INFLUENCES ON YOUNG CHILDREN'S BEHAVIOR, ENGAGEMENT LEVEL AND REPRESENTATION DURING STORYTELLING USING AN INTERACTIVE WHITEBOARD

By

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"Where you lead, I will follow, any, anywhere, that you tell me to, if you need, need me to be with you, I will follow, where you lead"

~Gilmore Girls theme song by Toni Stern and Carole King

TABLE OF CONTENTS

LIST OF TABLES

Table Page

LIST OF FIGURES

Figure Page

CHAPTER I

INTRODUCTION

"Recreating heart, we must see schooling as a place where relationships and meaning rather than test scores and standards drive the curriculum….will guide our efforts to form a new life, to create new meanings, to engage in alternative ways of interacting and relating with one another within the educational social context."

~Fleener, 2002, p. 183

The idea for this research study began with my lived experience as a Pre-Kindergarten teacher using an interactive whiteboard. The influence on children's storytelling in my classroom when I offered the students an opportunity to use an interactive whiteboard was illuminated one day as I worked with a small group of four year old students.

Our school had just received some interactive whiteboards through a technology grant and I was offered a chance to use one in my classroom. I immediately said "Yes!" and was anxious to see the possibilities it would offer children as a new technological tool in my classroom. I was working with a small

group of four children for literacy instruction and decided to let them explore the interactive whiteboard as if it were a large flannelboard since they were so familiar with storytelling using flannelboards. The interactive whiteboard software offered a limited selection of storybook backgrounds, characters and images to use when creating a story. They chose The Three Little Pigs from the list of fairy tales.

The first thing I assisted them in finding were background templates so they could choose a background for their storytelling experience. Amazingly, they unanimously chose the fair as their background. The fair template included a ferris wheel, two tents and a carousel as the background. I encouraged each child to pick a pig and place it in the fair background wherever they wanted. They each took a turn dragging an image of a pig with their finger across the interactive whiteboard to place their pig on the fair background. Three of the children placed their pigs on the carousel and one child placed his pig on the ferris wheel.

The possibility of having four pigs instead of three pigs was one of the ways in which the interactive whiteboard intrigued me as a way to offer an engaging and interactive option for students instead of a flannelboard. In a flannelboard story, there are a finite number of characters and props and the background would be exactly from the story such as a brick house. However, with the interactive whiteboard, the children were able to retell the story using the characters from The Three Little Pigs and create their own unique version of the story they titled as, The Four Little Pigs at the Fair. Yet, I didn't realize that the

most amazing moment of watching them explore and engage with the interactive whiteboard hadn't occurred yet.

The students agreed on inserting the image of the "blowing wolf" into the fair with the pigs. However, as the student inserted the blowing wolf, the wolf was projected on the interactive whiteboard as big as the ferris wheel! Three of the children laughed at the size of the wolf and wanted to leave the wolf that big. However, one child was not laughing and wanted to make the wolf smaller. So, as I stood in the back of the group, I asked them "What would happen if there was a blowing wolf at the fair that was as tall as the ferris wheel?" They explained to me how the wind from the wolf would blow the tents and ferris wheel down and it might even blow over the carousel. I was surprised by the representations of thought that they made in relation to the size of the wolf and the strength of the wind that would come from him. Their representations of thought were transformative since they had never seen a wolf that big.

So, I asked if it was okay if the one child who wanted to make a smaller wolf could change the size of the wolf. They agreed and then laughed at the small size of the wolf now. It was the same size as the pigs. "What would happen if there was a blowing wolf at the fair as small as the pigs?" I asked the students. Once more, they made an accurate prediction of the strength of the wind that would come from a smaller wolf. They commented that the pigs might not even notice the wind and the tents, ferris wheel and carousel would be okay. Their answer was generated from their previous understanding of cause and effect. At this time, the one student that just manipulated the size of the wolf on

the interactive whiteboard asked the other students if it was okay to leave the wolf this size. He commented to them that the wolf wasn't as "scary". As I sat there smiling and listening to these four year olds represent their understandings and watched their cooperative behavior, I was encouraged about teachers being able to use an interactive whiteboard for more than just a large flannelboard in their classroom. It seemed to encourage transformative and generative thinking and social interaction for the students in my classroom that had the opportunity to use it.

These experiences as an elementary teacher intensified my interest in understanding the qualitative differences in students' use of an interactive whiteboard. How do students behave when using an interactive whiteboard? How do they engage during social interactions with peers as they use an interactive whiteboard? How does the use of an interactive whiteboard affect their ability to represent their thinking? The ripples of curiosity from being offered an interactive whiteboard for my students to use three years ago led me to my interest in researching the use of an interactive whiteboard on students' behavior, engagement and representations of knowledge.

Technology is, whether we like it or not, reshaping the way we teach and learn due to The No Child Left Behind Act of 2001(NCLB). (Rathbun & West, 2003; US Department of Education, 2002). Teachers need to embrace it as part of the future classroom for our next generation of learners (Prensky, 2008). As teachers, we need to capitalize on children's engagement with technology and embed technology into curriculum in order to extend children's interaction,

exploration and perspective as it enriches their construction of knowledge and experience (Duffy & Jonassen, 1992). The inclusion of technology into curriculum offers a classroom rich with possibilities for creating an environment that provides an endless cycle of inquiry where children can engage and transform their knowledge. Young children engaged in constructing their own understanding of learning experiences is a fundamental characteristic of appropriate early childhood curriculum. “Giving students the freedom to explore their world confidently and routinely is one of the most important learning experiences that schools provide” (Grace,1999, p. 52). Teachers need to light a path for other teachers to follow that illuminates the connection between the use of technology and the enhancement of social and cognitive interactions for young children.

Children have a natural interest to explore technological tools due to the high degree of interaction involved in most forms of technology. Interactive whiteboards encourage this interest since they are a highly interactive tool. The SMART Board, introduced in 1991, was the first interactive whiteboard available for educational, commercial and governmental use (SMART Technologies, 2008). Today, other companies provide interactive whiteboard technology, such as Hitachi, Panasonic, Mimio, Interwrite, and Promethean (Cruickshank, 2007; Schmid, 2006; SMART Technologies, 2008).

Interactive whiteboards have tough exteriors optimized for use as wall sized touch screens due to being linked to a computer through a projector. The projector connects to the computer and to the interactive whiteboard so that the

whiteboard becomes a large scale version of the computer monitor. After calibration of the whiteboard to the computer, a finger on the whiteboard or a digital pen from an attached tray on the screen performs the same as a mouse does for computers. These pens can also write in “virtual” ink on the whiteboard which can then be saved to a document for later use (Solvie, 2004).

SMART Boards are equipped with SMART Notebook software that offers pre-made lessons for teachers to use when teaching any academic subject as well as clip-art images to assist in creating activities or lessons. It is marketed for educational use due to its ability to be highly interactive and engaging for whole group, small group and/or individual use in classrooms (Hyun, 2005; Schmid, 2006; Solvie, 2004). The interactive whiteboard is a physically interactive medium for students to use because of the interaction of the student’s mind and body with the blank screen. During storytelling, the whiteboard can be a place for students to insert clip art, upload photos, insert recognizable backgrounds, draw characters and/or write words. Solvie (2004) states that interactive whiteboards provide a novel approach for students to use for storytelling due to the possibility of engaging directly with this tool. Solvie (2004) explains that interactive whiteboards might encourage students to participate more enthusiastically in this type of literacy activity.

The potential for merging literacy activities with interactive whiteboards was explained by Solvie (2004) as “a tool to teach early literacy skills may help us reach young children in many positive and powerful ways” (p. 487). Fairy tales, nursery rhymes and tall tales are all forms of storytelling that teachers use

in classrooms to represent characters and relate possible lived experiences to students. Children love storytelling in early childhood classrooms. Dramatic play, flannelboard stories and storytelling are natural extensions of literacy activities for students in a classroom. Most early childhood teachers provide rich and varied types of props for storytelling, such as pre-cut felt pieces, flannelboards, puppets, flipbooks, tape recorders, storyboards, dioramas, scripts for plays, stuffed animals, plastic figures, illustrations and photos. Now teachers can add interactive whiteboards to their props to use for storytelling in their classrooms. Students enjoy storytelling for many reasons especially since it provides a way to communicate and express their lived experiences (Engle, 1999; Paley 1997). Solvie (2004) suggests that the interactive whiteboard "…allowed use of multiple senses, leading to increased levels of engagement and greater understanding" (p. 488).

When I introduced my students to the opportunity of using an interactive whiteboard for storytelling, their representations for the story were different from the original story. They seemed more flexible in their re-creations of the story characters, settings, and storyline. The students' behavior was more engaged as a cooperative activity during storytelling. They seemed more interested in the storytelling process, not solely the end product, when they were interacting with the interactive whiteboard to tell a story in my classroom. The possibilities offered when using interactive whiteboards provide a way for students to express their voice and transform their understandings. Students voices in our educational system are the weakest link that is often left unheard and as the

saying goes, “A chain is only as strong as its’ weakest link”(anonymous). It would do educators well to listen to and observe the behaviors of children as they are engaged in the learning process using interactive white boards. Their voices could suggest new and widened spaces for teaching authentically to young children.

Problem Statement

I wanted to investigate student’s behavior, engagement level, and representation during storytelling using an interactive whiteboard. The intention of examining these constructs during storytelling was to provide a way to understand and explain how using an interactive whiteboard influences students. This research would help teachers understand the effects of letting students use interactive whiteboards in their classrooms. My hope would be that teachers would have a renewed understanding of the influences of using technology with students in classroom environments.

My research questions are:

1. **In what ways does using an interactive whiteboard influence students’ representations of the story during storytelling?**
2. **In what ways does using an interactive whiteboard influence students’ behaviors during storytelling?**
3. **In what ways does using an interactive whiteboard influence students’ engagement levels during storytelling?**

Meaning of Terms

Interactive whiteboard—An interactive whiteboard is one of the brands of whiteboards that function similar to an “electronic version of a dry-erase board” (Solvie, 2004). It is a technological tool to use in conjunction with a projector and a computer to display and interact with information on a large white screen. It allows users to manipulate information on the whiteboard by “touching the board …in a similar way to clicking mouse buttons” (Solvie, 2004, p. 485).

Storytelling—Any effort by a child to communicate the sequence of events and represent their understanding of story through placement, dimension and use (or lack of use) of props. A definition offered by Carter (1993) is a “personification and a patterning of events around a theme or figure of significance to a particular culture” (p. 6).

Representation—Knowledge can be viewed using multiple forms of media, i.e., drawings, paintings, dramatic play, constructions using multiple materials, writings, photographs, audiotapes, videotapes, stories, and so forth. Children use symbols to represent what they understand based on their prior experiences, existing assumptions, theories and ideas which communicate their knowledge (Branscombe, Castle, Dorsey, Surbeck & Taylor, 2003; Edwards. Gandini, & Forman, 1998).

Transformative—Piaget stated that “transformation is a process and not a product; but a transformation is bounded by end states…” (Forman & Kuschner, 1983, p. 64). “A transformation is something that the child (or adult) does to change things” (Forman, 1984,p. 4). Teachers’ questioning style, presentation of

material and critical thinking opportunities provide a source of interaction and scaffolding needed from teachers to assist students with transformative thinking (Forman & Kuschner, 1983). Forman & Kuschner (1983) add that students with the ability to demonstrate transformative representations in their thinking are better able to use and detect perceptual information, make inferences and discriminate similarities and differences.

Engagement level—Using the engaged learner definition created by Jones, Valdez, Nowakowski and Rasmussen (1994) provided indicators of levels of student engagement to observe as part of the learning process. Students are responsible for their own learning. They exhibit joy in learning which will energize the learning process for them. Students are able to regulate their own behavior in order to complete learning activities. They are able to problem solve and concentrate on completing tasks during collaborative interactions with a peer (¶2).

Behavior—Marion (2004) states that "…behavior has meaning" (p. 133). Students demonstrate meaning through nonverbal, verbal and social cues such as mood, emotions, eye contact, gestures, body language and facial expressions. Students also provide examples of their behavior with physical cues such as movement, posture, proximity to others including objects, and manipulating objects.

Purpose of Study

The purpose of this descriptive naturalistic study was to contribute to an understanding of students' use of technology by identifying behaviors, engagement level and representations of thought during a storytelling experience. I wanted to observe children storytelling using an interactive whiteboard in their classroom and interview them about their experience. The intention of examining these constructs was to descriptively explain the phenomena so a general understanding of student's behavior, engagement level and representations as they used an interactive whiteboard was provided.

Significance of Study

I hoped that by conducting this research I would have an increased understanding of the influence of using an interactive whiteboard with students in a classroom. I wanted to observe and document children's behavior, engagement level and representation of thought when they interacted with a new technological tool, an interactive whiteboard. The benefit of using interactive whiteboards in classrooms was that it engaged students' interest and encouraged them to construct their own knowledge.

I hoped that this research study would inform teachers of another instructional tool in their classroom that had the ability to independently engage students in the learning process. My hope was that teachers would have a renewed understanding of the influences of using technology with students in classroom environments, especially in the age of 21st century learners.

Limitations of the Study

This research study was limited to classrooms where the teacher felt the students were able to independently use technology without adult assistance. This was part of my criterion for purposefully selecting a sample of students. My initial email to recruit subjects stated for teachers to respond only if they felt their students were able to independently use an interactive whiteboard.

This research study was limited due to the small sample size employed for this study. Eight students, four pairs of students, were observed and interviewed for this study. The emerging themes and patterns identified from this selected sample cannot be generalized to the population of first grade students as a whole. This study was an effort towards finding a richer understanding of students' use of an interactive whiteboard.

CHAPTER II

REVIEW OF LITERATURE

"Where the sun shines, there too is shadow. Be illumined by the light of knowledge no less than by its shadow."

~Halcolm, from Patton, 2002, p. 429

Technology

Young children are confident and comfortable using computers (Clements, 1999). Children, who have always lived in a world infused with technology since they were born, are considered Digital Natives (Prensky, 2005). Digital Natives was a term coined by Prensky in 2001 to describe "native speakers of technology, fluent in the digital language of computers, video games, and the Internet." (Prensky, 2005-06, p. 9). The difference between students growing up in an era of technology and teachers that have had to adapt to using technology is known as the Digital Divide (Prensky, 2001). Older adults are considered to be Digital Immigrants since they were born prior to widespread use or availability of technology (Prensky, 2005, ¶22). "Digital Natives", "Digital Immigrants" and the "Digital Divide" are all terms created as metaphors to describe the widespread, but recent changes in technology.

Statistics

In the United States, during the 1980's, early childhood classrooms contained a ratio of one computer for every 125 children. However, by 1997, early childhood classrooms increased the availability of technology for children to one computer for every ten children (Clements, 1999; Coley, Cradler, & Engle, 1997). Clements (1999) states that a 1:10 ratio is a minimum ratio for supporting social interaction while using technology. A 2004 report by the United States Department of Education stated that 99% of schools in the United States utilize an Internet connection with a 1:5 ratio of computers to students.

In 2002, teenagers reported spending more time interacting with technology on a daily basis than watching television (Siegle, 2004). In fact, "Children who use the Internet spend 37% less time watching television and 16% more time with friends and family." (Siegle, 2004, p. 32). It seems that engaging with technology is a social activity instead of an isolating one for students (Siegle, 2004).

Mandates for Education

Access to technology, acquisition of technological tools, Digital Divide, teacher computer expertise, school SES and limited/lack of funds are just a few of the issues that might affect teachers' use of technology in their classrooms (Becker 2000; Williamson, 2001). The No Child Left Behind Act of 2001 (NCLB) mandates for teachers to assist students with technology and integrate technology into their curriculum so students will be "technically literate by the

eighth grade" (Rathbun & West, 2003, ¶2; US Department of Education, 2002, p. 13). This mandate forces teachers to incorporate opportunities for students to use technology in their classrooms. Previously, President Clinton began this process of incorporating technology in the classroom with his 'National Call to Action' in an effort to connect all public schools to the Internet (Office of the Press Secretary, 2000).

Teacher's use of technology in classrooms

New ideas in early childhood curriculum, such as incorporating technology into the classroom to enhance traditional instructional methods, have begun to be implemented by teachers. Recently, Oklahoma was cited as "above average and ninth in the nation in a national report on school technology" (Oklahoma State Department of Education, April 2, 2007, ¶1). Specifically, Sandy Garrett commented that "we're very proud of the 'A-' given to Oklahoma in the Use category, because that means Oklahoma schools are effectively using and maximizing the technology that they do have…" (Oklahoma State Department of Education, April 2, 2007, ¶4). Yet, in many early childhood classrooms, the use of technology as an instructional tool to enhance curriculum is still perceived as an innovative way to engage young children in learning, or is it?

NAEYC states that "early childhood educators have a responsibility to critically examine the impact of technology on children and be prepared to use technology to benefit children." (NAEYC, 1996, ¶1). "The world is in a great state of flux vis a vis technology and this causes all educators to be unsettled."

(Williamson, 2001, ¶12). In the last 30 years, technology for classroom usage progressed from using computers for printing off information, using computers to offer a broader array of learning opportunities for students and now, computers offer "data-driven virtual learning….demonstrated by the application of a number of skills toward a given purpose" (Siegle, 2004, p. 33).

It is especially important for teachers to address how technology enhances curriculum due to the NCLB mandates; however, using technology is not enough. Teachers need to focus on adding technology to enhance curriculum because whether teachers acknowledge and incorporate changes in their curriculum or not students want and need to be able to use technology. Students welcome technology as a familiar learning tool. Many teachers currently use technology as "electronic worksheets" (Wilhelm, 2004, p. 45). Becker (2000) stated that "Children's most common computer experiences involved word processing and information acquisition" (p. 68). However, utilizing technology in such a static manner denies the interactive and engaging element embedded in most technological tools. It is the interactive and engaging element in technology that attracts young children towards using technological tools and assists them in constructing a better understanding of their thinking through experiences.

Early childhood educators know that providing students with a variety of technological tools in the classroom supports an understanding that students' needs, abilities and interests must be taken into account for learning experiences to be considered authentic. Authenticity in learning activities is an essential

component of appropriate early childhood curriculum (Branscombe, et.al, 2003). "…we can explore ways to use technology effectively in the classroom, ways that add value to traditional curricula and reach students who fail to respond to traditional approaches." (Shields & Behrman, 2000, p. 24). Balajhy (2000) reported that "In a survey of teachers …nearly one-third of the respondents used software primarily because it is 'interesting and motivational for students,' rather than for 'mastering skills and knowledge.'" (p. 291). Teachers need to remember that they are teaching students with differing needs for instruction. These students are used to activities that "promote higher level thinking, collaboration, constructivism, speed and information evaluation—i.e., those competencies required for the 21st century" (Asselin, 2001, p. 50).

21st Century Learners

Over time, these changes in technology and governmental mandates have created the need for teachers to view and teach students differently. "Our students, who are empowered in so many ways outside their schools today, have no meaningful voice at all in their own education….In the 21st century, this lack of a voice on the part of the customer will soon be unacceptable." (Prensky, 2005-06, p. 13). 21st Century Learners deserve to use technology in authentic ways in their classrooms. Instead of creating students that are "technically competent in rote, application-specific tasks; rather, our students deserve to understand how the various information technologies they intentionally use and unintentionally encounter every day work." (Cesarini, 2004, p. 12). These students are ""…so

different from us that we can no longer use either our 20th century knowledge or our training as a guide to what is best for them educationally."(Prensky, 2005-06, p. 9)

Children are being socialized in completely different ways. These numbers offer an insight into everyday social activities for students today:

> over 10,000 hours playing videogames, over 200,000 emails and instant message sent and received; over 10,000 hours talking on digital cell phones; over 20,000 hours watching TV …over 500,000 commercials seen ---all before the kids leave college…These are today's 'Digital Native' students. (Prensky, 2001, p. 1)

These statistics seem to represent how comfortable students are interacting with a group of peers in the same room with them or on the Internet. Either way, today's students have been immersed in technology from birth so that "They have spent their entire lives surrounded by and using…tools of the digital age" (Prensky, 2001, p. 1).

Research indicates that using technology supports students in both cognitive development and social interactions (Clements & Sarama, 2003). Elementary school students use technology as a form of socialization as well as for learning (Becker, 2000; DeBell & Chapman, 2003; Prensky, 2005). Clements & Sarama (2003) stated that "…children spent nine times as much time talking to peers while on the computer as when doing puzzles….shows the nature of the interaction to be positive." (p. 34).

Students' thoughts about using technology in a classroom are framed in a positive manner. They state that

> it is important for them to have computers…8-year-old Irshad, who explained that with computers, children can'…learn more things, and they'll be learning and having fun at the same time'…13-year-old Anneika, who states that '…computers will be the future, so if you grow up with it, then you will know it' (Escobar & Cappella, 2000, p. 187)

Listening to the voices of students will assist teachers in finding a new direction for 21st Century Learners to be able to learn in their classrooms.

Teachers need to offer the "prerequisites for learning—engagement and motivation" in classrooms in order to reach students and effect the learning process (Prensky, 2005-06, p. 11). Prensky noted though that while teachers need to guide instruction for students, learning occurs best for students when they are actively involved in using the technology, not watching the teacher use the technology (Prensky, 2008). Students interacting with each other and with technology seem to encourage cooperative exchanges in dialogue and work. "Technology appears to motivate children to increase the time they are willing to spend practicing important academic skills." (Morrow, Barnhart, & Rooyakkers, 2002, p. 219). He remarked that "…these tools are like extensions of their brains." (Prensky, 2005-06, p. 12). A challenge for teachers working with 21st Century Learners will be to find a way to instruct students using critical thinking activities and reflection within some form of technology (Prensky, 2001).

Theoretical Connections

Theory provides a broad explanation of the assumptions and framework that guide understanding phenomena. Constructivism is a theory of knowing that focuses on the role of each person in constructing their own knowledge. Technology not only intrigues students it offers "a complimentary relationship" with constructivist teaching methods (Nanjappa & Grant, 2003, ¶2). As teachers try to meet national, state, district and individual demands for appropriate classroom environments in the 21st century, "awareness of and responsiveness to the emerging changes in learning and teaching environments will be necessary" (Hyun, 2005, p.88). Teachers need to create classrooms that offer students an opportunity to use technology while at the same time offering teachers additional tools to use when instructing children.

A report on children and computer technology funded by The Future of Children Organization in 2000 indicated that

> positive results from computer use are most likely to be achieved when the applications reinforce one or more of the four fundamental characteristics of learning that underpin the 'constructivist' approach: (1) active engagement, (2) participation in groups, (3) frequent interaction and feedback, and (4) connections to real-world contexts. (Becker, p. 20).

Constructivist teaching provides an avenue for students to refine their thinking through Interaction in a social environment (Vygotsky, 1986). It provides the necessary link teachers need to understand how infusing technology into curriculum creates a vital connection for students.

Prensky explained the role of technology is to “support the new teaching paradigm. That is, technology’s role-and its only role-should be to support students teaching themselves (with, of course, their teachers’ guidance.)” (Prensky, 2008, p. 1). “Technology can provide the vehicle for accomplishing constructivist teaching practices” (Rakes, Flowers, Casey, & Santana, 1999, p. 3).

It is when teachers view their pedagogy rich with possibilities from infusing technology into curriculum that they are able to transform their teaching pedagogy on their own journey to self.

> It’s time for education leaders to raise their heads above the daily grind and observe the new landscape that’s emerging. Recognizing and analyzing its characteristics will help define the education leadership with which we should be providing our students, both now and in the coming decades. (Prensky, 2005-06, p. 9)

Constructivist Theory

Constructivist theory provides the necessary link for teachers to understand why the combination of technology with early childhood curriculum is a vital link for young children. A definition used by Branscombe, Castle, Dorsey, Surbeck, and Taylor (2003) explains constructivist theory as:

> A theory of knowing that emphasizes the role each person plays in constructing his or her own knowledge rather than absorbing it directly from the environment. The focus is on children's creation of knowledge

rather than what others consider important knowledge. This occurs as the individual mentally and often physically acts on the environment. (p.10)

This theory is child centered and active in nature focusing on children constructing their own understanding of their experiences rather than repeating what others consider important knowledge (i.e., rote drills to learn phonics). Constructivist teachers understand that children learn through a variety of methods. Constructivist teachers understand that children need to interact with their environment, learn through a variety of methods, and explore questions in an effort to refine their own thinking processes. (Branscombe, et al., 2003).

There are six assumptions of the constructivist theory that can be utilized by teachers to confirm their curriculum activities are maintaining a focus on children (Branscombe, et al., 2003, p. 33-48):

1. Children learn as they choose and engage in tasks that are authentic
2. Children learn as they actively explore objects and interact with others
3. Children learn due to being surprised and intrigued about experiences
4. Children learn as they refine and clarify their thinking
5. Children signify what they know through representations to others
6. Children learn about other cultures and society

These constructivist assumptions encourage teaching strategies to create classrooms that provide authentic tasks that are child centered, active, inquisitive, multicultural, representative of knowledge and exploratory.

NAEYC Curriculum Guidelines state that curriculum should provide an avenue for children to generate meaningful knowledge construction rather than

focus on teaching isolated information (Fields & Boesser, 2002). When elementary curriculum is generated from the interests of children within a group, it is more relevant, engaging and meaningful to children. Therefore, child-directed activities embedded in elementary curriculum foster construction of knowledge, social interaction during play and children's authentic use of manipulatives support children in their learning process while teaching children self-reliance and increasing their self-esteem. Child-directed projects and activities need to be the foundation for elementary curriculum.

This type of foundation supports children's innate desire to investigate their environment and is vital to incorporate into elementary curriculum standards. Yet, many elementary schools are forced due to NCLB mandates to utilize curriculum that promotes teacher-driven activities and rote memorization of information instead of supporting student-led activities in the pursuit of constructing their own knowledge. This regimented type of knowledge transmission does not support elementary curriculum that fosters children interacting socially during play and learning. Children learn best when they construct knowledge through social interaction and play (Branscombe, et.al., 2003). Both Piaget and Vygotsky would agree with this basic principle of constructivist teaching (Berk & Winsler, 1995; Piaget, 1654; Vygotsky, 1986).

Using technology to teach young children embraces a constructivist perspective by encouraging the use of instructional tools that enhance classrooms. Authentic child-centered tasks that encourage students to be active, inquisitive, multicultural, represent their knowledge and exploratory are

constructivist classrooms. Classroom instruction that uses technology offers these elements for young children.

Chaos Theory

Transformations that occur due to the rich, recursive, rigorous relationships between technology and curriculum emerge as students interact during teaching and learning in their classrooms. Benefits of this type of transformation were reported by The National Reading Panel as "…computer technology supports motivation to read and write; and electronic books are challenging assumptions about the nature of text and reading as a linear, chronological process" (Asselin, 2001, p. 49). This non-linear approach to teaching and instruction in curriculum can be viewed through the lens of the chaos and complexity theory.

In curriculum, any fragmentation or recursion in the boundaries due to the addition of a different method of instruction has the ability to change the way it is viewed in its journey from traditional instruction into a curriculum enhanced by technology. In order to be creative--to negotiate space when there isn't space—teachers need to negotiate the boundary. The most generative area is at the boundaries. Right now, the use of technology is on the boundary of most teachers' pedagogy in classrooms. "Without boundaries, nothing can exist; without boundary crossing, nothing new can be created" (Wang, 2004, p. 132).

Third Space

The third space created in a classroom where students use technology has recursive patterns within the teaching and learning process that encourage and support a journey to self for teachers and students. "Teachers cannot engage in students' personal transformations without first reaching beyond the teacher's self—culturally, socially, and personally." (Wang, 2004, p. 157) A third space must have conflicting halves from which to identify boundaries and recursion. The conflicting halves of curriculum are teaching and learning and the boundaries are technology. When curriculum is viewed in conjunction with technology, the conflicting halves are viewed as traditional and technological pedagogy. The conflicting halves of a teacher's pedagogy, bounded by students' use of technology, create the fragmentation needed to transform students' use of technology into a third space.

Students accept the third space that emerges from this conflict as a natural extension of curriculum due to their comfort level and ease with using technology. The transformation that emerges in the third space creates new understandings of the conflicting halves.

> …creating a generally-agreed-upon twenty-first century curriculum, one goal is, I think, now clear—the pedagogy with which our kids should be taught. Although it can be stated in many ways, the basic direction is away from the 'old' pedagogy of teachers 'telling' to the 'new' pedagogy of kids teaching themselves with teacher's guidance. (Prensky, 2008, p. 1)

The generation of a third space in teachers' classrooms causes small reiterative changes in their pedagogy that, over time, will transform curriculum, in classrooms.

Using technology in a classroom provides a third space for teaching and learning that involves interconnections and evolutions in meanings through a recursive, transformative process teachers and students generate as they use interactive whiteboards as part of the curriculum. Classrooms are sites where students and teachers interacting with interactive whiteboards create a third space full of layers, rich with differences and possibilities.

> One's third space shifts as one interacts with each person, with each text, in each situation. Transformative, it hosts ambivalence, contradictions and fragmentation, yet not without attraction. Affirmative, it regenerates though conflicts and passages. Creative, it holds endless love and boundless energy. (Wang, 2004, p. 150)

A sense of play in the boundaries is vital because there is always something that emerges as you play in the boundaries. "The pedagogical relationships between teachers and students are crucial in building bridges and initiating play" (Wang, 2004, p.106). During my research, I used teachers and their classrooms as a way to view and play at the boundaries of pedagogy while negotiating an agreement between the symbolic and the semiotic (Wang, 2004).

This eternal shifting and transforming in the third space provides teachers and students with endless possibilities. It is the journey through the layers of transformation and differences for teachers and students that provide the

understanding of technology as a third space. This journey "continues, at the interminable beginning through a 'complicated conversation' that is curriculum" (Pinar, 2004; Wang, 2004, p.151).

Storytelling

Storytelling is a developmentally appropriate activity for students to engage in during first grade when literacy skills and cognitive development are the primary focus for learning in a classroom. Stories are considered learning tools for students in classrooms as they make connections and modifications in their understanding of what they are doing (Paley, 1997). "They expect to understand. Play is their language and story is their second language" (Paley, 1997, ¶42).

Storytelling is one of many instructional strategies used by teachers for students in a classroom to focus on literacy development. However, literacy begins long before students enter school. The activities encouraged by a teacher either continues to make literacy development engaging for students after they enter school or changes literacy to an impassive activity for students. In regard to literacy instruction, Leu, Jr. (2000) pointed out that teachers need to realize "that the literacy community must change its focus to include far more than book technologies if we hope to prepare children for the futures they deserve" (p. 428).

The most important factors teachers should consider when assessing individual literacy needs of students include prior knowledge, language and

cultural background, rate of learning/ amount of instructional time, and interests and attitudes (Pikulski & Cooper, 1997). Castellani and Jeffs (2001) stated that "The Internet helps teachers implement authentic learning strategies in the classroom by allowing the learner to choose reading materials based on their own interests…The result is increased student motivation and success with the reading and writing process" (p. 66).

Literary instruction is a subject area that teachers have begun to use as an entry point for incorporating technology into curriculum. Literary instruction involves social interaction characterized by teachers providing instruction in literacy skills such as listening comprehension, speech production/discrimination, vocabulary, verbal expression, motivation to read, knowledge of literary forms (Morrison & Morrow, 2002). All of these literacy skills can be enhanced by complementing the traditional literacy skill instruction with the addition of technology. "…technology and literacy are always closely intertwined. Computers have initiated a new interest in the connection between technology and literacy…" (Reinking, 1997, p. 630). Using interactive technology with literacy skill instruction has shown improvements in "pretend reading and story sequencing" for students (Nordness & Clark, 2007, p. 1).

Solvie (2004) states that "the process of learning to read is truly complex….Incorporating the digital whiteboard …as a tool to teach early literacy skills may help us reach young children in many positive and powerful ways" (p. 487). Storytelling links together many of these literacy skills for children as well as promotes social interaction with play. Play is a vital component of

constructing knowledge for children. Curriculum objectives are not met using isolated academic activities, but instead are met through an integration of curriculum objectives with physical, socioemotional, cognitive and linguistic activities offered throughout children's play. “The value of educational time spent on using technology to support students’ literacy development rests on its ability to promote higher level thinking, collaboration, constructivism, speed and information evaluation—i.e., those competencies required for the 21st century” (Asselin, 2001, p. 50). Classrooms that use constructivist assumptions while providing a technology rich environment encourage or maintain interest levels for children in learning activities.

Engagement

Children who engage in child-directed activities such as storytelling focus on the process and not the end product. They are involved in social interactions with their peers. Play provides an outlet for children to actively construct knowledge while developing cognitive, socioemotional, and physical skills. Child-directed play offers children the opportunity to engage in activities that are not only interesting, but are meaningful learning experiences. Many elementary teachers consider play to be a vital component of elementary curriculum (Paley, 1997). Children in classrooms that include play as a medium for learning have children that are less stressed and have more social skills (Fields & Boesser, 2002).

"Many studies indicate that play not only reflects but contributes to general cognitive and social development" (Berk & Winsler, 1995, p. 58). Students engaged in learning are practicing social skills. The skills of an engaged learner such as negotiation, expressing feelings, empathizing, cooperation, creativity, and self-regulation are all skills that encourage children to problem solve as they interact (Jones, et.al, 1994). Using the skills of engaged learning in a classroom provides the opportunity to offer representational play to students as a learning activity.

Representations

Children use symbolic representations most often which include "The natural spoken language, the sign language of the deaf, the Morse code, and mathematical symbols are all examples of codes (symbols) that have been conventionalized so that many people can use them to communicate with one another" (Forman & Sigel, 1979, p. 37). It is through the opportunity to actively construct knowledge that students are able to understand. "…through representation of their knowledge, the knowledge itself is enhanced" (Bradekamp & Copple, 1997, p. 11). Student's behavioral knowledge changes due to "a variety of firsthand experiences ….helping children acquire symbolic knowledge through representing their experiences in a variety of media." (Bradekamp & Copple, 1997, p. 11).

Forman (1996) provided a detailed example of this with a student whom constructed his understanding of a water wheel by using five media to represent

his knowledge. The student utilized three forms of representation using materials (clay, paper and pie pans) and the other two were typical forms of representations, writing and drawing. The iterative process of representing knowledge in multiple forms of media provided the impetus for this student to construct a better understanding of a water wheel (Forman, 1996).

Children use symbols to represent what they understand based on their prior experiences, existing assumptions, theories and ideas which communicate their knowledge (Branscombe, Castle, Dorsey, Surbeck & Taylor, 2003; Edwards. Gandini, & Forman, 1998). Students use a variety of ways to represent their knowledge. Storytelling, writing, painting, clay and drawing are all forms of representing knowledge (King, 2007). Other forms of representations could be graphic organizers, dramatic play, constructions using multiple materials, photographs, pretend play, manipulatives, audiotapes, videotapes, stories, and so forth (Bradekamp & Copple, 1997; DeVries, Zan, Hildebrandt, Edmiaston and Sales, 2002). King (2007) describes storytelling as a natural way for students to represent their understanding.

Behavior

“Children demonstrate their strengths through behavior” (Marion, 2004, p. 131). Forman and Kuschner (1983) explain that motivation encompasses personality traits (i.e., attention, restlessness, enthusiasm) and situational factors (i.e., allocated time, fatigue, excitement). “Motivation encompasses all the emotional components of learning, such as the child’s interest, fear, drive,

conflict, and boldness." (DeVries, et.al, 2002, p. 153). This means that motivation can be exhibited in students' behaviors.

Therefore, if teachers can provide motivation for learning to their students then they will have a classroom of learners that demonstrate their motivation with their behavior. Student's behaviors are demonstrated through nonverbal, verbal and social cues. The cues could range from mood, eye contact, and body language to movement, proximity to others including objects, and manipulating objects (Forman & Kuschner, 1983).

Summary

Technology has become a pervasive presence for teachers and students in the classroom. Young children born in the 21st century have always lived in a world infused with technology. They use technology as a form of socialization to connect with other people through e-mail, online games and as a form of entertainment. Curriculum is more familiar to students when it incorporates technological tools as a means to enhance their learning process.

> …the burden of bridging this gap between technology and teachers is placed squarely in the laps of teachers. They face the daunting task of not only using the technology, but also showing the expected benefits of its use. …Thus, teachers 'fear of technology' or lack of technological expertise is often linked to teachers' use of technology in their classroom/instructional practices….we rarely look to the specific technology itself and its usability as contributing to the lack of technology

integration in classroom practices and instruction.

(Buzhardt & Heitzman-Powell, 2005, p. 14)

Due to NCLB mandates and expectations for accountability in classrooms, it is imperative for teachers to address how technology might enhance curriculum and learning in their classrooms.

Teachers need to remember that they are teaching 21st Century Learners. "This means encouraging decision making among students, involving students in designing instruction, and getting input from students about how they would teach." (Prensky, 2005-06, p. 10). Technology is, whether we like it or not, reshaping the way we teach and learn making it rich with possibilities. As teachers, we need to capitalize on student's engagement with technology and embed technology into curriculum in order to extend students interaction, representation, and positive behaviors while enriching their construction of knowledge and experiences.

CHAPTER III

METHODOLOGY

"Piaget believed that 'to understand the nature of knowledge, we must study its formation rather than examining only the end product.'"

~Kamii & Ewing, 1996, p. 260

Introduction

My research study was conducted from an Interpretivist theoretical perspective. I used a Constructivist epistemological stance as the lens through which I viewed my findings. Constructivists interpret and construct knowledge based on experiences and interactions with the environment (Denzin & Lincoln, 1994). The research strategy that I employed to provide an interpretive understanding of my inquiry was a descriptive, naturalistic qualitative approach. The qualitative methods utilized to gather data for my research study were observations, interviews and document analysis.

Crotty (1998) identified three assumptions of constructivism inquiry as: (1) meanings are constructed as humans engage and interpret the world, (2) humans make sense of their world based on their own social and historical experiences, (3) meanings are derived from social interactions. Due to my epistemological stance being derived from a constructivist lens, my emic view of

being a classroom teacher offering students the opportunity to use technology in my classroom influenced my interpretations. I interpreted the findings of my research study using the Interpretivist and Deconstructionist paradigms. Specifically, I used the Constructivist Theory and a Poststructural perspective, Third Space, to analyze the data from this study.

I chose to conduct a qualitative research study in order to gain knowledge about the experience of students' using an interactive whiteboard. In particular, I wanted to investigate ways using an interactive whiteboard influenced young children's behaviors, engagement levels, and representations during storytelling.

My research questions were:

1. **In what ways does using an interactive whiteboard influence students' representations of the story during storytelling?**
2. **In what ways does using an interactive whiteboard influence students' behaviors during storytelling?**
3. **In what ways does using an interactive whiteboard influence students' engagement levels during storytelling?**

Selection of Participants

The sample of young children selected was limited to eight students, four pairs of students, from an elementary population of first grade students. The students were selected from one elementary classroom of a teacher who responded to my email invitation. This email was sent to all first grade teachers at a selected elementary school in the largest public school district located in a

large urban setting in the northwest portion of a Midwestern state. This selected school was chosen since all students in that elementary school had access, for the past three years, to an interactive whiteboard in their classroom. The teachers that volunteered to participate in this research were limited to those that responded affirmatively to my email. My email requested permission to observe students in their classroom if they felt that they had students able to use an interactive whiteboard "independently."

I employed a criterion based purposive sampling method in order to choose a small sample of first grade students in the selected classroom based on a sole criterion. I requested for the teacher to use the sole criterion of "independently use an interactive whiteboard" to determine which students to select for this study. She identified eight students she felt were able to independently use an interactive whiteboard to complete an activity. Following this criteria selection process, the sample of students selected was based on students that received parental consent to participate and students that gave their assent to participate in the study.

I picked first grade students due to their familiarity and comfort with storytelling and engaging peers to tell a story. Also, I picked schools that had interactive whiteboards in all classrooms so first grade students would have had the opportunity to use an interactive whiteboard previously in Kindergarten and possibly, even Pre-Kindergarten. It is important for my research study that students were able to use an interactive whiteboard independently so their ability

to use technology was not a factor influencing their behavior, engagement level or representations during storytelling.

Procedures

First, I obtained consent from the public school district's Research Review Committee (Appendix A). Then I obtained consent from the Oklahoma State University Institutional Review Board (Appendix B). Following approval from both institutions, I requested a listing from the public school district's technology department about which elementary schools in that district had interactive whiteboards available for use in their first grade classrooms.

I contacted the initial first grade teacher that volunteered to participate in my research study following my email solicitation in November 2008 (Appendix C). I inquired if this teacher felt she had eight students that could independently use an interactive whiteboard to tell a story. The teacher responded that she did meet that requirement so I selected this classroom for my study. I felt that by letting a teacher volunteer for my research study ensured that she was not coerced into participating by an administrator or the school district.

Prior to meeting the students selected by the teacher, I obtained consent from the first grade teacher using the Teacher Consent Form (Appendix D). Then, I arranged a date prior to beginning observations, to be introduced to all the students in the classroom. At that time, I also practiced setting up the videocamera, oriented and opened the SMART Notebook software on the interactive whiteboard, and read the story, Goldilocks and the Three Bears, to the

students. This was done in an effort to have students become familiar with me being in their classroom and for me to become familiar with the students.

Following my read aloud in the classroom, I met separately with the small group of eight students selected by the teacher for this research study. I explained to the eight students what the research study entailed. I asked them if they felt they met the criteria of being able to independently use an interactive whiteboard. They all responded affirmatively to that question. I explained to them that before they could officially be eligible to complete the storytelling activity, their parents must give permission by signing and returning a Parent Consent Form to me (Appendix E). I paraphrased to the students what the Parent Consent Form stated and explained that there was a Student Assent Form (Appendix E) attached to their parents form for them to sign as well after they had their parent's permission.

I sent this form home with the eight students that day. I called the teacher two days later to find out if at least two students, one pair, had turned in their completed permission slips so that I could begin my observations the following week. If parental consent had not been given for any of the initial eight students selected by the teacher, I planned on asking the teacher to choose additional students. However, I didn't need to the initial eight students selected by the teacher returned their signed permission slips. This process of checking with the teacher continued until I had received parental consent and student assent for four pairs of first grade students.

The teacher paired students together for each observation. She stated

that she would determine, on a daily basis, which of the eight students would be paired together for each observation. One factor would be their behavior in the classroom during the morning before I came for an observation. She wanted them to be “good listeners” during the morning session if they were going to be given the opportunity to participate in the research study in the afternoon. Another reason that she did not pair any students together until the day of each observation was to provide some flexibility in case one or more of the eight students was absent.

I began observing and interviewing pairs of students every other day for a span of eight days until I completed gathering data for all four pairs of students selected by the teacher (eight students in total). Beginning with the second observation, I began printing and collecting documents to use for analysis from the pages created by the students during storytelling on the interactive whiteboard. Following all four observations and interviews, I transcribed each observation and interview. During transcription, I noticed that using letters to distinguish students from each other, even in pairs, wasn’t going to work since so many students wore clothing that began with the letter ‘b’ (blue and black). Therefore, the students were given pseudonyms instead during transcription. I compared my observational fieldnotes with my transcriptions to determine if I could add additional descriptive information to the transcribed observations and interviews. Then I collapsed all of my data for each pair of students into a notebook so that all of my observations, interviews and documents would be together.

Data Collection

The initial method for collecting data for this research study was based on observations and interviews with students. However, after my first observation and interview with one pair of students, I also began collecting documents saved by the SMART Notebook software that provided a visual representation of each pair of students' storytelling experience. I observed four pairs of students, eight students total, from the same first grade classroom as they used an interactive whiteboard during storytelling. I observed during a time period in this classroom when there was at least 50 minutes of uninterrupted time for these students to use the interactive whiteboard. This time period provided an opportunity for students to not feel rushed to complete their storytelling experience. Interviews with the pairs of first grade students were completed immediately following the storytelling activity. All four observations and interviews ranged in time from 28-35 minutes each.

Storytelling Observations

I observed children storytelling using an interactive whiteboard. These students were selected based on the teachers' opinion that they would be able to independently use an interactive whiteboard. I observed four pairs of students that were paired together by their teacher on a random basis from the eight students selected for this research study.

Prior to beginning an observation, I asked the teacher to introduce me to the two students from the sample of eight students that she had selected for

today's observation and interview. After introductions, she would take the rest of the class to their 'Special' for the day (PE or Music). The pair of students and I went to the area in front of the interactive whiteboard in their classroom. I asked the students if they remembered when I read the story, Goldilocks and the Three Bears, to their class. I reminded them that the activity that I wanted to observe was their re-telling of the story, Goldilocks and the Three Bears, using an interactive whiteboard while I videotaped them.

I set up the videocamera on a tripod to capture all the details of the storytelling experience. While the videocamera captured the students' interactions on the interactive whiteboard, I used a Running Record Observation Form to make notes on during the observation (Appendix F). I recorded both students' behaviors during the observation on the observation form and provided descriptions of the room, their clothes, their behavior, the sounds, the smells, their engagement with the activity, their engagement with each other, representations of their thinking that they made during storytelling and some snippets of conversation. During each observation, I assigned students a letter based on the color of their clothes so that there wasn't any personally identifying information written down on my running record about what I observed.

Prior to asking them to begin their storytelling activity, I asked the students if the interactive whiteboard was "oriented" for their use. For all four observations, the interactive whiteboard was not ready for their use so I had the students assist me in getting the interactive whiteboard "oriented" so that it didn't

waste our time together. SMART Notebook software uses the term “orienting” in the same manner as other software programs use the term “calibrating”.

“Orienting” an interactive whiteboard provided a means for the placement of objects on the whiteboard screen to be linked with the computer’s hard drive and projector. This process was completed through the illumination of nine pre-defined quadrants in the form of a square-based grid on the whiteboard screen. These nine quadrants were identified with a dot in the center of an X which students touched in order to confirm the placement of objects on the whiteboard screen. So, after an interactive whiteboard was oriented, a student was able to touch the whiteboard screen with their finger or use one of the available digital pens to insert an object. This process was similar to using a mouse to place objects on a computer screen.

After the students and I oriented the interactive whiteboard, I opened the SMART Notebook software to a blank page to find the preinstalled Language Arts activities that I wanted the students to use for this storytelling activity. I told the students that I couldn’t help them as they used the interactive whiteboard because I wanted to observe them use the interactive whiteboard for storytelling. Then I began the videocamera for each observation/interview and asked the students to “Begin telling the story of Goldilocks and the Three Bears using the interactive whiteboard”.

Interviews with Students

Following each observation, I conducted individual interviews with all four pairs of students that ranged in time from 3-7 minutes. The interviews with these first grade students occurred immediately following the storytelling activity. I completed each interview using the script of questions related to the use of technology and storytelling (Appendix G). Two of the four pairs of students were asked one additional question during their interviews that was a natural extension of the interview dynamics for each specific pair of students. These questions are not listed in Appendix G, but within the context of my findings for each interview.

I kept the videocamera on during the interviews so that the interview could be recorded for ease in transcribing the interview. My interviews with the students were transcribed from the videotape recordings.

SMART Board Artifacts

Prior to beginning this study, I did not anticipate gathering these artifacts. However, as I was closing everything down after the first observation, I noticed that the computer had saved each page created by the students on the computer. These pages were saved much in the same way as slides for PowerPoint handouts. Since I hadn't planned on gathering this data, I closed out of the program thinking about the waste of not using these artifacts in my research to visually represent the first pair of students' storytelling experience. I continued to reflect on the missed opportunity to print these off and use them as artifacts. Then I decided that although it wasn't planned for in my research study,

it was an important artifact of students' representations during their storytelling experiences as they used an interactive whiteboard.

Following the second through the fourth observations, I printed off the pages created and saved by the SMART Notebook software as the students engaged in storytelling. These digital artifacts of students' thought processes during their storytelling experience provided a visual depiction of their sequencing and representations of story. The number of pages these three pairs of students used to tell the story of Goldilocks and the Three Bears ranged from 12-17 pages.

Data Analysis

I conducted a descriptive, naturalistic qualitative research study to gain knowledge about the influence on student's behavior, engagement level, and representation when using an interactive whiteboard. The data sources for my qualitative research were observations, interviews and document analysis. The process of analyzing data involved making sense of the data. Creswell (2003) described some steps to follow when analyzing and interpreting data from a qualitative study:

1. "Organize and prepare the data for analysis" (p. 191). This includes transcriptions, sorting data, and scanning artifacts for use as sources of information.
2. Obtain a "general sense of the information and reflect on its overall meaning". (p. 191).

3. Begin the coding process by “organizing material into ‘chunks’ before bringing meaning to those ‘chunks’” (p. 192).
4. Generate “detailed descriptions…Then, use the coding to generate a small number of themes or categories” (p. 193). This builds layers in your analysis so you can gain a holistic perspective of your data.
5. “Advance how the description and themes will be represented in the qualitative narrative” (p. 194).
6. Make an interpretation or “meaning of the data” (p. 194).

My observations and interviews from this study were qualitatively analyzed using these steps. My data was organized to gain a general sense of it prior to coding it and identifying themes from emerging patterns within the data. My SMART Board Artifacts were analyzed using the first two steps and set aside to interpret at a later date with my observations and interviews. My interpretation of the data provided a way to move from inductive to deductive analysis as I continued trying to make sense of the data. The iterative process of coding and interpreting data continued until there were no new themes, codes or patterns generated from my data.

Qualitative Analyses

The data from my research study was analyzed using content analysis which provided rich details about themes and patterns regarding behavior, representation and engagement level during storytelling due to the use of an

interactive whiteboard. Patton (2002) states that "the challenge of qualitative analysis lies in making sense of massive amounts of data" (p. 432).

I used thick, rich descriptive details in my running records (jottings). I wrote these into fieldnotes. Emerson, Fretz, & Shaw (1995) states that "writing fieldnotes from jottings is not a straightforward remembering and filling in; rather, it's a much more active process of constructing relatively coherent sequences of actions and evocations of scene and character" (p. 51). I incorporated my fieldnotes into my transcripts to assist me in generating codes, patterns and themes that emerged from the data during my qualitative analysis.

Content Analysis.

Themes are considered to be a "more categorical or topical form" while patterns are "descriptive findings" (Patton, 2002, p.453). Patterns in data, searching for indiscriminate chunks of information that is recognized by the researcher as a pattern, leads to the identification of themes (Patton, 2002). A theme describes a characteristic of a lived experience so that it is understood (van Manen, 1990). This type of content analysis is considered to be "any qualitative data reduction and sense-making effort that takes a volume of qualitative material and attempts to identify core consistencies and meanings" (Patton, 2002, p.453). Creswell (2003) suggests that in qualitative research, after themes have been analyzed from the data, researchers compare their themes and patterns "with personal experiences or with existing literature on the topic" (p. 133). I identified themes from patterns in my data in relation to my

research questions and purpose. Then I compared these themes to my personal experiences as a teacher using technology in a classroom and my literature review.

Coding.

My transcripts from the observations and interviews were used for open coding analysis. This method of analysis provided a way to look layer by layer at the data to discover patterns and themes that emerged during analysis. Emerson, et.al. (1995) explained that open coding refers to reading your data "line-by-line to identify and formulate any and all ideas, themes, or issues they suggest, no matter how varied and disparate" (Emerson, et.al., 1995, p. 143). This is similar to steps 3 & 4 of Creswell's steps for analyzing qualitative data. In order to do this, I went through my fieldnotes and transcripts noting inductive patterns that emerged from the data. I cut apart my pages of data and glued the identified data chunks onto 3x5 cards so that I could easily view, sort and organize the data chunks into similar groups. After viewing all 3x5 cards in each group, I determined overarching themes that were suggested by the content of the data chunks in each group.

I continued to refine the coding of my data by viewing the identified data chunks using a focused coding analysis. During focused coding, I attempted to maintain an emic perspective of the data chunks so that I could deductively analyze the data looking for expected ideas and categories. Emerson, et.al. (1995) stated that focused coding "subjects fieldnotes to fine-grained, line-by-line

analysis on the basis of topics that have been identified as of particular interest…uses a smaller set of promising ideas and categories to provide the major topic and themes" (p. 143).

In an effort to be thorough, I asked a peer to inductively analyze my data chunks to see if they uncovered any other codes or patterns that I didn't uncover during my previous coding processes. New codes and themes were suggested by my peer so I reviewed my data again to determine if the new information offered additional promising themes or codes for my research study.

Finally, I took some time away from my data and then returned to view my data with a fresh perspective. I followed the same inductive to deductive, open to focused, coding method suggested by Emerson, et.al. I identified additional themes, revised themes and reorganized codes into new codes. This final coding process seemed to identify more specific and narrow themes and patterns which were able to illustrate my findings more clearly. Again, I asked my peer to review my final coding process to see if she could uncover any other patterns or themes that she felt emerged.

Trustworthiness and Authenticity

Trustworthiness is the qualitative term for the term, rigor (Patton, 2002). Rigor means that your study has internal and external validity, reliability and objectivity (Denzin & Lincoln, 1994). Since qualitative research is an interpretive form of inquiry and stands strong in meaning making, it is important to address the issue of trustworthiness for qualitative inquiry. Also, since the researcher is

an instrument in qualitative research, it is important to review the validity, reliability and objectivity of a research study (Patton, 2002). Trustworthiness provides a means to share my methods for conducting a valid, objective and reliable qualitative research study. This, in turn, will provide others with a method for judging the goodness or quality of my research study. Denzin and Lincoln (1994) explain that trustworthiness and authenticity replace the "traditional positivist criteria of internal and external validity" (p. 100).

Creswell (2003) states that validity is "seen as a strength of qualitative research, but it is used to suggest determining whether the findings are accurate from the standpoint of the researcher, the participant, or the readers" (p. 195). Validity, both internal and external, means that a study measured what it set out to measure. There are many different strategies that can be used to support and present a research study as having rigor. I used the following four strategies to support my effort at presenting a research study with trustworthiness and authenticity--rich, thick descriptions, peer debriefing, reflexivity and triangulation.

Rich, Thick Descriptions

The data from my research study was analyzed to provide a sense of being there from the thick, rich descriptive details. These descriptions assisted in identifying patterns that led to emerging themes related to behaviors, representation, engagement levels and technology use during storytelling. As Pinar (1988) relates, "The measure of our openness which is needed to understand something is also a measure of its depthful nature. Rich descriptions,

that explore the meaning of structures beyond what is immediately experienced, gain a dimension of depth" (p.19). I attempted to make this a "close observation" as stated by van Manen (1990) which "involves an attitude of assuming a relation that is as close as possible while retaining a hermeneutic alertness to situations that allow us to constantly step back and reflect on the meaning of those situations" (p. 69).

My observations and interviews with the students were transcribed from the videotape recordings then infused with my descriptive fieldnotes in a detailed manner. Emerson, et.al. (1995) states that description is "a means of picturing through concrete sensory details the basic scenes, settings, objects, people, and actions the fieldworker observed….description calls for concrete details rather than abstract generalizations, for sensory imagery rather than evaluative labels…." (p. 68-69). My data includes descriptive details of the students' storytelling experiences using an interactive whiteboard.

Peer Debriefing

In order to provide an objective look at my research study for external validity, I asked a fellow doctoral candidate and my adviser to review my dissertation many times. They asked questions, provided insight into areas needing clarity and reviewed my findings so that others could understand my research process and the interpretations I generated from my data.

Reflexivity

I understand that my emic view about students using technology in classrooms was part of the way I observed and interpreted my data. My biases, values and interests in this topic were a factor in this research study (Creswell, 2003).

I know that I attempted to identify a sample of students who could "independently use" an interactive whiteboard which means that I expected to observe students that could utilize technology without adult assistance. My bias for this to be a mutually understood term was framed from my own experiences as a classroom teacher. I expected the teacher to view "independently use" in the same manner that I did.

I expected students to be excited about completing this activity since they were using an interactive whiteboard. I also expected students to enjoy storytelling as the structured activity offered in the classroom since they would have an opportunity to create differences in the representations of the story.

My observations of students were from a Constructivist framework which also affected my role as a researcher for this study. I expected that if students were involved in activities that were authentic, interactive and supported their construction of knowledge then their behaviors would be more positive and engaging.

Another bias of mine would be my own interest in using technology. I expect everyone to be excited and comfortable with assimilating new methods of teaching students in a classroom. I am at ease with new technological tools and

don't feel uncomfortable at attempting to use them with the assistance of students. This excitement with using technology makes me forget that everyone does not feel the same as I do about using technology.

Triangulation

I chose to use methodological pluralism throughout my inquiry in order to lend credibility to my findings. I used multiple data sources to construct a sense of internal validity: observations, interviews and SMART Board artifacts. I triangulated the evidence from all three sources to assist in gaining a coherent sense of my data.

Also, I chose to use more than one theory to interpret the data in order to present my conclusions. I analyzed my findings with the Constructivist Theory and a Poststructural perspective, Third Space. Denzin is quoted in Patton's (2002) section on triangulation as saying "By combining multiple observers, theories, methods, and data sources, [researchers] can hope to overcome the intrinsic bias that comes from single-methods, single-observer, and single-theory studies" (p. 555).

Time Line

The time line for this research study began with the initial research question and related literature review research to identify gaps in the literature on this topic. This process of reflection and research began in September 2006. Refining the purpose of my study, narrowing my research questions, creating a

literature review and determining my methodology followed with the presentation of my research proposal to my committee in April 2008. The approval of my study by the IRB paved the way for me to gather my data in November 2008. Then the final part of the process was the analysis and interpretation with the presentation of my findings to my committee in April 2009. I plan to submit a manuscript of my conclusion chapter to a journal in July 2009 for possible publication at a later date.

Scope and Limitations

A limitation of this research study were the conflicting definitions of students being able to "independently use" an interactive whiteboard. I define "independently use" as the ability of students to be able to problem solve any issues that occur due to their familiarity with using the tool. However, the teacher that volunteered for this research study had a different definition. When I questioned her about her students' difficulties following the first observation, the teacher explained to me that in her classroom she sets up structured activities on the interactive whiteboard for students to complete "independently." However, after we discussed it at length, I realized that they were able to complete activities "independently" because she had "locked" the images projected on the screen so that students didn't accidentally delete the image as they are working on the activity. The teacher commented that the first two students I observed were not her best students for observing "independent use", but they were two of her best eight students so she didn't feel that all of my other observations would

be the same as the first one. Yet, in the end, these eight students did not know how to “independently use” the interactive whiteboard according to my definition.

During my discussion with the teacher, I realized that the student teacher interaction demonstrated through modeling was missing as well. She didn’t model the use of the interactive whiteboard for the students in her classroom. When she had them complete a large group activity with her on the interactive whiteboard, she didn’t take the time to model how to delete objects or problem solve issues that occurred while she was in front of the entire classroom of students. She just fixed the problem as fast as possible or slid things out of her way so that she didn’t “waste” the students’ instructional time with her. This understanding of the different definitions of independent use caused me to realize that the term should have been clearly defined at the beginning of this research study instead of assuming a shared understanding of the term by another teacher.

A limitation that I realized following my data collection was that I did not conduct observations on a pair of male students. The observations were conducted on two pairs of female students and two pairs of mixed gender students. The only gender based finding I discovered was that the two pairs of mixed gender students were observed enjoying mutual laughter while the female only pairs of students did not exhibit mutual laughter. However, gender was not a focus of this research study. Yet, it did provide me with pause, when I realized that the teacher selected more female students for this research study. I wondered if gender was a conscious choice on the part of the teacher as she

made her selections or if it was that, in her class, she felt there were more female students able to independently use the interactive whiteboard.

There was no risk of psychological, social, physical stress or legal risks that were greater than those ordinarily encountered in daily life for participants in this research study. I plan to shred the transcriptions from student observations, interviews and documents as well as break apart the videotapes after my committee has finalized my dissertation as stated in my IRB.

CHAPTER IV

FINDINGS

"It is the teacher's knowledge and skills about how to use the technology that makes the difference, not the technology itself."

~Tsantis, Bewick, and Thouvenelle, 2003, p. 4

Introduction

This section presents the research findings of my observations and interviews with four pairs of first grade students about their use of the Interactive whiteboard during a storytelling experience. I conducted this research study using qualitative methods and analyzed accordingly. I videotaped each pair of students as they interacted with the interactive whiteboard and each other during the storytelling of Goldilocks and the Three Bears. I continued videotaping as I asked them eight questions during the interview regarding their familiarity with the interactive whiteboard, use of storytelling in their classroom and reflections on their experience during this research study. The experiences described from my observations of students storytelling using an interactive whiteboard was the impetus used to uncover themes within the data. The data from student interviews reinforced the themes generated and assisted in identifying layers

within each theme by revealing connections between the themes and the three research questions.

The setting was described in detail in order to assist in creating an image of the classroom space where the observations and interviews took place. Then all four pairs of students were described physically in order to provide the possibility for creating images of each pair of students as they worked on the interactive whiteboard. Following the physical descriptions of each pair of students, my reflection of each observation was summed up in relation to the distinctive atmosphere that seemed to radiate from the interactions between each pair of students. This atmosphere was charged with excitement and curiosity from the students due to their opportunity to use the interactive whiteboard. I also noticed their enjoyment from working collaboratively with a peer as they used the interactive whiteboard. The descriptions of the interviews summarized the most important elements verbalized during the interview process along with my analysis of their answers.

Observations

All four observations occurred in the same first grade classroom shortly after lunch and recess for the students. The students had been in school for 13 weeks by the time my research study began. The area where I conducted the observation and interview was to the left of the double doors to the classroom and occupied 1/3 of the left side of the rectangular shaped classroom. Facing the back wall of the classroom to the left of the double doors was a dry erase

board that filled the wall with its size, approximately 2.5 feet tall and 8.5 feet wide, located 3 feet off of the floor directly behind the entire expanse of the interactive whiteboard. The interactive whiteboard was 4 feet wide by 3 feet tall and began about 2 feet off of the ground. The interactive whiteboard had four pens in a tray at the bottom of the screen: red, green, blue and black.

There was a border above the interactive whiteboard at the top of the dry erase board that said “12345 Math Rocks! 678910”. Further above the border in the wall was a vent to heat and cool the classroom and a speaker used to make school-wide announcements. To the left of the interactive whiteboard, vertically aligned on the dry erase board and attached with magnets, were two square plastic bins holding three dry erase pens in the bottom bin and two dry erase pens in the top bin. Further to the left of the interactive whiteboard were the double doors leading to the hallway from the classroom.

To the right of the interactive whiteboard, were rectangle shaped posters announcing “Today” “Yesterday” and “Tomorrow” lined up vertically on the dry erase board. The handwriting in each rectangle listed the day of the week and the date and looked as if it is had been written by their teacher with today’s day/date, yesterday’s day/date and tomorrow’s day/date in each rectangle. The rectangle shaped posters were illustrated so that it looked like they were balloons being held by a brown bear dressed in a shirt and pants.

Further to the right of the interactive whiteboard, placed in the corner of the room where the back wall and the right side wall meet, was a dry erase board in the form of an easel. The dry erase board easel was almost 4 feet tall and 3

feet wide with the dry erase board taking approximately 2.5 feet of the 4 feet of the easel ending horizontally with a tray for pens. In the tray was an eraser and two dry erase pens, but nothing was written on the dry erase board at this time. Further along the right side wall, next to the dry erase board, was a cluster of two computers for students to use and one computer for the teacher to use sitting on tables pushed against the wall.

The interactive whiteboard software and tools were configured for use on one of the student computers and parallel to this cluster of computers was the interactive whiteboard projector. The interactive whiteboard projector was sitting on a square, brown metal rolling cart directly in front of the interactive whiteboard approximately 4.5 feet from the interactive whiteboard screen. I was sitting to the left of the interactive whiteboard projector in a student chair taken from an adjacent student desk.

The hum of the projector for the interactive whiteboard along with the hum of the heater blowing from a vent near the ceiling made a constant low sound in the classroom. The doors to the hallway were shut after the rest of the class left for their Specials (PE and Music). I asked the students to “orient” the interactive whiteboard prior to beginning each observation. After orienting the interactive whiteboard, I opened the SMART Board Notebook software to a blank page to find the preinstalled Language Arts activities that I wanted the students to use for this storytelling activity. Then I began the videocamera for each observation/interview of students using the interactive whiteboard so they could

begin to tell the story of Goldilocks and the 3 Bears using the interactive whiteboard.

Observation of Tayler and Cathleen

These two students were females, one with a white shirt on (Tayler) and one with a blue jacket on (Cathleen). Both girls were wearing jeans and tennis shoes. Tayler was approximately 4 feet tall with blondish brown windblown, uncombed, stringy hair down to her shoulder blades. *This observation time period was on a windy day with wind gusts up to 40 mph.* She had a fair complexion and freckles on her face. Cathleen was smaller in height, approximately 3.5 feet. She had her hair up in doggy ears, each tied with a red lace ribbon, but her doggy ears still cascaded down to the middle of her back and looked silky, not windblown. This observation/interview lasted for 34:17 minutes.

These two students were excited that they were picked to be the first to work on the Interactive whiteboard with me. They used multiple exclamatory statements as they begin working on the interactive whiteboard, “wow” (line 143), “ahhhh” (line 149), and “cool” (line 150). The interactive whiteboard software offered a Gallery listing of images and backgrounds underneath the sections, Essentials for Educators, Language Arts, Storytelling for three Fairy Tales and three Nursery Rhymes. Goldilocks and the Three Bears were listed directly below Little Red Riding Hood in the Nursery Rhymes section.

Tayler and Cathleen began working on the interactive whiteboard by double-clicking on the Little Red Riding Hood option instead of the Goldilocks

and the Three Bears. Then Tayler and Cathleen began inserting images and backgrounds randomly from multiple fairy tales and nursery rhymes during their time working on the interactive whiteboard. They utilized clip art for the following nursery rhymes and fairy tales: Little Red Riding Hood, Hickory Dickory Dock, Goldilocks and the Three Bears, Humpty Dumpty and The Three Little Pigs.

Tayler and Cathleen seemed to be enjoying their time using the interactive whiteboard to tell a story even though they were not focused entirely on telling the story of Goldilocks and the Three Bears. However, when they would focus on the story of Goldilocks and the Three Bears, they would express frustration with their inability to complete the task, “how do we get it back to Goldilocks and the Three Bears?” (line 398), “but we don’t know how to delete it” (line 492). Finally, Tayler asked Cathleen if she was done telling the story of Goldilocks and the Three Bears about three minutes prior to both of them agreeing after Cathleen said “I think we’re done” (line 494).

Cathleen laughed 14 times at representations viewed on the interactive whiteboard that were not what was expected (size, content, and number of representations).

Observation of Brayden and Amber

The two students were a male and a female. The male had on a long sleeved red shirt, jeans and tennis shoes (Brayden). The female was wearing a short sleeved blue shirt over a lacy light blue shirt that went to her hips while the overlaying blue shirt ended at her waist (Amber). She was wearing jeans and

tennis shoes also. Brayden was approximately 4 feet tall with reddish-blondish short hair, white complexion and freckles. Amber had short blondish brown hair cut short at her shoulders with the sides of her hair being longer than the back of her hair which was cut closer to the nape of her neck. She had an olive complexion and was smaller in height by approximately 2-3 inches. This observation/interview lasted for 33:00 minutes.

These two students had to be patient for five minutes before they could begin so that I could deal with a computer glitch concerning their classroom's computer that was connected to the interactive whiteboard. Their teacher explained that the computers had been acting up all day and needed to be rebooted in order for the interactive whiteboard to work properly. The interactive whiteboard software offered a Gallery listing of images and backgrounds underneath the sections, Essentials for Educators, Language Arts, Storytelling for three Fairy Tales and three Nursery Rhymes.

When the students finally were able to begin working on the interactive whiteboard to tell the story of Goldilocks and the Three Bears, they began discussing how to begin telling the story using the interactive whiteboard "what will it do?" (line 104), "try dragging it hard" (line 138), and "now I'll get Goldilocks" (line 157). They seem to be cooperating to tell the story, "where are we going next?" (line 163), "by the chair, ok, put it right there, right there" (line 180), "let's put the bedroom…" (pair 2 transcript, line 184), and "let's get Goldilocks" (line 195). However, Amber reminded Brayden "no we have to do it the right way" (line 193) and three more times throughout the observation (lines 200, 301, 311)

when Brayden would stray from the storyline of Goldilocks and the Three Bears that was recently read to them in their classroom. Finally, Amber stated “it’s done” (line 358) a little more than a minute before Amber exclaimed “ta da, we’re done” (lines 378-379). Brayden followed Amber’s lead the second time, but disagreed with her when she stated that they were done telling the story of Goldilocks and the Three Bears the first time.

Amber laughed 6 times and Brayden laughed 21 times while they both laughed together three times. These periods of laughter were usually related to Amber and Brayden inserting and moving characters or props (chairs, beds, forest background) they were able to manipulate using the technology embedded in the SMART Board Notebook software program.

Observation of Kevin and Lauren

The two students were a male and a female. The male had on a long sleeved white shirt under a red jersey half sleeved shirt, jeans and tennis shoes (Kevin). The female was wearing a black jacket with multi colored butterflies on it (Lauren). She was wearing jeans and tennis shoes also. Kevin was approximately 4.5 feet tall with blonde hair cut in the form of a Mohawk down the center of his head that had grown out so that it was too long to stand up anymore due to the length being about 2-3 inches long and the hair on the sides of his head being cut to the skin in a burr type haircut. He had a white peachy colored complexion with a round face. Lauren was about 4 feet tall with her hair in a ponytail. Her hair was styled in corn rows across her scalp and then in tiny little

curls as is the style of some African Americans for their hair for her ponytail. She had a light brown colored complexion with a long, thin face. This observation/interview lasted for 28:19 minutes.

Kevin and Lauren began their work together on the interactive whiteboard. The interactive whiteboard software offered a Gallery listing of images and backgrounds underneath the sections, Essentials for Educators, Language Arts, Storytelling for three Fairy Tales and three Nursery Rhymes. Initially they vocalized feelings with each other over who is going to work on the interactive whiteboard, “wait, wait” (line 50), “what are you doing?” (line 53), “you didn’t listen” (line 57) and “I want to have a turn now” (line 66). These power struggles continued throughout the observation, “scoot her over to the big bed” “no” “she’s wasn’t in that one” “yes she was” “why won’t you just believe me?” (lines 393-397). Kevin and Lauren’s power struggles included physical actions against each other “pushing her hands away from the screen as she tries to stop him” (line 101), “pushes her hand away so he can insert the chair instead” (line 126), “she pushes his hands away but he pushes her hands back” (line141) and “she pushed him away from the screen and stood in front of him blocking his ability to get to the screen ahead of her” (line 370).

Although these students were involved in a power struggles throughout the observation, they also laughed frequently during the twenty-one minute observation as well. Lauren laughed 18 times and Kevin laughed 16 times while they both laughed together four times. Their laughter seemed to revolve around questions about using the whiteboard (“How do you go sideways?”; “We need to

go back down"; "How did that get up there?"). Finally, Lauren stated that they were finished telling the story of Goldilocks and the Three Bears minutes before Kevin so I questioned "are you guys done?" (line 399) and both Lauren and Kevin exclaimed "yea" (line 400) at the same time.

This observation seemed to be a physical and emotional roller-coaster for the students punctuated by laughter which seemed to reduce the stress level.

Observation of Jessica and Whitney

The two students were females. One female was an African American girl with a dark brown color to her skin (Jessica). She had her hair put up in a single ponytail with a big white barrette holding two smaller ponytails from the side of her head together into one ponytail at the back of her head. Jessica was wearing a long sleeved pink sweater over a brown shirt that had multi-colored polka dots all over it, jeans and tennis shoes. She was about 3.5 feet tall. The other female was wearing a black short sleeved t-shirt over black knit long pants and tennis shoes (Whitney). Whitney was approximately 4.5 feet tall with brown hair cut so that it ended at the bottom of her neck in the back and above her ears on the side of her face in a cut similar to a boy's cut. Whitney had a white complexion and was a little overweight for her height. This observation/interview lasted for 29:01 minutes.

These two students seemed to be happy that they were going to be working together since they like to spend time together as friends anyway (line 316). The interactive whiteboard software offered a Gallery listing of images and

backgrounds underneath the sections, Essentials for Educators, Language Arts, Storytelling for three Fairy Tales and three Nursery Rhymes. They began their storytelling by taking turns and working together cooperatively “k, your turn” (line 40), “now you try” (line 47), and “let’s go on” (line 57). The exchanges between these students had many positive comments throughout this observation “that’s fine” (line 134), “yea, that’s good” (line 156), and “ahh, that’s pretty” (line 177).

Also, this pair of students seemed to focus on telling the story more than any other pair “do you remember what she said?” (line 98), “walking, walking, walking scream” (line 172), and “no they try their beds, the mommy and the daddy try their beds then the baby tries his bed” (line 244). Finally, Jessica stated that she was done telling the story of Goldilocks and the Three Bears a little over a minute before Whitney agreed by stating “but now we’re done” (line 274).

This pair did not laugh except for one time when Whitney laughed at Jessica’s comment that Goldilocks was at the front door (line 64).

Summary of Observations

These four observations provided a glimpse into first grade students’ behaviors, engagement levels and representations when using an interactive whiteboard to tell the story of Goldilocks and the Three Bears. All four observations filtered laughter throughout, some more than others, as the students worked together on the Interactive whiteboard. These bouts of laughter

seemed to occur when something surprised them in relation to their use of the interactive whiteboard.

Jessica and Whitney's observation was similar to Brayden and Amber's observation since both pairs of students remained focused on telling the story of Goldilocks and the Three Bears more often than the other two pairs of students. Tayler and Cathleen's observation was completely different than the other three observations due to their inability to use the interactive whiteboard as independently as the other six students. Kevin and Lauren's observation was completely different from the other three observations due to the physical actions and power struggles between these two students throughout the observation.

The four observations were similar, in that all of the students expressed some comment that indicated enjoyment of using the interactive whiteboard to tell a story ("This is kinda fun"; "Yea, that's good"; "Wow, it did it itself"; "Cool"). The four pairs of students continued my glimpse into first grade students' behaviors, engagement levels and representations when using an interactive whiteboard by answering my eight questions during the interview process.

Interviews

All four interviews were completed immediately after my observation of each pair of students' storytelling experience on the interactive whiteboard. The students and I sat on the floor directly in front of the metal rolling cart with the interactive whiteboard projector on it while I held the videocamera in my hand to record the students during each interview session.

Interview with Tayler and Cathleen

This interview lasted six minutes with Cathleen answering the questions first more often than Tayler for this pair of students. However, both Tayler and Cathleen provided detailed answers to my questions without repeating each other's answers. On question 2, Tayler didn't answer at all due to a "blank affect, eyes half opened with a glazed expression" (line 533). Tayler seemed mentally tired from the storytelling experience and took a few minutes to not focus on the task of answering questions before she mentally returned to the interview process to answer question 3. This pair of students stated that they don't do much storytelling in their classroom, but when they were asked to be specific, Cathleen commented that the teacher usually does storytelling instead of the students.

Based on the students' comments that they would read books if given a choice of any literacy activity in their classroom, I became curious about another choice. So, I asked this pair of students an additional question. I asked them what their choice would be if they had to choose between using the interactive whiteboard to tell a story and reading a book. Cathleen chose reading books while Tayler chose to use the interactive whiteboard. They liked using the interactive whiteboard since they "got to work together" (line 537) and "create stuff that we wanted to put on there and we worked together" (line 538).

When asked about what they didn't like about this experience, Cathleen stated that computer problems were an issue, but Tayler focused on a part of the Goldilocks story that she didn't like. The most interesting answer to my

questions came from the interview question where the students needed to tell me how it felt working together to tell the story of Goldilocks and the Three Bears. Cathleen answered “it felt fun” and “it’s always fun to have help instead of just one of you” (lines 551 and 553) while Tayler added to this answer by saying “and special” as she smiled at Cathleen. It seemed to be a positive experience for this pair of students.

Interview with Brayden and Amber

This interview lasted seven minutes with Amber answering the questions for the pair before Brayden every time, but once. Brayden’s answers were brief and repeated Amber’s answers often. This pair of students stated that they don’t do much storytelling in their classroom, but then Amber described using the interactive whiteboard, word walls, and playing games while Brayden simply answered that they would write stories for storytelling activities. I was curious about how their storytelling activities were different than the activities they complete for reading and writing in their classroom. So, I asked an additional question to this pair of students so they could provide an example of some of the literacy activities, like reading and writing, which they do in their classroom. They responded more specifically with “centers” and “games at reading group” (lines 483-486). They agreed that it was “fun” (line 442-443) when asked how it felt to work together during the storytelling activity.

They liked using the interactive whiteboard and “dragging the things in” (line 425), but conversely didn’t like it when “it wouldn’t come” (line 439). Both of

these answers addressed computers and the conflicting emotions that technology can inflict on users—enjoyment and dissonance. Amber explained the importance of trying to "do it the right way" (line 457) when asked about working together to tell the story of Goldilocks and the Three Bears. This pair of students seemed to have an enjoyable as well as frustrating experience.

Interview with Kevin and Lauren

This interview lasted three minutes with Lauren answering the questions first more often than Kevin for this pair of students. The exception was that Lauren didn't answer question 2 at all. However, this interview was so short because whichever student answered second, they would repeat the answer that the first student gave me in every instance except for two questions. The two questions that elicited independent answers, questions 5 and 6, were related since both questions were about how it felt to work together and how they decided to tell the story of Goldilocks and the Three Bears using the interactive whiteboard.

Lauren and Kevin's answers differed on these questions due to their continued effort at trying to represent their understandings of the movement of Goldilocks in the Bears bedroom differently from each other as they attempted to do during the storytelling observation. Kevin explained that "Lauren kept putting Goldilocks in the wrong place" to which Kevin responded by stating that "Goldilocks was supposed to be in the baby bed" (lines 426-427). They both elaborated on their individual answers during question 6 when Lauren explained

that Goldilocks “was sleeping in the baby’s bed” while Amber stated that “she went in the baby bed then the momma bed then the daddy bed” (lines 440-443). Power struggles seemed to be a constant factor during the storytelling experience between these two students.

Lauren and Kevin responded that they never do any storytelling in their classroom “we don’t tell stories the teacher reads our books” (line 457). When asked about any type of literacy activity they could complete to tell a story, Kevin responded that he would make a story on paper and the Interactive whiteboard and Kevin responded with the same answer. The most interesting answer from this pair of students occurred when they said that it felt “awesome” to work together during this activity (line 425-426). Yet, they had more power struggles working together to complete their storytelling experience than any other pair of students. This seemed to be an emotionally exhausting experience for these students.

Interview with Jessica and Whitney

This interview lasted five minutes with both students taking turns to answer the interview questions first as if they were following an unspoken agreement. Both of these students commented that they didn’t do much storytelling in their classroom, but then Jessica added “but we do it all the time” (line 288). Then both students gave specific activities as examples of storytelling activities they complete in their classroom: Goldilocks and the Three Bears, Red Rover, Frog in a Bog, Lunch, the mouse” (lines 294-299).

They expressed that they liked similar elements of this storytelling experience. Jessica and Whitney liked using the computer and what it did with the Interactive whiteboard “dragging it and making it falling down and making it small and getting them to go to new places” (lines 307-308). However, computers and their interaction with the interactive whiteboard were also at the core of what they disliked about their storytelling experience. Whitney stated that she didn’t like “that we couldn’t get the momma bear to shrink and they didn’t have a table for the porridge and the chairs” while Jessica added that “I would like it if it would all stick together” (lines 311-313). These students’ problems with technology didn’t seem to permeate into their feelings about their storytelling experience.

The feelings stated by these two students was “nice” and “very good” about working together since they stated that they were best friends that like to spend time together anyway (line 318-319). Jessica described their friendship further on question 6 when I asked them how they decided to tell the story by explaining that “we were going to help each other and she told me and I didn’t know how to do some things and showed me” (lines 323-324). This seemed to be a positive experience for these students.

Summary of Interviews

A listing of the eight interview questions and a summary of all four pairs’ answers to those eight questions is listed in Table 1. As previously described in Tayler & Cathleen’s interview and Brayden & Amber’s interview, they were each

asked an additional question based on their comments to the original eight questions. The additional questions were listed within each pair of students' interview descriptions, not in Table 1.

I wished I had asked all four pairs of students the additional question that naturally occurred during my interview with Cathleen and Tayler. That question pertained to what they would choose if they had to choose between using the interactive whiteboard to tell a story and reading a book. Since Cathleen chose reading books and Tayler chose using the interactive whiteboard, there was an equal distribution between the choices. However, if I had asked all eight students, I wonder what the finding would have been?

These four interviews provided a glimpse into first grade students' behaviors, representations and engagement levels when using an interactive whiteboard to tell the story of Goldilocks and the Three Bears. Overall, the students all commented that their experience of storytelling and working together was fun. My observations didn't always agree with their comments about observing enjoyment in all four pairs of students. Most of the students seemed to behave similarly in their interviews as they behaved during their storytelling observations.

The students' remarked that the best thing about this research study was their chance to work together and their ability to use the interactive whiteboard. The students did not provide a unanimous answer for what type of storytelling activities they complete in their classroom, what they would choose to do if given a choice of literacy activities and what storytelling looks like in their classroom

Table 1: Interview Questions

1. "How often do you get to do storytelling activities, like this, in your classroom?"
   Not much = 6
   Never = 2

2. "What does it look like when you get to do storytelling activities in your classroom?"
   Teacher read-alouds = 4
   Interactive whiteboard, games and word walls = 1
   Write stories = 1
   No response = 2

3. "I watched you use the Interactive whiteboard to tell the story of Goldilocks and the Three Bears, tell me what you liked most about doing that activity?"
   Worked together = 2
   Using Computers = 4
   She jumped out the window = 2

4. "What didn't you like about doing this activity?"
   Nothing = 2
   Computer glitches = 5
   Goldilocks getting hurt = 1

5. "How did it feel to work together during your storytelling activity?"
   Nice to work together = 1
   Very Good = 1
   Fun = 3
   Special = 1
   Awesome = 2

6. "Explain to me how you decided exactly how you were going to work together to tell the story of Goldilocks and the Three Bears?"
   Help each other = 1
   No answer = 1
   Read books = 2
   Tried hard = 1
   Figured out what we wanted to do = 1
   The right way = 1
   I don't know = 1

7. "If you could choose any storytelling/literacy activity in your classroom that you do everyday, what would you choose to do?"
   Math= 1
   Drama = 2
   Centers = 1
   Books =2
   Interactive whiteboard = 2

8. "Is there anything about your storytelling experience that we haven't talked about yet that you want to tell me?"
   No = 6
   It was fun = 1
   It was hard = 1

which seemed to lend credibility to their answers to question 1. Question 1 simply asked them how often they complete storytelling in their classroom and their replies were, overwhelmingly, “not much.” Additionally, I thought it was interesting that the one question not answered by two students was question 2. Question 2 asked them to describe what storytelling activities they do in their classroom. This proved to be a difficult question for all students to answer, but more notably, for two students.

It seems that these students were not offered the opportunity to complete storytelling in their classroom often nor work on the interactive whiteboard. Many of the students’ complaints about their storytelling experience for this research study related to computer issues that would not have been a problem for students that were using the interactive whiteboard on a regular basis.

Content Analysis of Observations and Interviews

The qualitative analysis of my research study was based on the meanings inferred from the unique mixture of my observations and interviews of these pairs of students as they were storytelling using the interactive whiteboard. The observation and interview data were reviewed following their transcriptions so that I could compare my written transcriptions with the original videotapes for accuracy. The SMART Board artifacts were visually reviewed to get a sense of the progression of the storytelling experience for each pair of students.

I read the transcripts of the observations and interviews multiple times to get a feel for the uniqueness of the each pair of students as well as a feel for the

whole research study. I looked through all of the 3x5 cards of chunks of data from the observations and interviews that were sorted into patterns and grouped under overarching themes. I reviewed the pages of SMART Board artifacts. All of this was done in an attempt to immerse myself in the data so that I could derive my interpretations of it in a holistic manner. Patton (2002) explains that

> Interpretation, by definition, involves going beyond the descriptive data. Interpretation means attaching significance to what was found, making sense of findings, offering explanations, drawing conclusions, extrapolating lessons, making inferences, considering meanings, and otherwise imposing order on an unruly but surely patterned world. (p. 480)

Throughout the data, the content analyzed seemed to be related to general themes surrounding students' use of technology in a classroom.

Making sense of the data and going beyond the findings in a thoughtful, reflective manner provided the framework for using content analysis. Patton (2002) suggested an approach for analyzing themes which was utilized for this research study and involved the following:

- Observation and interview transcripts were printed out, cut apart, and "chunks" of data were glued onto 3x5 cards
- These 3x5 cards were sorted into piles of cards based on the content of what was happening in the 'chunk' then it was labeled with a code or label that generalized the content of each 'chunk'

- The pile of coded cards was re-sorted again to determine if any additional codes were discovered or needed to be re-distributed among the codes since my original interpretations and sorting of data
- Each code of data 'chunks' was reduced to the smallest amount of content possible so that each code was very specific in its representation of data
- Similar codes were identified and grouped together so that an overall meaning could emerge from the collective content within each grouping of codes as a theme

Using this content analysis process, my data was grouped into 17 codes expressed within five overarching themes:

Theme 1: Use of Technology— reasoning regarding movement of images; reasoning regarding size of representations; learning about technology from peers

Theme 2: Representations— representation of the story; representations of background images (movement & placement); representations of characters (movement & discovery)

Theme 3: Peer Interactions— instructional communication; storytelling

Theme 4: Enjoyment—positive affirmations; singing; laughing; exclamations of amazement

Theme 5: Dissonance—power struggles; physical actions; negative comments; statements of "No"; issues with technology

Within these five themes, I analyzed each code with the three elements in my three research questions--representations, behaviors, and engagement level.

What I discovered was a layering of the three elements from my research questions within the observations and a reiteration of these elements throughout my interviews with the students as well.

Emergence of Themes

Five general themes with 17 codes emerged from the data which provided a glimpse into the overarching ways using an interactive whiteboard influences students during storytelling in a classroom. The identified themes were Use of Technology, Representations, Peer Cooperation, Enjoyment and Dissonance. The following analysis provides details from observations and interviews that support the themes and codes that emerged from my interpretation of the data.

Theme 1: Use of Technology

This theme emerged from the references to technology various times during students' engaged behaviors and even in the representations the students exhibited during my observations. During interviews with the students, six out of the eight students stated "not much" when I asked them if they were able to do storytelling activities like this in their classroom. However, students were engaged in using the interactive whiteboard. They were focused on problem solving and completing the task as they took responsibility for their own learning.

It also provided a framework for understanding that size and movement of the images was an important consideration to students as they represented the story of Goldilocks and the Three Bears. The following snippets from my data

provided examples of the students' use of technology while using an interactive whiteboard. These 'chunks' of data support the theme of Use of Technology and support the merging of the following three codes under the umbrella of this theme:

Learning about technology from peers.

"We gotta stop touching it both"; "No, we use this" as Cathleen touches the bar to scroll up and down the gallery; "Oh, we just click on them?"; "How do you erase it?"; "Here, I think that you're supposed to click on it at the same time"; "What is a plus?" This whole thing?" as Tayler pointed to the Gallery listing.

(Tayler & Cathleen, lines 448; 109; 110; 380; 272; 255)

"Let me give you a new window"; "The X means, this means that you can't do it" "The blue thing, hit the blue thing"; "try dragging it, it's hard"; "no, it's right here" Amber touched on the Gallery tab.

(Brayden & Amber, lines 150; 142; 98; 138; 333)

"What happens if you hit the green light?"; "What happens if you do that?" Lauren touches on a circle on the square around the chair; "How do you turn that thing around?"; "Watch this is how I did it"; "That makes it go giant" Kevin said to Lauren as she tried to make the chair bigger.

(Kevin & Lauren, lines 74;133 134; 382; 174)

“How do you get her smaller?”; “Like that” Amber showed Brayden how to drag the bed onto the screen; “Ok, now push delete”; “You don’t have to push it, just push it down”; “K, which one do you push to go down?” Jessica showing Whitney the resize button for the Papa Bear that Whitney just moved onto the screen.
(Jessica & Whitney, lines 154; 45; 55; 240; 159-160)

Reasoning regarding movement of images.

“It looks like she is going to walk by her” (Tayler & Cathleen, line 298)
“Pretend like she’s laying down”; “I can” then Brayden moved Goldilocks so she looks like she is standing on the chair; “Make her, make her stand up in it”
(Brayden & Amber, lines 242; 226; 224)

“Scoot her over to the big bed”; “Wait, she’s laying in bed”; “I have to find a broken chair somewhere”
(Kevin & Lauren, lines 393; 235; 303)

“She’s in the bed” as Whitney put Goldilocks in the bedroom; “Maybe if we push it here, not that, could um, leave it” then Whitney was able to make the Momma bear lay down; “Now let’s get Mom, let’s get the Momma” and Whitney drags the Momma Bear in and moves it to look as if she is laying in her bed”
(Jessica & Whitney, lines 107; 260-261; 127-128)

Reasoning regarding size of representations.

"She's too tall, she's too tall" when Tayler moves the Mom by the house and the Mom is taller than the house.

(Tayler & Cathleen, line 481-482)

"Wait, no, make her giant, giant, giant, no, make her real tiny"; "I will make the big chair smaller cause that's the medium bowl"; "the Daddy was bigger than that"

(Kevin & Lauren, lines 231; 196; 332)

"Because the house, if it was right here, it would be perfectly in there"; "He's supposed to be behind them. She's supposed to be in front of them"; "Ok, now" resizing Momma Bear so that she isn't bigger than Papa Bear; "The girls little so the boy has to be little, he has to be little too"; "Yea, make her get smaller" Jessica makes Goldilocks smaller.

(Jessica & Whitney, lines 225; 198; 200; 166; 155)

Theme 2: Representations

This theme emerged from the number of representations the students made during their storytelling activity to make their thinking visible to me. Their representations didn't stray far from the story in either the characters or their representations. Even though there were not any transformative or generative types of representations observed, these representations were an essential part of their storytelling activity.

The following snippets from my data provided examples of students' representations of their knowledge related to the story while using an interactive whiteboard. These 'chunks' of data support the theme of Representations and support the merging of the following three sub-codes under the umbrella of this theme:

Representation of the story.

"I need the book"; "This is Goldilocks and the Three Bears" Cathleen clicked on the words.

(Tayler & Cathleen, lines 449; 402)

"Too big" Amber said when Goldilocks is on Papa's bed; "too squishy"; "What's that little girl doing in my bed?"

(Brayden & Amber, lines 321; 323; 348)

"How do you make the chair break, the baby chair?"; "Then she says it's good"; "Wait, let's start over there she sleeps in it and then go there and then"; "Now there, now she's laying in bed"; "Now we need her sleeping in the baby's bed" Lauren inserted Goldilocks onto the screen; "And then the Momma said somebody been in my bed and then the Daddy said somebody's been in my bed"

(Kevin & Lauren, lines 289; 248; 252; 242; 225-226; 391-392)

“Goldilocks is eating the porridge”; “Goldilocks sits in the chair” as Whitney drags in Goldilocks to sit in baby’s bears chair; “Ahh, this is the perfect size” as Whitney moves Goldilocks from Papa Bear’s chair to Momma Bear’s chair to Baby Bear’s chair; “No, this is too hard, this is too soft”; “Hey their bed is bumpy”

(Jessica & Whitney, lines 70; 75; 79-80; 77; 246)

Representations of Background Images.

“I think I know where to put the house”; “We’re gonna need space for the house”

(Tayler & Cathleen, lines 455; 452)

“Oh, I’ll just start with the house”; “Ok, go back, go back to the forest” as Amber puts the forest background in; “K” as Amber moves in the bedroom background; “Yes, we need some chairs, I’ll get some chairs”; “Now, we need a chair”

(Brayden & Amber, lines 121; 194; 232; 276; 257)

“Find a broken chair”; “Now we need to go back in the house”; “Get them some chairs”

(Kevin & Lauren, lines 308; 342; 356)

“Well, we need to find a room, find a room”; “Ok go get the house”; “Ok let’s go down to beds, beds” as Jessica scrolls down; “We need to drag a chair in”; “There it is” Whitney inserted the bedroom.

(Jessica & Whitney, lines 226; 216; 214; 58; 104)

Representations of Characters.

"Get the Papa Bear"; "This is Momma Bear"; "Put the Goldilocks in the chair"; "Now I'll get Goldilocks"; "Let's do the bears, it's up there, the bears"
(Brayden & Amber, lines 310; 343; 221; 157; 244)

"I get the Daddy Bear"; "I get the Momma Bear"; "I get the little bear"; "I'm finding Goldilocks"; "The baby bear's over there"
(Kevin & Lauren, lines 351; 350; 349; 335; 355)

"Put her right there" Jessica inserts Goldilocks onto the forest screen; "Do the Daddy first" Whitney inserted Papa Bear onto the screen; "I'm gonna move out to the bears"; "Goldilocks in the woods"; "She goes right down here"
(Jessica & Whitney, lines 151;185; 184; 149; 212)

Theme 3: Peer Cooperation

This theme emerged from the verbal and nonverbal cues the students exhibited during my observations. During interviews with the students, they stated that they were "going to help each other" and "we figured out what we wanted to do" in answer to how they decided to work together. When students coordinated their perspectives in a way to complete a task together, they were cooperating. Motivation to use the interactive whiteboard and engage in this activity was a big factor in their cooperative behaviors.

The following are snippets from my data as students' completed their storytelling task while using an interactive whiteboard. These 'chunks' of data support the theme of Peer Cooperation and support the merging of the following two sub-codes under the umbrella of this theme:

Instructional Communication.

"Now all we need to do is get rid of this" Cathleen began moving the 18 clip art items to the left; "There"; "Up here"; "Go down a little"; "Go up like that"; [*Gasp*], "go down, go down"

(Tayler & Cathleen, lines 427; 303; 246; 202; 283; 282)

"Gallery, let me hit, you hit Gallery" Brayden said to Amber as she moved towards trying to hit the Gallery tab; "Down, down, down, down"; "Down, down, click, down there"; "go down"; "Next?"; "Where are we going next?"

(Brayden & Amber, lines 331; 315; 282; 169; 161; 163)

"There"; "We need to go back down"; "Go up"; "Ok what do we need?"; "Kevin, you click up there"; "Unh uh this is up, this is down"

(Kevin & Lauren, lines 340; 47; 347; 200; 219; 118)

"Let's me make let me make this one go down"; "There" Amber inserts a baby bear onto the screen; "Ok here they are"; "Ok that's enough"; "Yea, you can put them in"; "K, your turn"

(Jessica & Whitney, lines 158; 242; 213; 238; 202; 40)

Storytelling.

"Want to put a house in it?" as Tayler sees a house in another background template; "Let's keep the house right there" when Cathleen put her hand up on the screen to move the house; "You can design where they go and I'll …and I'll…" as Cathleen moved the house to the bottom of the screen; "How bout we change it to the room?"; "We have to decorate the thing, we can make it better with the three bears"; "Yea, let's change it to the room"
(Tayler & Cathleen, lines 271; 479; 456; 198; 438; 200)

"Make her sitting on the table, no, we need some chairs, get chairs, get chairs, get some" "The porridge, you should press, the baby's porridge, is up there, right there" Brayden points to it for Amber; "Let's get some chairs out there"; "Let's put the bedroom"; "We need baby's chair"
(Brayden & Amber, lines 272-273; 251-252; 212; 184; 214)

"Now we need to go up" Kevin put the house in for the background; "We have to find a broken chair here"; "I get the little bear and you get other bears"; "Ok how in the world are we going to, now we need that" as he inserted the bedroom"; "Why don't you move that chair over there so we can fit the big chair right there"
(Kevin & Lauren, lines 267; 305; 369; 223; 195)

“Where should Goldilocks be?”; “Maybe let’s do something else, how about let’s go to um, let’s go to beds”; “I’m trying to get her to, now you try” Whitney hasn’t been able to get the Momma Bear to move so that the Momma Bear looks like she is laying down on the bed; “Let’s move out to the bears”; “Ok let’s get beds, let’s go to the house and get beds”; “Let’s go to bedrooms”
(Jessica & Whitney, lines 179; 100; 250-251; 182; 215; 145)

Theme 4: Enjoyment

This theme emerged as I found nonverbal and verbal cues that students exhibited during my observations. During interviews with the students, they stated that they liked “that we got to create stuff”, “we worked together”, and “dragging things in”. When the students were asked how it felt to complete this activity, the students commented that it was “nice to work together”, “fun”, “special”, “awesome” and “very good”.

These questions during the interview elicited the most consistent and reliable data towards my interpretations of this theme. I think that the students were able to easily answer these interview questions due to the questions being related to affect. The following snippets from my data provided verbal exchanges representing students’ affect while they were being observed using an interactive whiteboard. These ‘chunks’ of data support the theme of Enjoyment and support the merging of the following four sub-codes under the umbrella of this theme:

Positive Affirmations.

“That’s way better!”

(Tayler & Cathleen, lines 265)

“Yea, that’s ok”; “There you go”; “That’s better” as Brayden begins to scroll down to the bottom of the screen; “That’s ok”; “Just right”; “Keep going, keep going”

(Brayden & Amber, lines 289; 154; 334; 287; 324; 335)

“That would be sweet” as Kevin inserted the Momma Bear; “This is kinda fun”; “That looks cool”; “We’re doing it” as they both move the chair together onto the screen

(Kevin & Lauren, lines 100; 39; 268; 129)

“”Let’s go to that one, yea”; “Now you try”; “That’s fine”, “Yea, that’s good”; “Ahhh, that’s pretty”; “That’s ok”

(Jessica & Whitney, lines147; 47; 134;156; 177; 83)

Singing.

“Baby’s chair, baby’s chair” Cathleen singing and putting a chair into the page; Brayden humming then singing unintelligibly; “Baby’s porridge, baby’s porridge” Amber singing these words as she inserted the baby’s porridge; “Make sure” Amber singing as she makes Goldilocks skip down the path then she put

Goldilocks on the roof; “Yummy yum yummy yum” in a musical tone as Amber moves the porridge to the sidewalk in front of the door.

(Brayden & Amber, lines 281; 126; 253; 203-204; 374)

‘Both laughing then Whitney begins to hum the beginning eight counts of the Wedding March’

(Kevin & Lauren, lines 175; 293; 344; 342; 215)

Laughing.

‘Amber moved the second one to another chair and Brayden is still laughing’; “another chair” Brayden laughing; “Get the baby bear, baby bear” Brayden laughing; “Make him sitting down” Brayden laughing; ‘Brayden laughing’

(Brayden & Amber, lines 175; 293; 344; 342; 215)

‘Lauren laughing’ (*lines 217; 76; 79; 59; 62; 105; 87; 280; 298; 205; 41)*; ‘Kevin and Lauren laughing (*line 110*)

(Kevin & Lauren)

‘Whitney laughing’

(Jessica & Whitney, line 64)

Exclamations of Amazement.

"Wow, it did it itself" as Cathleen puts her arms out to the side of her body with the palms of her hands up towards the ceiling; [Gasp] as Tayler sees the clip art available; "Cool" as Cathleen touches the head of Tayler lightly with her left hand; "Whoa"; "Ahhhhh"; "Yea"; "Wow"; "It's way cool!" Cathleen said twirling behind Tayler as Tayler kneeled on the floor in front of the screen

(Tayler & Cathleen, lines 143; 332; 150; 206; 149; 256; 267; 268)

"Ta da"; "Ahhhh swoopdee" as Brayden moved the background scene; Brayden said "oh yea"; "Whoop"; "Cool" Amber looked for and scrolled fast down through the clip art images.

(Brayden & Amber, lines 378; 265; 355; 181; 349)

"Yea"; "Ooohhh, let's put a bear in there" Kevin smiling

(Kevin & Lauren, lines 400; 99)

"Yea"; "Uhh, that's so cool"; "Yes"; "Yea, we do"; "Yea Goldilocks"

(Jessica & Whitney, lines 211; 59; 259; 222; 150)

Theme 5: Dissonance

This theme emerged as I observed physical actions and verbal exchanges that represented students' differences of opinion during my observations. During interviews with the students, they stated that they didn't like "computer glitches".

issues. They explained the computer issues as “it wouldn’t listen” or “it wouldn’t come”. The combination of the observations and interviews provided an overwhelming amount of data related to students’ dissonance with each other, with the technology and with attempting to complete a task that they were not equipped to complete easily.

The following snippets from my data provided examples of students’ verbal and physical acts while using an interactive whiteboard. These ‘chunks’ of data support the theme of Dissonance and support the merging of the following five sub-codes under the umbrella of this theme:

Power Struggles.

“Hey, I’d pick my Goldilocks” Cathleen said when Tayler tried to move the Goldilocks; “You already did it” Cathleen said when Tayler put another house on the screen; “Watch out” Tayler said to Cathleen when Cathleen got in front of the projector.

(Tayler & Cathleen, lines 293; 366; 484)

“I’ll get the baby’s chair” Brayden said when Amber touches her finger over his finger to drag it onto the screen instead of him; “But I want her right here”; “I don’t like that, I want to go back down”; “Oh, stop, see there” Amber said as Brayden started to scroll instead of her; “Oh wait, wait, wait”

(Brayden & Amber, lines 279-280; 207; 219; 316; 370)

“You didn’t listen”; “It’s not fair we’re supposed to share”; “I want to have a turn now”; “Don’t touch it, don’t touch it, I need to do something”; “Now you made it, look what you did, you made it little”; “Hey, I was about to do that”; “Stop touching it, I need to do something”; “I am trying to do something”

(Kevin & Lauren, lines 57; 372; 66; 275; 362; 44; 279; 304)

“You need to let me have a try”; “Hey, I’m barely doing nothing”; “Hey, I’m trying to get”; “Move him back here”

(Jessica & Whitney, lines 249; 248; 206; 191)

Physical Actions.

Tayler was getting physically pushed away from the interactive whiteboard by Cathleen during their storytelling experience in order for Tayler to have control of the whiteboard.

(Tayler & Cathleen, lines 223; 279)

Brayden was getting physically pushed away from the interactive whiteboard by Amber during their storytelling experience. Amber did this so that she could manipulate items on the whiteboard instead of Brayden.

(Brayden & Amber, lines 166; 156; 336; 96; 101; 236; 301; 195)

Lauren was physically pushed away from the interactive whiteboard by Kevin during their storytelling experience 14 times while Kevin was pushed away by

Lauren only two times. Kevin was trying to control the use of the whiteboard instead of sharing it with Lauren.

(Kevin & Lauren, lines 101; 139; 353; 126; 158; 370; 160; 48; 96; 154; 269; 282; 190; 141; 263; 254)

Whitney physically pushed Jessica away from the interactive whiteboard one time as Whitney was trying to insert an object instead of Jessica.

(Jessica & Whitney, line 254)

Negative Comments.

"Stop it"; "We've got too much stuff"; "What are you doing?"; "Oops!"; "Uh oh"; "Stop"

(Tayler & Cathleen, lines 454; 386; 170; 259; 337; 296)

"We have to do it the right way"; "Stop"; "Ugh, I had to wait"; "I can't"; "What in the world are you doing?"; "What in the world?"

(Brayden & Amber, lines 200; 227; 132; 225; 327; 361)

"Duh"; "Stop"; "I can't see"; "I told you"; "What are you doing?"; "What the heck?"; "Why won't you just believe me?"

(Kevin & Lauren, lines 175; 302; 51; 284; 53; 285; 397)

“Oops”; “Yikes”; “Can’t see it”; “But I can’t see it”

(Jessica & Whitney, lines 192; 186; 46; 56)

Statements of “No”.

“No” was stated by Cathleen twice. Once was when Cathleen told Tayler “no” and once was when Cathleen said it to objects on the whiteboard screen. Brayden and Amber used statements of “no” 15 times during my observation of their storytelling experience. Ten of the 15 statements of “no” were to each other while five were towards objects on the whiteboard screen.

Kevin and Lauren said “no” to each other five times and used statements of “no” to objects on the whiteboard screen three times.

Jessica and Whitney used “no” towards the technology once and said “no” in reference to objects on the whiteboard screen.

Overall, it seems that the word “no” was used most often towards each other during their interactions than used towards the images on the whiteboard screen.

Issues with Technology.

‘Cathleen puts her hands up in an ‘I don’t know why it didn’t work’ position using her shoulders and arms to create the shape of the letter W; “this one won’t go and get in”; “Argghhh” as the bear moved over the girls face; “Argghhh” when it

doesn't work for her; "I already clicked it"; 'Cathleen's mouth drops open and she says "ohhhh?";

(Tayler & Cathleen, lines 274; 362; 338; 278; 404; 181)

"Argghhh"; 'Amber sighs as the house background gets inserted instead'; "She won't go in the chair"; "did it do it?"; "You clicked this"

(Brayden & Amber, lines 118; 266; 291; 103; 267)

"What the heck?" Kevin said when the window on the whiteboard screen got smaller when Kevin's finger changed the size; "It won't let me do"; "I'm trying to pick this"; "How did that get up there?"; "Hey, I don't see anything happening?"; "Hey I can't even do it" as Kevin inserted the baby bear.

(Kevin & Lauren, lines 359-360; 306;165; 203; 78; 374)

"Yikes" when Momma Bear moved up to the sky; "Why can't you move the Dad over?"; "He really needs to delete now"; "This, can't pull it up"; "That's what I picked" Amber tried to get the Daddy Bear but her finger goes over the Baby Bear so it inserts the Baby Bear instead each time; "and then, hey, hey, awwww, what are they doing to us?"

(Jessica & Whitney, lines 205; 210; 52; 50; 94-95; 257)

SMART Board Artifacts

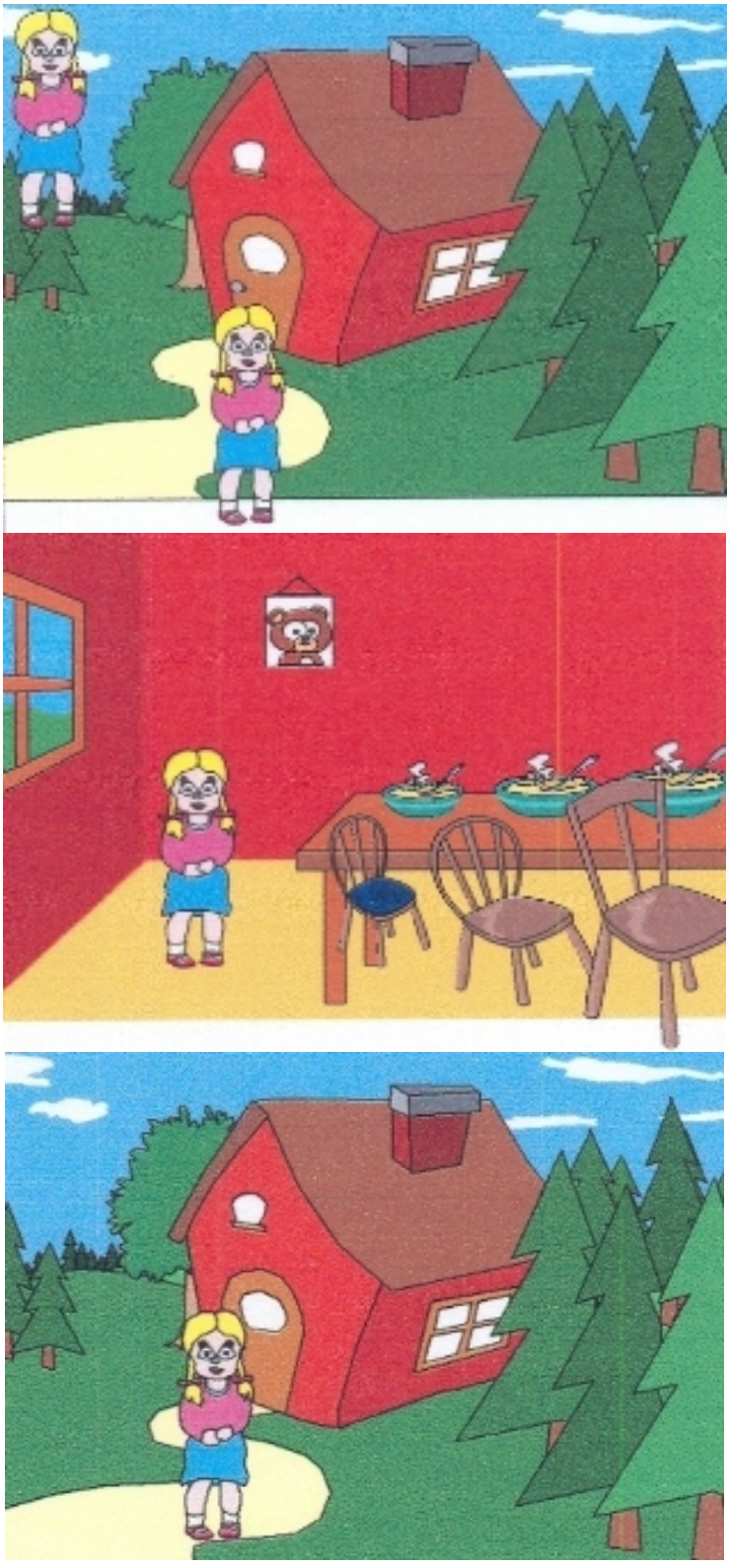
The interactive whiteboard in this classroom used SMART Board Notebook Software to save documents as they were created. During the storytelling of Goldilocks and the Three Bears, the computer saved each new page as students created their stories. These drafts were saved on the computer until the teacher chose to save it as a file or exited the software. I saw these representations on the computer screen after my first observation and interview of Cathleeen and Tayler's storytelling experience. As I reflected on this additional data, I decided to begin printing the pages off after each subsequent interview before I exited the software. These artifacts were wonderfully visual representations of the students' storytelling experiences.

These visual representations ranged from 12 pages to 17 pages of students' storytelling experiences for the last three pairs of students. Brayden and Amber used 17 pages to tell the story while Kevin and Lauren and Jessica and Whitney each used 12 pages to visually represent their stories. One thing that I thought was interesting was the similarity of the initial pages and the final pages for all three pairs of students.

Figure 1 provides a liner depiction of the three pairs of students' initial visual representations during storytelling. Brayden and Amber's initial representation is on the top, followed by Kevin and Lauren's then Jessica and Whitney's initial representation is on the bottom. Each pair of students began their storytelling experiences with a blank screen to insert images on in their effort to tell the story of Goldilocks and the Three Bears. Brayden and Amber

Figure 1.

Students' Initial Visual Representations of the Story



initially began their storytelling experience by placing Goldilocks on the path to the house, almost in the exact same spot on the path as Jessica and Whitney. However, Brayden and Amber had a second Goldilocks on their initial page. The second Goldilocks was located in the top left corner of the page. This software automatically inserts characters in the top left corner of the screen when someone touches an image twice in rapid succession. Brayden and Amber didn't add an additional Goldilocks for any reason other than they lacked the skills to know how to independently use the interactive whiteboard.

Kevin and Lauren began their story with Goldilocks also. Yet, they began by inserting Goldilocks in the dining room. Additionally, their initial page included various sizes of bowls of porridge inserted in the dining room along with three chairs of various sizes.

The representations illustrated on the final pages were more similar than the representations on the initial pages. All three pairs of students finished their storytelling experiences with Goldilocks and the Three Bears in the bedroom. The only distinct difference was that Jessica and Whitney were able to turn the bears so that the Momma Bear, Papa Bear and Goldilocks actually looked as if they were lying on the beds with Baby Bear looking at them. Brayden and Amber and Kevin and Lauren finished their storytelling experiences by inserting bears next to their appropriate sized beds in the bedroom.

Figure 2 provides another liner depiction of all three pairs of students' final visual representations. The final representations begin with Brayden and

Figure 2.

Students' Final Visual Representations of the Story

Amber's on the top, Kevin and Lauren's in the middle and Jessica and Whitney's final representation on the bottom.

Missing Themes

When I began this research study, I had an expectation that literacy would be a major part of the findings. Literacy is an all encompassing process that students are practicing and gaining mastery of during the first grade. I expected literacy to be one of the themes that emerged from my research study since my research study was founded on storytelling using an interactive whiteboard. I immersed myself in analyzing the data again and again and kept the theme of literacy for a long time. However, I realized that I didn't have foundational support within my data for this theme. It was a phantom theme that wouldn't go away until I let go of my emic view of my data and let the themes emerge from an inductive analysis of the data.

Another missing theme was the lack of students' generation of transformative representations of knowledge as they used an interactive whiteboard. The theme of representations that did emerge remain focused on providing a sense of the story, images or characters within the story. The representations were not generative or transformative, but were replications of their representations of knowledge within the framework of the story, Goldilocks and the Three Bears. Teachers are an integral part of the process for students representing their knowledge in a transformative way. Teachers scaffold learning through questioning techniques and facilitation of critical thinking experiences.

Since the students in this study were expected to use the interactive whiteboard independently, their interaction with their teacher was not possible.

There was not an understanding elicited from my data that supported the use of an interactive whiteboard for learning activities in a classroom. The behaviors that I observed were ones of enjoyment, dissonance and peer interaction through the use of technology, but not of a learning process. Again, I feel that the missing presence of a teacher in the role of the facilitator of the students' learning process was a contributing factor. Technology provides another avenue for students to learn, but teachers must provide the foundation for students to construct and transform their knowledge.

Conclusion

My findings were based on a small sample of students. Although I expected the students to be able to independently use an interactive whiteboard, the teacher's definition of "independently use" was different from mine. Even though the students were not able to use the interactive whiteboard independently, I enjoyed my observations and interviews with these students. The students' level of energy and enthusiasm for a frustrating, enjoyable, collaborative activity of representing a story using an interactive whiteboard was compelling to watch. They never gave up, well, after about 30 minutes they did, but while they were interacting with each other to complete their task, they remained fixed on the task.

The 5 themes and 17 codes that emerged from my data revolved around my three research questions in some manner. Overall, they had elements of representations, behaviors and engagement levels sprinkled throughout the themes.

The missing themes of literacy, transformative representations and learning were identified. The missing theme of transformative representations was most surprising to me since my Pre-Kindergarten students were able to do this with their Four Little Pigs at the Fair story. This lack of transformative or generative representations of thought from these first grade students as they used this form of technology was surprising. However, this was one type of media for students to use to represent their knowledge. I did not give them a variety of media as in Forman's (1996) water wheel experience described previously so that might have played a role in their lack of transformative responses. Additionally, these eight students commented that they "never" or "not much" completed storytelling in their classrooms as well as stated that their teacher performed most of the storytelling activities in their classroom. These would all be possible factors for why literacy, transformative representations and learning were all missing themes in this research study.

The theme that emerged from interpreting my data and was most striking to me was the theme of Dissonance. This makes sense since students were not taught to independently use the interactive whiteboard. Yet, I was still surprised. The sub-themes under the umbrella of the theme of Dissonance: power struggles, physical actions, negative comments, statements of "no" and issues

with technology were all clearly observed within all four pairs of observations, some more than others. These codes were powerful on so many levels—they fed your visions of past experiences with student conflicts, feelings of helplessness, loss of confidence and negativity.

The theme of Dissonance provided support for my deductive reasoning prior to this research study in an opposite manner. I expected students to want to interact with technology and use it in their classrooms. As 21st Century Learners, students want and need to use technology as part of the learning process in their classrooms. However, I didn't anticipate that students needed to be taught how to "independently use" technological tools.

CHAPTER V

CONCLUSION

"To prepare kids for their 21st century lives, we must help them maximize their tools….Schools should actively teach students this technology and encourage them to use it."

~Prensky, 2005-06, p. 12

Interpretation of Findings

The purpose of this study was to contribute to an understanding of students' use of technology by descriptively explaining students' behaviors, engagement levels and representations of thought as they used an interactive whiteboard. I feel that I found sufficient data to make interpretations about these three research questions.

All of the students attempted to represent their understanding of the story. All of the students used the images of the characters and background images to provide the foundation needed to represent this story. Most of the students began with Goldilocks coming to the Bears' house. Most of the students proceeded to find the dining room and the bedroom and one student even insisted on finding a broken chair to use to represent when Goldilocks breaks Baby Bears' chair after sitting in it. Some of the students used their words as

they inserted and moved characters to substantiate what they were doing with the characters as part of their representation of story. Most of the students ended their storytelling experience in a similar fashion with Goldilocks being found by the Three Bears in the bedroom. Yet, the students' attempts at representing the story were predictable, not transformative. The use of the interactive whiteboard did not influence the students' representations of story in a remarkable way.

The students' behaviors ranged from cooperation to power struggles, laughing to physically pushing each other, positive affirmations to negative comments, statements of "no" to exclamations of amazement and using technology to frustrations with technological issues. The definition of engagement levels that I used for this study blended the term, behavior, throughout the definition in regards to completing a task. The co-mingling of these two terms, engagement levels and behaviors, used for this research study seems to be a natural occurrence during social interactions. Jones, et.al., (1994) remarked about the skills of engaged learners to interact in socially acceptable ways in order to problem solve and represent their thinking during a learning activity. I found this to be represented within my findings.

Some pairs of students seemed to have social interactions where one student would dominate the pairs' engagement level with the interactive whiteboard (Brayden & Amber; Kevin & Lauren). These student's interactions with their peers presented them as self engaged learners. They were motivated to engage with the interactive whiteboard, but created meaning without their peer

whom they occasionally treated in socially inappropriate nonverbal and verbal ways.

Other pairs of students seemed to have social interactions dominated by their motivated behaviors to use the interactive whiteboard with their peers' assistance (Jessica & Whitney; Cathleen & Tayler). Students' collaborative interactions with a peer presented them as engaged learners. They were motivated to create relationships and meanings with a peer in socially appropriate nonverbal and verbal manners to complete a task. The students' use of an interactive whiteboard influenced their behavior and engagement levels during their storytelling activity in distinct ways.

My findings suggested that themes that emerged from my observation and interview data were supported from viewing the SMART Board artifacts as well. I will further discuss my interpretation of my findings within the framework of educational issues mentioned in my literature review so that the significance of the findings can be linked to issues within the field of education.

Technology Use in Classrooms

During my first observation, I noticed that the students were struggling with simple tasks such as deleting and inserting images on the screen. I questioned the teacher following my first observation and interview if all the students she selected were going to be unable to "independently use" the whiteboard citing examples of Tayler and Cathleen's inability to insert and delete objects. She assured me that the students selected could "independently use"

the whiteboard. She didn't know why this first group was struggling, at first, to insert objects, but could explain why deleting may be difficult for all eight students. She explained that she didn't delete objects much during large group instruction. Most of the time, she swept the images to the side of the screen to get them out of her way so that she could continue with instruction. I chose to continue on with my research study with these students since the teacher assured me that the first two students were her least skilled students in regards to their ability to independently use the whiteboard. Also, I continued because I felt like I had observed ways that the students were influenced by the interactive whiteboard in their representations, behaviors, and engagement levels beyond just being frustrated with the tool.

What is interesting to me was that these students had access, on a daily basis, to this technological tool in their classroom, but were still unable to "independently use" it. Also, what was interesting to me was that the teacher set up prescriptive ways for her students to use the interactive whiteboard in their classroom instead of teaching them to use this tool. So, my research questions of "in what way does using an interactive whiteboard influence students'" representations of the story, behaviors, and engagement levels was strongly influenced by these students' ability to use this tool. Yet, I was able to reflect and interpret ways the interactive whiteboard influenced students. Also, I determined a missing ink for teachers to be able to incorporate technology seamlessly into their classrooms.

"Technology is ubiquitous, touching almost every part of our lives…Properly used, technology will help students acquire the skills they need to survive in a complex, highly technological knowledge-based economy." (Edutopia, 2009, ¶1). During this time of continuous technological advances in our society, teachers are being encouraged to embed technology into their classrooms for students to use for learning. While most teachers interest is easily piqued when asked if they would like to include technological tools in their classrooms for students to utilize, the cost of attaining some of the newer technological tools gives administrators pause.

This research study was tempered with my own experience and perspective on providing independent activities for students to complete on an interactive whiteboard. However, I hoped the analysis from this study would provide teachers with the encouragement they needed to embrace the idea of offering students independent opportunities with technology in their classrooms.

What I learned was that there was a missing link for teachers to be able to teach students to use technological tools. Also, I learned that students were great teachers to each other during my observations. Most of the students provided instructional communication to each other and specific guidelines to follow so that the other student could use the whiteboard without assistance in the future. Also, during my interviews, the students commented that they liked "working together" and "helping each other." This caused me to reflect on how students could learn from their peers to use technological tools in their classroom.

21st Century Learners

The students in my research study were born in the 21st Century. These students were confident in their ability to use the interactive whiteboard even when they didn't know exactly how to delete an image. They never doubted that they could, would, figure out how to use the interactive whiteboard to tell the story of Goldilocks and the Three Bears. They inserted and moved images and changed backgrounds while telling a story. Yet, an understanding of the changes needed to address students in the 21st Century is a significant need for the field of education.

A video entitled "A Vision of Today's K-12 Students" was posted on YouTube by the Jordan School District 21st Century Engaged Classroom website that begins with this quote: "Students will use engaging technologies in collaborative, inquiry-based learning environments with teachers who are willing and able to use technology's power to assist them in transforming knowledge and skills into products, solutions and new information" (http://www.youtube.com/watch?v=_A-ZVCjfWf8&feature=related) This video continues using statistics presented by students of diverse cultures and ages set to contemplative yet hopeful instrumental music. It states that students in school today:

> …spend 3.5 hours a week playing games, 16.5 hours a week watching TV, and 5.5 hours a week using the computer….76% of my teachers have never used wikis, blogs, or podcasts….At least once a week, 14% of my teachers will let students create something using technology while 63%

> never do…. Teach me to think, to create, to analyze, to evaluate, to apply, teach me to think…. Engage me….We are digital learners." (http://theengagedclassroom.wikispaces.com/)

This video truly sums up the feelings of 21st Century Learners and their want, need, to use of technology in classrooms—"engage me." Prensky (2005-06) supports the notion that teachers need to remember "that they are teaching the 21st century. This means encouraging decision making among students, involving students in designing instruction, and getting input from students about how *they* would teach." (p.10).

This notion is at the heart of my own pedagogy. I knew I only had students 180 days each year, but I wanted to give students ways to work independently with technology after they left my classroom. I became conscious that my method for teaching students was focused on teaching students to use technological tools for life. However, most teachers haven't been taught how to turn these new tools of technology over to students for use in their classrooms so they don't.

> The twenty-first century is all about creating and inventing—tools, art, videos, writing, programs, simulations—and sharing those things with an increasingly connected world….If we're smart, we'll give our kids their heads (as we say about horses) to use all their technology and passion to learn, as we steer them in positive directions and truly enjoy the ride. (Prensky, 2007, p 3)

Students have grown up in an age where technological tools are extensions of their brains (Prensky, 2005-06). This understanding connected with my observations of students engaged with each other to use an interactive whiteboard made me pause. 21st Century Learners need 21st Century technological tools in their classrooms and need to be taught how to independently use them.

Mandates for Classrooms

The students in my research study were from a classroom where they had technology available in their classrooms since they were in Pre-Kindergarten (three years). This first grade classroom had a SMART Board, two computers, a digital camera, TV, DVD, VCR, a tape recorder, a CD player/Stereo, an Airliner, and a laptop computer for the teacher. This school is from a large public school district located in a large urban setting serving a wide range of students and households. This particular school qualified 61% of its' students for free and reduced lunches. So, purchases of technology are not the priority; yet, this school has applied for and received most of these technological tools through technology grants. Teachers and schools are mandated under NCLB to incorporate technology into their classrooms (US Department of Education, 2002). Which means that classrooms are getting technological tools to use and teachers are receiving professional development on how to use the tools. However, teachers are not instructed how to teach their students to use the technological tools in their classroom. Prensky (2008) states that

> …before we can successfully introduce technology into our schools, we have to take a prior step. We must get our teachers--hard as it may be in some cases--to stop lecturing, and start allowing the kids to learn by themselves. …If we can agree that the role of technology in our classrooms is to support the 'new' pedagogy of kids teaching themselves with the teacher's guidance…. (p. 3)

During my interviews, I asked my sample of students how it felt to complete the activity on the whiteboard, they responded: "nice to work together," "very good," "fun," "special," and "awesome." Their voices expressed engagement levels and behaviors as they used technology to complete an activity which is what all teachers attempt to elicit out of students in classrooms every day. Teachers need a model for how to teach and support students' independent use of technological tools in their classrooms.

Social Interaction in a Classroom

This research study provided observational and interview data that generated my interpretations of how students behaved, engaged with each other and represented their thinking while using an interactive whiteboard. Students' behaviors in this study were similar to the behaviors Forman and Kuschner (1983) identified as motivation:

> Motivation encompasses all the emotional components of learning, such as the child's interest, fear, drive, conflict and boldness…factors that influence the child's interest—attention, persistence, ability to delay

> gratification, and ability to cope with ambiguity and frustration—are a part of the motivational level of the child at the time of the learning encounter. (p. 153)

I agree with this mingling of behaviors inside the definition of motivation. I observed motivation through the engaged behaviors as students enjoyed themselves, made positive affirmations to each other and learned how to use the interactive whiteboard from each other. Social interaction is a key component in learning within the constructivist framework. Each observation for this research study was a social interaction between two students. The students' motivation to work together was a significant factor in whether they cooperated or were in a state of dissonance during these social interactions.

Forman and Pufall (1988) noted that cooperation in groups was a common occurrence when students were observed using computers. So, the cooperation I observed between Cathleen and Tayler and Jessica and Whitney was not unusual. They were familiar with working in groups and enjoyed engaging and supporting each other as they used technology. Prensky (2005-06) defines the "true prerequisites for learning—engagement and motivation" (p. 11).

Engagement and motivation might explain the differences in the social interactions observed with Kevin and Lauren and Brayden and Amber. Both pairs of students were more physically intrusive with each other, made negative comments and engaged in power struggles. These two pairs didn't seem to behave in ways that illustrated their interest in social interaction. Their engagement levels and motivation seemed directly related to the level of

dissonance they experienced by interacting with their peer during this activity. They did not seem uninterested in using the interactive whiteboard, just unable to interact with it as they would have liked to if they had been paired with another student. Nel Noddings (1992) reminds us that "How children feel — whether they are happy, engaged, realistically confident, eager for experience — matters." (¶25).

Constructivist Theory and Third Space

Using technology was an interactive activity utilized by students to learn within their classroom. Forman and Pufall (1988), editors of the book, Constructivism in the Computer Age, compiled chapters of ways in which computers were perceived to provide educational gains in relation to the constructivist theory. Although, the book is over 20 years old, the thoughts by Ginsburg and Zelman (1988) are still applicable.

> The technology is genuinely 'inter-active'; the student both responds to the computer and makes it respond to him or her. Active learning of this type is facilitated by an almost unique characteristic of the computer: It relieves the student of much drudgery. There is learning by doing in the sense that the computer does the *doing* so that the student may do the *learning*." (p. 157)

Stating that Constructivists believe in learning by doing is not being clear enough about the framework that exists within this theory of knowing. Constructivists recognize that students construct their knowledge through active engagement

with authentic tasks, through exploration of objects and interactions with others, through unexpected and intriguing experiences, through clearly detailed reflections of thought, through the ability to represent your knowledge to others and through an understanding of other cultures (Branscombe, et.al, 2003). The foundational support for students to construct their knowledge comes from the role of their teacher in the learning process.

Teachers play an important role in creating learning environments for students that encompass constructivist assumptions within the classroom and the activities offered to students. Beyond the learning environment, the role that teachers play in providing scaffolding to students during their learning process is equally important. Unknowingly, students in this research study were not provided with an authentic task to complete nor were they offered a task that encouraged them to be transformative in their representations of knowledge. Students in this classroom remarked that they didn't complete much storytelling in their classroom so asking them to retell a story was a fun activity, but not an activity that they considered to be part of an authentic learning process. The teacher explained she set up activities on the interactive whiteboard for them to complete independently that required prescriptive answers. So these students explored and interacted with one another during this storytelling activity enjoying the intriguing and unexpected opportunities it provided, but did not utilize the interactive whiteboard in a transformative way during this research study. This reflection about my research study was vital since it provided an understanding

of the hidden components within these students' learning environment that had not been expressed prior to beginning my research study.

Although students' knowledge and risk-taking when exploring the interactive whiteboard for this research study did not provide a place for students to be transformative in their representations, it provided a third space for teaching and learning to use technology. This third space was student centered. It was focused on the students desire to use technology. The conflicting halves of a teacher's pedagogy, bounded by students' use of technology, generated a third space for students in this research study.

During my observations, I observed the students as they generated a third space while using technology. They constructed an understanding of their storytelling experience while crossing boundaries through the use of technology as they transformed their knowledge. "see the X means that you can't do it" (line 141, Brayden & Amber); "how do you make it go sideways?" (line 228, Kevin & Lauren)" ; "I think I know where to put the house" (line 455, Cathleeen & Tayler); "well, we need to find a room, find a room" (line 226, Jessica & Whitney). They used Intersubjectivity, "subjective states between two selves," when they were engaged in the process of transformation to a third space (Wang, 2004, p. 20). Some students were only engaged in self transformation (Kevin; Cathleen); an understanding constructed in the context of social exchange. While other pairs of students were engaged in co-transformation (Brayden & Amber; Jessica & Whitney); shared understandings constructed in a context of social exchanges.

These transformations occurred as students learned how to use the interactive whiteboard to complete their storytelling experience. As students using technology switched back and forth between the learner and the teacher roles, they were learning within the boundaries of a third space in their classroom. Giving voices, to the journey, sometimes with students' words of amazement and sometimes with students' words of dissonance, assisted their negotiation of the boundaries of learning with technology.

I loved the understanding this perspective provides for the field of education. I think it provides a wonderful metaphor for teachers and students to view technology, not as another add on to their curriculum, but as a different dimension that is already there for their use. The layers of understanding that accompany the recursive nature of learning with any technological tool were illustrated for me as I observed these students using technology. Jessica and Whitney kept trying to figure out how to make the images turn and increase/decrease in size. They figured it out and used it for many different purposes throughout their storytelling experience and ending with their representations of the bears and Goldilocks lying down on the beds. As students used the recursive nature of the learning process in this third space, they were able to take the time and the risk to create multiple layers of knowing. Papert (1980) suggests that using technology in the classroom provides "… new understandings of the process of learning itself" (p. 186). Cary (2006) concurs with the thought that understanding curriculum "opens up a space for other ways of understanding." (p. 133).

When students negotiated their third space in the classroom, they constructed layers of knowledge. This knowledge was connected in the third space to the tension of the dualities within their classroom experiences: teachers and students, peer cooperation and power struggles, positive affirmations and negative comments, instructional communication and issues with technology, exclamations of amazement and statements of "no", representations of thought and engagement levels as well as constructivist assumptions and third space possibilities.

I gained a richer understanding of the need for a third space in classrooms. I know that students need to be able to use technology in their classrooms, but for that to happen, teachers must create new, widened spaces for teaching and learning.

Papert (1980) suggests a model of teaching that includes technology in curriculum since it has a way of "supporting children as they build their own intellectual structures with materials drawn from the surrounding culture. In this model, educational intervention meant changing the culture, planting new constructive elements in it and eliminating noxious ones" (p. 32). Prensky (2001) goes further by saying that "One of the most interesting challenges and opportunities in teaching Digital Natives is to figure out and invent ways to include reflection and critical thinking in the learning…" (p. 5).

These statements by scholars in the field reflect my views of supporting students in their own learning process. So, I hope that the model I created for teaching students to use technology in the classroom will be helpful to teachers

and address some of the challenges inherent with teaching Digital Native students. All of my findings from this study, the missing link for teachers, the needs of Digital Native students and the concept of creating a third space in classrooms encouraged me to view the issue of students being able to independently use technological tools in their classrooms from a different perspective.

Implications for Education

During the analysis of my data, I quickly became aware that my observations and interviews were vastly different from my experience as a classroom teacher with Pre-Kindergarten students using an interactive whiteboard to tell the story of the "Three Little Pigs." The data in this research study did seem to support engagement and motivated behavior in students during their interactions to complete a storytelling experience using an interactive whiteboard. Yet, this data did not seem to support students' abilities to construct a different representation of the story using an interactive whiteboard as a tool.

I wasn't completely surprised though since during my four observations and interviews of students using an interactive whiteboard, the students exhibited varying levels of their ability to work independently on the interactive whiteboard. I know these students utilized an interactive whiteboard on a daily basis in their classroom from their answers during the interviews and my knowledge of this teacher as a fellow educator. So, why was it so distinctly different from my experience offering students the opportunity to independently use an interactive

whiteboard? What made my students able to independently use the interactive whiteboard as a tool to represent their thinking? Was there something about my teaching that caused me to prepare my students without realizing it was different than other teachers in my ability to support students' independent use of the interactive whiteboard?

As I reflected on my research study, I realized a defining term in my procedures for selecting participants was misunderstood. My definition of "independently use" consisted of students being able to use all the features on the interactive whiteboard without adult assistance. I had asked the teacher that volunteered for this research study "to choose four pairs of students able to independently use an interactive whiteboard." Yet, during this research study, I found out that the teacher and I did not share the same meaning of "independently use." Fleener (2002) explains that organizations use words as root metaphors to assist in negotiating a shared meaning of the word. Clearly, I thought teachers shared meaning of "independently use" in relation to students and used it as such, as a root metaphor in this research study, but I was wrong. This teachers' interpretation of "independently use" was students' ability to use the interactive whiteboard after it is set up in prescribed ways for an activity.

Fleener (2002) continues to explain that organizations need to create generative metaphors since they "extend meanings and evolve our language games. They 'provide the impetus for conversants to disclose new understandings…for new meanings to emerge'" (p. 155). A new understanding of "independently use" would provide a way for teachers to offer students a

meaningful voice through their independent use of technological tools in their classroom learning environment (Prensky, 2005-06). A generative metaphor of "independently use" when focused on students in a classroom could provide a new understanding that classrooms need to be a "place where 21st century students learn about their world and prepare themselves for their 21st century lives." (Prensky, 2005-06, p. 13). Using this generative metaphor would have been a way for me to explain my definition of "independently use" so that there was a shared meaning for both myself and the teacher.

I realized, upon reflection of my data, that the exploratory and transformative way I expected students to be able to use their classroom interactive whiteboard "independently" was not observed during this research study. The definition of "independently use" was not clearly defined to the teacher. Yet, my sole criterion in my purposive sampling method was in her hands. In the future, I would more carefully select classrooms from teachers that responded to my initial email by observing students in their classrooms using an interactive whiteboard prior to choosing a classroom to conduct my research study. My understanding of root metaphors and how dependent students are on strategies modeled for them in their classroom will be part of my reflexivity as a researcher in future endeavors.

This realization caused me to further reflect on my teaching method for supporting students' use of this tool in my classroom. What methods or strategies did I use to encourage students to use an interactive whiteboard

independently? How did I build a foundation in my classroom for students to be able to explore and interact with an interactive whiteboard independently?

I realized that my teaching philosophy of encouraging students to cooperatively work together as they were allowed to explore, manipulate and interact with an interactive whiteboard created a foundation of experience for the students as I remained nearby in proximity. My proximity during their exploration with an interactive whiteboard provided the means for me to model for students, interject scaffolding as needed for individuals as well as hold a classroom meeting in order to problem solve technological issues within a community of learners. These reflections on my data and my own experiences as a classroom teacher utilizing many different tools of technology in my classroom caused me to realize the missing link for teachers. Teachers have not been given a model for teaching students how to “independently use” technological tools. We need to teach students how to “independently use” technology as a life skill as well as within the structures set up in individual classrooms.

From this research study and my own teaching experiences with students, I recognized the need for teachers to have a model for teaching students how to independently use technological tools. I reflected some more on my teaching strategies with technological tools as well as common teaching methods that would encourage students to become independent in their use of an interactive whiteboard and created a model for teaching students to use technology.

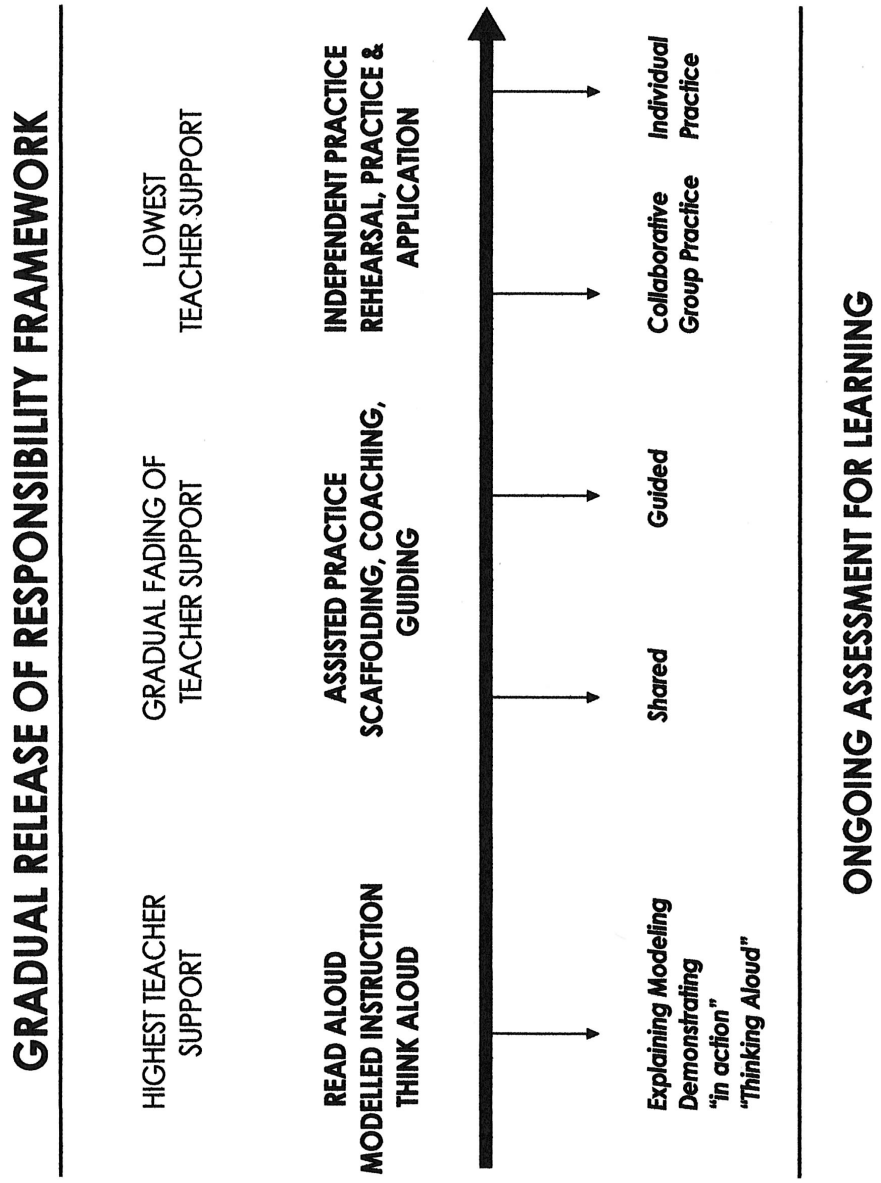
Model for Teaching Students to Use Technology

This model provides a framework for teachers who want to support their students' ability to manipulate, utilize and understand the use of technological tools in a classroom environment and beyond. However, if you live long enough you realize that all things presented as new tend to be a version of something old, which I found out as I discussed this model with a colleague. She thought it sounded similar to the Gradual Release of Responsibility Framework for teaching (see Figure 3). I reviewed literature on the Gradual Release of Responsibility Framework and found that it was similar to the model I created in its' phases and philosophical stances for learning. Yet, this model was different since it focused on using technology in a classroom and not on learning to read. Also, this model offered exploration as the beginning of the process, encouraged the use of mistakes in the learning process and used classroom problem solving as a means for teaching students to use technology on an individual basis.

The Gradual Release of Responsibility Framework was created from a connection within the learning theories from these theorists: Piaget, Vygotsky, Bandura, Bruner, Wood and Ross. "Taken together, these theorists suggest that learning occurs through interactions with others, and when these interactions are intentional, specific learning takes place." (Fisher & Frey, 2008, p. 3). The Gradual Release of Responsibility Framework has been used to ensure "better student learning through structured teaching" (Fisher & Frey, 2008, p. 16). My expectation by creating the Lisenbee EMSCI model was to provide a structure for teachers to follow in an effort to ensure better student learning of how to

Figure 3:

Gradual Release of Responsibility Framework



Retrieved on March 7, 2009, from
http://www.lkdsb.net/Program/elementary/early_years/Gradual%20Release%20of%20Responsibility%20Framework.doc

independently use technological tools which requires a recursive nature similar to the approach used in the Gradual Release of Responsibility Framework.

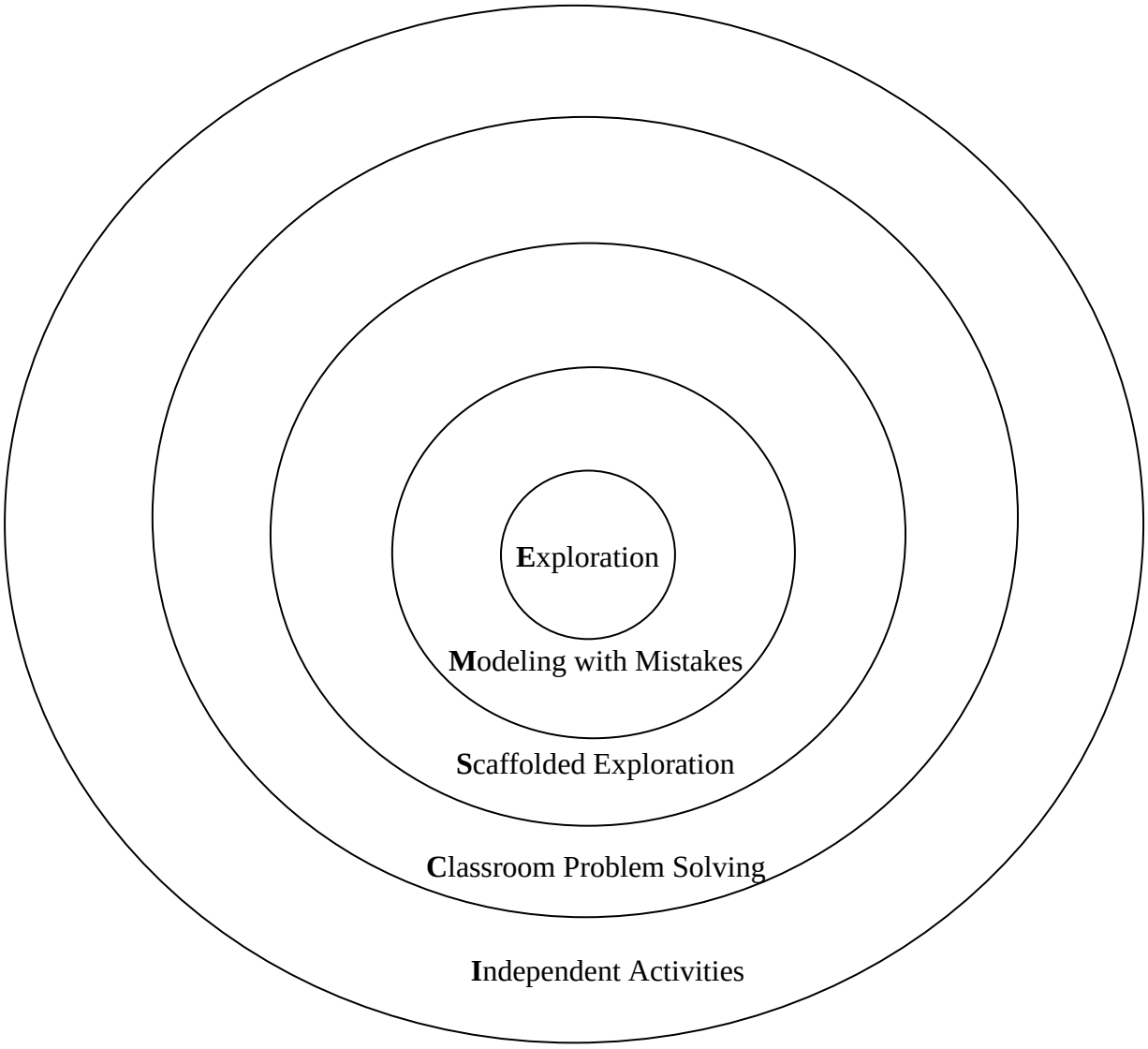
The five phases of the Lisenbee model are: Exploring, Modeling with Mistakes, Scaffolded Exploration, Classroom Problem-Solving, and Independent Activities (EMSCI). The Lisenbee EMSCI Model is an acronym of the initial letters from all five phases in this model. The Lisenbee EMSCI Model for Teaching Students to Use Technology is reminiscent of some of the methods I used to teach my elementary students to independently use a computer, camera, SMARTBoard, tape player, and DVD player in my first grade classroom.

The structure I utilized to visually reflect the fluidity of the five phases of the Lisenbee EMSCI Model was a pool of concentric circles (Figure 4). This structure provided an opportunity to create a generative metaphor for the term “independently use”. It purposefully linked the initial phase of Exploration to a “drop of water in a pond” and finished the phases of the Lisenbee EMSCI Model by likening them to “ripples in a pond”. The creation of a generative metaphor for “independently use” in relation to the use of concentric circles was focused on a shared understanding of the term. Teachers must let students perform the initial or centermost circle first then continue teaching each phase of this model until they have reached the outermost circle.

If the center circle is not offered to students initially, the formation of the continuing ripples might be vastly different than the phases associated with the Lisenbee EMSCI Model which means that students might not have learned to “independently use” the tool. Conversely, if during any phase the teacher

Figure 4:

Lisenbee EMSCI Model for Teaching Students to Use Technology



determines that a previous phase needs to be reiterated for a student then a recursion of the ripples will still follow using the ripple effect. Each phase of learning how to use technology affects the following phases until the ripple effect of learning how to independently use technological tools is only evident by students' abilities to independently use technology. "Effective technology integration is achieved when the use of technology is routine and transparent and when technology supports curricular goals" (Edutopia, 2009, ¶ 2).

Five Phases of the Lisenbee EMSCI Model

The Lisenbee EMSCI Model encompasses five phases of familiar teaching strategies for teachers to utilize: Exploration, Modeling with Mistakes, Scaffolded Instruction, Classroom Problem-Solving, and Independent Activities. Over time, teaching moves from student exploration and teacher assistance to independent use by students.

The initial phase provides time for students to explore. The second phase provides time for the teachers to model and make mistakes in a large group setting. Next, the teacher provides an opportunity for students to explore the tools in small groups while being available for scaffolded instruction. Then in the fourth phase, students are encouraged to return to a large group setting to problem solve common issues that the teacher noticed students struggling with during scaffolded instruction. After classroom problem-solving, the teacher provides independent activities for the students to attempt in groups of two. The time for each of these phases increases incrementally with Exploration needing

the least amount of time and Independent Activities needing the greatest amount of time.

As with all models of teaching, this is a time consuming method of instruction. It could take weeks, months, even a year depending on the amount of time invested by the teacher on a daily basis to support students learning. Each phase of this model will take a different amount of time based on the needs of the students in the classroom. It is important that all students have a solid foundation to build upon for each phase of this model so teachers need to take as much time as necessary in each phase.

I purposefully did not provide time constraints for each phase since I feel strongly that each teacher will be able to determine when to move to the next phase based on the individual needs of the students in each classroom. Yet, some teachers need at least a general guideline of the amount of time they will be committing by incorporating this model into their classroom. So, I created some general time constraints based on a first grade classroom. Teachers would need to make the necessary adjustments for classrooms of students in a different grade level.

During the Exploration phase, I feel each student needs the opportunity to explore the tool at least twice, so plan for a minimum of 20 minutes per exploration.

During the Modeling with Mistakes phase, utilize lessons that you were going to present anyway. So depending on the number of lessons that utilize

each technological tool, you would need to model mistakes with the tool for 5-10 minutes repetitively for a minimum of two weeks.

During the Scaffolded Exploration phase and Classroom Problem Solving phase, the amount of time would depend on the lessons created for students to complete in a small group. Both phases are based on the number of lesson needed instead of amount of time. Students need the opportunity to experience the technological tool under a teachers' guidance for at least 15-20 lessons. As teachers provide scaffolding for the students while they are completing lessons in small groups, the teacher compiles a running list of issues that students have needed scaffolding with the most. This list will be used for the Classroom Problem Solving meetings.

The time frame for Classroom Problem Solving phase cannot be determined since it is based on the list created by the teacher during scaffolding. Just like the previous phase, Classroom Problem Solving is based on the number of meetings needed instead of amount of time. Teachers need to have enough of these classroom meetings to address all the issues on the running list within the confines of the classroom community.

The Independent Activities phase will continue for the rest of the school year unless there is a need for reiteration of a previous phase based on the teacher's observations of students independently using technology in the classroom.

The process of students constructing their understanding of each phase of this model may take more than one repetition. The most important thing is to

begin at the beginning and provide for recursion as needed while students are constructing their understanding of how to independently use each technological tool. As with all teaching, consistency is very important in successfully completing each phase of the Lisenbee EMSCI Model so each phase of the model is predicated upon a solid foundation of knowledge and/or experience being built in the previous phase.

Exploration.

Any time a new object is brought into a classroom, a chance to explore the object assists in creating an environment for effective instruction. "Young children are encouraged to explore their environment and express themselves through all of their available 'expressive, communicative, and cognitive languages,'" (Edwards, Gandini & Forman, 1998, p. 7). The curiosity associated with the new object is heightened by students' ability to touch, manipulate, explore and interact with the new object creating transformations in their knowledge. According to Piaget (1954), these transformations are made as a child explores an object in relation to themselves and in relation to other objects. This is an experiential process. Offering students an opportunity to explore a new object transforms their sense of wonder into an emerging sense of knowledge that only experience with an object can provide. "By transforming the object…the children may eventually discover the relationship between…structure and function." (Forman & Kuschner, 1983, p. 162).

It is the same for new tools in technology. Students need the opportunities to explore, manipulate, touch and interact with new tools in an effort to construct their understanding of the possibilities associated with this new tool. "Constructivists emphasize 'situating' cognitive experiences in authentic activities" (Duffy & Jonassen,1992, p. 4). As teachers cautiously step into the 21st Century in their classrooms, they need to offer students a chance to explore tools of technology instead of just having them available for students to use in structured, teacher prescribed ways.

The Exploration phase of the Lisenbee EMSCI Model, begins with an understanding that students need time to explore technological tools. This means that teachers need to give the tool over to students while observing the manner and method that students use to explore the tool. Of course, I am not encouraging teachers to offer a digital camera to students while they are painting. Yet, students' time of exploration needs to be without prescribed limits created by the teacher if possible. Most teachers set limits for using technological tools in an effort to keep the tool from being broken. However, students need to be able to freely explore technological tools.

This time of exploration provides an opportunity for students to be able to explore and identify the structures and functions of tools. Given an unlimited exploratory timeframe, students might determine how where the USB ports are for a digital camera, how to use digital pens calibrated for use with an interactive whiteboard or access a computer link that takes students to Internet websites. However, all exploration leads to a better understanding of the capabilities of the

tool for their later use. This may be the smallest circle in the structure of the Lisenbee EMSCI Model, but if it is skipped, all the other elements incorporated in this Model are without experiential support. “Meaning is seen as rooted in, and indexed by, experience (Duffy & Jonassen, 1992, p. 4).

An example of the Exploration Phase in my Three Little Pigs story at the beginning of my dissertation didn’t occur. I hadn’t created this model nor had I reflected on how to teach my students to “independently use” an interactive whiteboard. I didn’t even know I was going to be offered an interactive whiteboard for my students to use that day. So, on the first day I let my students interact with the whiteboard, I began with, what I termed in the Lisenbee EMSCI Model as, Scaffolded Exploration. Upon reflection of this experience and in conjunction with my experience in following years teaching students to independently use technological tools, I feel strongly that exploration is the missing link for most students.

If I had I offered my students the chance to explore the interactive whiteboard, the pens, the movement of the clip art onto the whiteboard, and so forth, their ability to use it independently would have been heightened greatly due to my focus on letting them use their natural curiosities with this tool. Teachers mistakenly limit students’ exploration of technological tools in fear that an expensive piece of equipment will get broken. Yet, these digital learners are very adept at utilizing technology and, for the most part, know how to explore a tool without breaking it. Engaging students in learning is a fundamental element for effective teaching.

Modeling with Mistakes.

Teachers understand the importance of modeling. A definition of modeling is simply for "teachers to demonstrate how to use strategies and skills" (Tompkins, 2009, p. 29). When teachers model strategies and skills in using a technological tool for students, teachers provide effective instruction in the use of a technological tool. "…modeling is likely to lead the children to make more sophisticated explorations on their own (Forman & Kuschner, 1983, p.163). Fields and Fields (2006) explained that the importance of modeling for independent use of materials as "Instead of telling kids what to do, show them how to….It is not a way to limit how children use things, but rather to provide guidelines for their creative expression" (p. 137-138). Yet, this phase of the Lisenbee EMSCI Model isn't solely focused on modeling. Making purposeful mistakes is an added element. Modeling with mistakes is not a common teaching strategy used by teachers in classrooms. However, for this phase, teachers are encouraged to make mistakes as they model strategies and skills with the technological tool in an effort to show students that it is okay to actively problem solve issues.

The Modeling with Mistakes phase of the Lisenbee EMSCI Model, suggests providing time for teachers to explore technological tools with students in large groups as their audience. During exploration, teachers can purposefully make common mistakes and fix them in front of the students or accidentally initiate an issue that needs to be fixed and ask the students to provide input for the solution. This shift in focus for teachers to Modeling with Mistakes

encourages students to take the same risks as they learn this new technological tool.

Students learn that it is acceptable to attempt to problem solve issues with technology instead of expecting themselves to be able to model precise skills for using technology. This phase takes students from an exploratory phase to a time of observing, possibly assisting, a teacher as she models and sometimes effectively uses a technological tool. Whether the mistakes are purposeful or accidental, the fact that teachers are comfortable modeling mistakes in front of their students holds significant merit for all students, especially students afraid of taking risks. This phase is an important time for students since it provides an understanding that taking risks can be seen as an opportunity to learn instead of a problem.

An example of the Modeling with Mistakes Phase in my Three Little Pigs story was also missing. I didn't model how to use any part of the interactive whiteboard for them before I let them begin to interact with it. I truly feel that my students began that day with Scaffolded Exploration even though at the time, I didn't have a name for it. However, I came up with this phase due to the many interactions I had during my classroom teaching years, where I would make mistakes in front of the class and they would talk me through how to fix the mistake. Sometimes, I would even invite a student to come up to demonstrate for the entire class their idea of how to resize an image, delete a duplicate image, find a background to use, scroll up/down to view all the choices possible and so forth.

In the past, modeling, whether completed by myself or a student, was a powerful way to make mistakes in front of others and use the collective wisdom of the classroom community to explain it in a way that everyone might understand. These experiences provided an understanding of the need to offer students a chance to watch me make mistakes. I hoped that they felt they were in an environment that didn't put pressure on them to always know the correct answer. I understood that I was modeling for them that it was okay to not always have the answer.

Scaffolded Exploration.

Scaffolding for students in classrooms is a common technique used by teachers. Tharp and Gallimore (1988) stated that scaffolding "does not involve simplifying the task; it holds the task difficulty constant, while simplifying the child's role by means of graduated assistance from the adult/expert" (p. 33). Scaffolded instruction is a term coined from Lev Vygotsky's (1978) idea of the Zone of Proximal Development (ZPD). Vygotsky suggested two parts to learning: the "actual developmental level" and the "potential developmental level". The Zone of Proximal Development is "the distance between the actual developmental level as determined by independent problem solving and the level of potential development as determined through problem solving under adult guidance, or in collaboration with more capable peers" (Vygotsky, 1978, p. 86).Therefore, this phase focuses on the teacher's ability to scaffold for the students as they learn how to use this technological tool.

The Scaffolded Exploration phase of the Lisenbee EMSCI Model provides a time frame to teach students to use technological tools with teacher assisted instruction based on the needs of each small group of students. This phase uses ZPD as suggested by Vygotsky's theory of learning; yet, during this phase it is used in relation to students learning how to use tools of technology.

This phase is an important step towards student's independent use because it provides the teacher with an opportunity to observe students' confusion with a technological tool in a small group. This confusion provides the opportunity for teachers to support individuals in their construction of knowledge through scaffolding each student at their ZPD. Collectively, the insight provided by this phase of Scaffolding Exploration offers teachers a method for creating a list of problems/issues that needed scaffolding most often in the small groups.

This list will be used during the next phase for whole group instruction since it offers an understanding of the problems/issues that students were still struggling with as they attempted to independently use technology. It is extremely important that teachers are close in proximity to each small group of students during this phase. This is the time when teachers encourage students to attempt to independently use the technological tool while being available in close proximity to assist with scaffolding as needed.

My Pre-Kindergarten students started at this phase when they began telling their story on the interactive whiteboard. An example of the Scaffolding Exploration Phase was when I asked questions to ascertain their understanding in relation to the large blowing wolf inserted on the screen. I asked "What would

happen if there was a blowing wolf at the Fair that was as tall as the ferris wheel?" to which they explained how the wind from the wolf would blow the tents and ferris wheel down and it might even blow over the carousel.

I further questioned their thought process by asking them "What would happen if there was a blowing wolf at the fair as small as the pigs?" Once again, they made accurate predictions of the strength of the wind that would come from a smaller wolf. These students' were able to accurately represent their thinking during their exploratory phase with an interactive whiteboard. My presence was an important one for deepening and strengthening their knowledge about the wind by my positive responses to their answers. If I had not been there to provide scaffolding questions and comments, I would not have realized their knowledge regarding cause and effect. This phase is important because it provides exploration with adult assistance and provides immediate feedback to students.

Classroom Problem-Solving.

Classroom problem-solving is used as a means for solving behavior problems or as part of large group instruction. This is similar to classroom meetings in which "the purpose of the community meeting is to create an intentional community devoted to a common project…" (Gartrell, 2004, p. 94). Classroom meetings are a method for encouraging feelings of classroom community that have the ability to solve problems or issues for the class as a

whole. This phase focuses on fostering a sense of community in the classroom in regard to using technology.

It also provides the teachers with the ability to gain a general understanding of how most of the students in the classroom might solve specific technological problems so that misunderstandings can be discussed and understandings can be supported. This phase is important since it provides other perspectives for students in regard to using technological tools. It is also important to provide students with an understanding that they and their fellow students are capable to solve most of the problems that they will encounter as they use technological tools.

The Classroom Problem-Solving phase of the Lisenbee EMSCI Model provides an opportunity for the entire classroom to solve the problems together. These problems/issues are the ones identified by the teacher in the Scaffolded Exploration Phase as she assisted students in creating an understanding of their knowledge when using the tool. The problems/issues will be addressed one at a time until all issues have been resolved to the satisfaction of the students, not the teacher.

It is important that the students agree on the solution since their independent use of technological tools is the primary objective of this model. The teacher needs to realize that this phase is rich in individual and small group perspectives and must be willing to facilitate a common solution that is agreeable to most, if not all, of the students. This phase is not one that I have observed being used in classrooms. Classroom meetings are used as a method of

problem solving, but usually they revolve around behavior problems. This type of classroom meeting is a proactive method for generating solutions to technological problems/issues that the entire class has dealt with in order to make the students more independent in their use of a technological tool.

An example of the Classroom Problem Solving Phase was not observed during my Three Little Pigs story either. However, reflecting on the experience and the objective of this phase, if I had used this phase following my first group of students then the subsequent small groups would have been more knowledgeable about using the interactive whiteboard. An example of how this phase could have assisted students was in their ability to manipulate some of the basic functions of the whiteboard. During the classroom problem solving, I could have had a student model basic function for the classroom, so that everyone understood how to delete an image, how to turn an image, how to enlarge an image, how to change to a different background, etc.

There were several similar technological problems/issues that could have been dealt with as an entire classroom so that all students learned from their peers how to use the interactive whiteboard. Students want to become more adept at using technology so learning from their peers in the form of a community meeting provides a positive experiential component to a new type of activity for students in relation to using an interactive whiteboard.

Independent Activities.

Independent activities are a fundamental part of learning for students in a classroom setting. "Learning is a constructive process in which the learner is building an internal representation of knowledge, a personal interpretation of experience This representation is constantly open to change….learning is an active process…." (Duffy & Jonassen,1992, p. 21). Students need to have activities that they are familiar with and have had modeled to them prior to teachers presenting them as an independent activity for students to complete with or without the use of technology. However, when technological tools are an added element, the importance of this prerequisite is increased.

It would be difficult for teachers to ascertain if the technology was causing the confusion for a student or the students lacked an understanding regarding the objectives of the activity. This phase provides an opportunity for the students to utilize tools of technology without the need for the close proximity of the teacher. However, it is important to understand that teachers might need to provide recursion back to a previous phase if an issue arises where students are unable to independently use a tool.

The Independent Activities phase of the Lisenbee EMSCI Model focuses on the final objective for using this model when teaching students how to use technology. The students need to be able to demonstrate their ability to use technological tools independently and problem solve technological issues that occur during their use of technology without adult assistance.

The students have had time to explore the tool, observed their teacher model the use of the tool, worked in a small group with their teacher who provided scaffolding as needed, solved common technological issues in a classroom community and then implemented all of these strategies so that they were able to independently use a technological tool. This might be the final phase. However, it might be the catalyst for recursion to a previous phase.

Any reiteration of a previous phase would be to attain the objectives that were foundational for independent use. There are many reasons why it would seem as if your classroom of students mastered this model then regressed to a previous phase. It is not considered a problem to repeat a phase, in fact, it is important to provide this option as we all have been in situations where the final step made perfect sense until we got there and then we were confused or unsure about our abilities. So, offering the chance to repeat a phase in order to provide sense of confidence to students before they take the risk to independently use a tool of technology is necessary. This phase is seen in classrooms more as a means of evaluating mastery, not as a means for judging whether previous steps need to be experienced again before continuing on. This unique phase is the penultimate goal for students' use of technology whether it is for life skills or in a classroom. Yet, teachers need to be aware that the road to this summit could be a winding road instead of a straight line. Only time will tell.

This phase for my Three Little Pigs story was never realized due to the story being about my students' first encounter with an interactive whiteboard. My classroom didn't get to keep the whiteboard for very long. This is the phase that

students and teachers seem to rush to in their attempt to offer students an opportunity to use technological tools. Which is why, I have seen some interactive whiteboards perform as large worksheets with the ability to manipulate images on the screen with a pen or your fingers. This is not what I mean by "independently use" technology.

The Independent Activities Phase is a culminating phase where students are able to showcase all of their hard work and effort at mastering a technological tool. This phase might be one that is attained after several recursive loops back through other phases in order to provide the experiential support needed for "independent use". With the use of the Lisenbee EMSCI Model, teachers and students will generate a new, mutual understanding of the term "independently use" while creating a third space for teaching and learning in a classroom. This will enable all classroom teachers to support efforts by students in achieving this important life-long skill.

Implications for Future Research

A lot of questions bubbled up around the periphery of my research as I worked with my data. Due to technology in a classroom being a relatively new addition for teachers and students, there was a gap in the literature that could not answer most of my questions which provide implications for further research.

Are teachers at schools with technology grants utilizing technology more in their instruction? How are teachers at schools with technology grants utilizing technology in their instruction? Are students using technology more in their

learning activities? Does the use of technology elicit learning for students? Are students in upper grades offered the choice of activities using technology or the activities prescribed by teachers? Do students experience joy when they use technology or do they only experience joy when they are offered a choice in technologic activities? Can students describe their feelings about using technology? Do students describe the same feelings when they use technology as when they use other methods for learning? How do teachers teach students to use technology? What subject areas, language arts, science, math or social studies, are used in conjunction with technology to engage students to learn independently in their classroom? Are teachers receiving professional development on how to use the technological tools? Are teachers receiving professional development on how to teach students to use technological tools? Are teachers implementing the information they have learned in professional development about using technology in their classroom so that it empowers students to independently use technology?

These questions revolve around the theme of technology and learning in classrooms. There was a gap in the literature that existed in relation to how interactive whiteboards provide a different experience for students in classrooms. I think the implications of conducting research on these themes will be an important addition for teachers in the future as well as the field of education as we merge into the 21st Century.

Personal Reflections

As I reflected on my research findings, my hope was that teachers would have a renewed understanding of the influences of using technology with students in classroom environments. The benefit of using interactive whiteboards with students in classrooms was that it engaged students in an activity that interested them and encouraged them to construct their own understanding. Students enjoyed working with a peer to use the interactive whiteboard even when they had issues with using the technological tool.

I hope that by conducting this research I have provided a little bit of information to fill the gap in the literature about the use of an interactive whiteboard on students' behavior, engagement level and representation. Using technology did influence students' behaviors and engagement levels during a storytelling experience. However, my findings were interpreted from a small sample so they are not findings to generalize to all students. Yet, I still feel that the cost of purchasing an interactive whiteboard is negligible when students' needs and interests are factored into the equation. Students need to be familiar and successful with all types of technological tools. 21st Century Learners want to engage in learning in ways that are natural to them which means teachers are going to have to embrace technological use in their classrooms.

Teachers need to prepare students to use technology so students can learn to use it for life. I hope that the Lisenbee EMSCI Model provides the needed framework for teachers to understand how to teach students to use technology for life. I hope that the Lisenbee EMSCI Model will make the idea of

offering students the opportunity to independently use an interactive whiteboard less stressful and overwhelming for teachers. I hope that the Lisenbee EMSCI Model provides a voice and sense of the third space to students in their classrooms once they begin to independently use technological tools in their classrooms. This sense of the third space will provide teachers with an understanding of how technology fragmenting the boundaries of teaching and learning makes the necessary changes in their pedagogy and students' learning. More importantly, as Fleener (2002) suggests, it may be a way for teachers to recreate heart in their classrooms.

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APPENDICES

Appendix A

School District Research Review Committee Approval

TO: Dr. Kathryn Castle
Faculty Advisor
Oklahoma State University

FROM: 

DATE: April 21, 2008

RE: Peggy Lisenbee, doctoral candidate

Peggy Lisenbee, a [redacted] teacher, has submitted an application to conduct a research study using [redacted] students. Her proposal has been approved by the District's Research Review Committee. Ms. Lisenbee has been given a copy of the District's policy on research which states that at the completion of the study, a final copy must be sent to me to place in our files.

Ms. Lisenbee should contact me with the names of the schools she desires to include in the study so that I may contact the principals first to get their approval. After the principals give approval, Ms. Lisenbee may contact the teachers.

Please contact me at [redacted] if there are questions or concerns.

Appendix B
OSU IRB Approval

Oklahoma State University Institutional Review Board

Date:	Monday, November 03, 2008
IRB Application No	ED08148
Proposal Title:	Influences on Young Children's Behavior, Engagement level and Representation During Storytelling Using an Interactive Whiteboard
Reviewed and Processed as:	Expedited (Spec Pop)

Status Recommended by Reviewer(s): Approved Protocol Expires: 11/2/2009

Principal Investigator(s):

Peggy Lisenbee
[redacted]

Kathryn Castle
235 Willard
Stillwater, OK 74078

The IRB application referenced above has been approved. It is the judgment of the reviewers that the rights and welfare of individuals who may be asked to participate in this study will be respected, and that the research will be conducted in a manner consistent with the IRB requirements as outlined in section 45 CFR 46.

☒ The final versions of any printed recruitment, consent and assent documents bearing the IRB approval stamp are attached to this letter. These are the versions that must be used during the study.

As Principal Investigator, it is your responsibility to do the following:

1. Conduct this study exactly as it has been approved. Any modifications to the research protocol must be submitted with the appropriate signatures for IRB approval.
2. Submit a request for continuation if the study extends beyond the approval period of one calendar year. This continuation must receive IRB review and approval before the research can continue.
3. Report any adverse events to the IRB Chair promptly. Adverse events are those which are unanticipated and impact the subjects during the course of this research; and
4. Notify the IRB office in writing when your research project is complete.

Please note that approved protocols are subject to monitoring by the IRB and that the IRB office has the authority to inspect research records associated with this protocol at any time. If you have questions about the IRB procedures or need any assistance from the Board, please contact Beth McTernan in 219 Cordell North (phone: 405-744-5700, beth.mcternan@okstate.edu).

Sincerely,

Shelia Kennison, Chair
Institutional Review Board

Appendix C

Email sent out to recruit subjects:

EMAIL TO RECRUIT SUBJECTS

Hi, my name is Peggy Lisenbee. I am a former first grade teacher and a current student at Oklahoma State University pursuing a doctorate in Education. I need your help in identifying first grade teachers/classrooms with students that are able to independently use an interactive whiteboard. If you feel your classroom meets these requirements, please continue to read and respond to this email.

I plan to conduct research on first grade students using an interactive whiteboard for storytelling observing their behaviors, engagement levels and representations of thinking. I plan to observe at least four pairs of students that you have chosen as being able to work independently on an interactive whiteboard. I will observe the pairs of students for 45 minutes each as they use the interactive whiteboard. I will observe during a time frame suggested by you as being a time when your classroom is focused on literacy activities. I will observe them weekly until I have been able to observe all four pairs of students using the interactive whiteboard. I will need to interview the pairs of students following their storytelling experience in order to elicit more details about their experience from them. The interview should take approximately 30 minutes each and will be conducted on the day of their observation. I plan to begin this research in November 2008 and hope to complete all of my observations and interviews in approximately one month.

The intention of examining these constructs is to understand how using an interactive whiteboard influences young children. This would help teachers better understand the effects of offering the use of an interactive whiteboard for literacy activities to students in their classrooms.

If you are willing to volunteer your classroom and ultimately, eight of your students, for my research study, please reply to this email. I am only available to come to your classroom to observe on Wednesdays and Fridays so keep that in mind as well when you respond. If you have any questions that you want to clarify before deciding to volunteer, please reply to this email and I would be happy to answer your questions.

Thank you for your consideration—I know your time is valuable!

Peggy Lisenbee
Assistant Professor in Elementary Education, NSU
OSU Doctoral Candidate

Appendix D

Teacher Consent Form

Teacher Consent Form for
Influences on Young Children's Behavior, Engagement Level and Representation during Storytelling Using an Interactive Whiteboard Research Study

Principal Investigator:
Peggy Lisenbee, Doctoral Candidate in Education

Purpose:
This form outlines the purposes of the research study and provides a description of your involvement and rights as a participant. The purpose of this research study is to investigate students' behavior, engagement level, and representation during storytelling using an interactive whiteboard.

Procedures:
You are invited to participate in this study by providing the principal investigator with an opportunity to observe eight students in your classroom using an interactive whiteboard for storytelling. You will use the sole criterion supplied by the researcher to choose the eight students. The sole criterion is as follows: the students' must have the ability to complete a storytelling activity independently while using the interactive whiteboard. You will group two students together so they can complete a storytelling activity together as a "pair". Pairs of students will not be determined by gender. Each pair of students will be created by you applying the sole criterion the eight students you select using discretion to decide whom to place together as a "pair". The observation of students' storytelling experiences, two students at a time, will last approximately 45 minutes each with videotape recordings taken of the storytelling experience. Immediately following the student observation, the principal investigator will interview the two students, pair, about their experiences during storytelling. This interview will take approximately 30 minutes each and will be recorded for ease in transcribing the interview. As the researcher, I agree to meet the following conditions:

1. I will take detailed notes as I observe and record participant actions being sure to describe and not evaluate actions. I will remain as unobtrusive as possible in your classroom.
2. I will assign letters associated with their clothing color to distinguish between the students on the observational forms. Real names will not be used at any point of information collection or in my class projects.
3. I will keep the videotape cassettes recorded during observations and the cassette tapes recorded during interviews in a locked file cabinet. After my dissertation defense is complete, all cassette tapes, transcriptions, field notes and any other personal information collected during the research study will be permanently destroyed.

Risks of Participation:
There are no known risks associated with this project which are greater than those ordinarily encountered in daily life.

Benefits:
This research will provide an increased understanding of how interactive whiteboards influence learning experiences for young children during storytelling. The intention of examining these constructs is to understand how using an interactive whiteboard influences young children's

behavior, engagement level and representations during storytelling. The benefit of using interactive whiteboards with literacy activities for young children in schools is that it engages their interest and encourages them to construct their own knowledge.

Confidentiality:
Students' real names will not be attached to any documents. Color of clothes will be used to differentiate between the students during observations and transcriptions, but no key code will be created to identify students at a later date. Teachers' names will not be attached to any documents either. Videotape cassettes recorded during interviews will be kept in a locked file cabinet in the study at the home of the Principal Investigator except when they are being used for transcription purposes and even then, they will be handled only by the Principal Investigator and locked away in the file cabinet in the study of the home when the Principal Investigator is not actively transcribing. The key to the file cabinet will be stored in the kitchen drawer away from the study. After my dissertation defense is complete, all video cassette tapes, transcriptions, field notes and any other personal information collected during the research study will be destroyed by a shredder or by stomping on them until they are broken/unusable. The findings from this research study will be reported in my doctoral dissertation and possibly scholarly publications following the defense of this dissertation. Any written results will discuss group findings and will not include information that will identify participants (including children). Only researchers and individuals responsible for research oversight will have access to the records. It is possible that the consent process and data collection will be observed by research oversight staff responsible for safeguarding the rights and wellbeing of people who participate in research.

Contacts:

Principal Investigator:
Peggy Lisenbee, M.S., C.C.P.S.
[redacted]

Adviser's Name:
Dr. Kathryn Castle, EDD
235 Willard Hall, Stillwater, OK 74078
918-744-8019
kathryn.castle@okstate.edu

OSU IRB Chair:
Dr. Shelia Kennison, IRB Chair
219 Cordell North
Stillwater, OK 74078
405-744-1676
irb@okstate.edu

Participant Rights:
As a participant in this research:

1. You are entitled to know the nature of my research.
2. You are free to decline to participate.
3. You are free to stop the interview or withdraw from the study at any time. No penalty exists for withdrawing your participation.
4. You are free to ask any questions at any time about the nature of the class research activity and the methods I am using.

5. Your suggestions and concerns are important to me. Please contact me at the addresses/email provided above.

Signatures:
I have read and fully understand the consent form. I sign it freely and voluntarily. A copy of this form has been given to me.

_____ _____
SIGNATURE OF PARTICIPANT DATE

I certify that I have personally explained this document before requesting that the participant sign it.

_____ _____
SIGNATURE OF RESEARCHER DATE

APPENDIX E

Parent Informed Consent Form and Student Assent Form

Parent Permission Form and Student Assent Form for
Influences on Young Children's Behavior, Engagement Level and Representation during Storytelling Using an Interactive Whiteboard Research Study

Principal Investigator:
Peggy Lisenbee, Doctoral Candidate in Education

Purpose:
This form provides a description of your child's involvement and rights as a participant. The purpose of this research study is to investigate students' behavior, engagement level, and representation during storytelling using an interactive whiteboard.

Meaning of Terms:
Interactive Whiteboard –This is a new form of technology used in your child's classroom that allows them to manipulate the information on a large white screen with a pen or their finger in the same way as a mouse does with a computer monitor. Your child may refer to the interactive whiteboard in their classroom by its' brand name such as SMART Board or Promethean Board instead.

Procedures:
Your child has been invited to participate in this study by providing the principal investigator with an opportunity to observe them in their classroom using an interactive whiteboard for storytelling. The observation of students' storytelling experiences will last approximately 45 minutes with videotape recordings taken of the storytelling experience. Immediately following the student observation, the principal investigator will interview the students about their experiences during storytelling. This interview will take approximately 30 minutes each and will be recorded for ease in transcribing the interview.
As the researcher, I agree to meet the following conditions:

1. I will take detailed notes as I observe and record participant actions being sure to describe and not evaluate actions. I will remain as unobtrusive as possible in your classroom.
2. I will assign letters associated with their clothing color to distinguish between the students on the observational forms. Real names will not be used at any point of information collection or in my class projects.
3. I will keep the videotape cassettes recorded during observations and the cassette tapes recorded during interviews in a locked file cabinet. After my dissertation defense is complete, all cassette tapes, transcriptions, field notes and any other personal information collected during the research study will be permanently destroyed.
4. I will use some still photos taken from the videotape recorded during the storytelling experience to visually depict themes and patterns that emerged during my data analysis in my doctoral dissertation and possibly scholarly publications.

Risks of Participation:
There are no known risks associated with this project which are greater than those ordinarily encountered in daily life.

Benefits:
This research will provide an increased understanding of how interactive whiteboards influence learning experiences for young children during storytelling. The intention of examining these constructs is to understand how using an interactive whiteboard influences young children's behavior, engagement level and representations during storytelling. The benefit of using interactive whiteboards with literacy activities for young children in schools is that it engages their interest and encourages them to construct their own knowledge.

Confidentiality:
Students' real names will not be attached to any documents. Color of clothes will be used to differentiate between the students during observations and transcriptions, but no key code will be created to identify students at a later date. Teachers' names will not be attached to any documents either. Videotape cassettes recorded during interviews will be kept in a locked file cabinet in the study at the home of the Principal Investigator except when they are being used for transcription purposes and even then, they will be handled only by the Principal Investigator and locked away in the file cabinet in the study of the home when the Principal Investigator is not actively transcribing. The key to the file cabinet will be stored in the kitchen drawer away from the study. After my dissertation defense is complete, all video cassette tapes, transcriptions, field notes and any other personal information collected during the research study will be destroyed by a shredder or by breaking them so that they are unusable. The findings from this research study will be reported in my doctoral dissertation and possibly scholarly publications following the defense of this dissertation. Any written results will discuss group findings and will not include information that will identify participants (including children). Only researchers and individuals responsible for research oversight will have access to the records. It is possible that the consent process and data collection will be observed by research oversight staff responsible for safeguarding the rights and wellbeing of people who participate in research.

Contacts:

Principal Investigator:
Peggy Lisenbee, M.S., C.C.P.S.
[redacted]

Adviser's Name:
Dr. Kathryn Castle, EDD
235 Willard Hall, Stillwater, OK 74078
405-744-8019
kathryn.castle@okstate.edu

OSU IRB Chair:
Dr. Shelia Kennison, IRB Chair
219 Cordell North
Stillwater, OK 74078
405-744-1676
irb@okstate.edu

Participant Rights:
As a participant in this research:

1. You are entitled to know the nature of my research.
2. You are free to decline to participate.

3. You are free to stop the interview or withdraw from the study at any time. No penalty exists for withdrawing your participation.
4. You are free to ask any questions at any time about the nature of the class research activity and the methods I am using.
5. Your suggestions and concerns are important to me. Please contact me at the addresses/email provided above.

Signatures:
Parental Signature for Minor
I have read and fully understand the consent form. As parent or guardian I authorize _____(print child's name) to participate in the described research which includes having them videotaped as they are storytelling using an interactive whiteboard during the observation.

_____ _____
PARENT/GUARDIAN NAME (printed) DATE

_____ _____
SIGNATURE OF PARENT/GUARDIAN DATE

I certify that I have personally explained this document before requesting that the participant sign it.

_____ _____
SIGNATURE OF RESEARCHER DATE

STUDENT ASSENT FORM
OKLAHOMA STATE UNIVERSITY

Dear Student,

I am interested in watching you use the interactive whiteboard for storytelling because I want to know about how you use technology. I need your permission to let me watch you and videotape your storytelling activity. Your Mom and/or Dad (or guardian) know about this project and have given their permission for you to participate.

You do not have to do this. You do not have to answer any questions that you don't want to answer. You may stop at any time and go back to other activities in your classroom. If you are in the middle of the activity, you can also stop at any time and go back to other activities in your classroom. Your name will not be on any form.

If you have any questions about what we are doing, please ask us.
Thank you for your help.

Sincerely,
Peggy Lisenbee
Doctoral Candidate, Oklahoma State University

Dr. Kathryn Castle, Ph.D.
Professor Oklahoma State University

I have read this form and agree to help with your project.

_____
(your name)

_____
(date)

Appendix F
Running Record Observation Form

Running Record Observation: Format

Focus:_____

Date:_____

Context/Background Comments	Intensive Observation	Reflection/ Comments

Appendix G

Script for interview questions for the students:

1. How often do you get to do storytelling activities, like this, in your classroom?
2. Tell me what it looks like?
3. I watched you use the interactive whiteboard to tell the story of Goldilocks and the Three Bears, tell me what you liked the most about this activity? What didn't you like?
4. Explain how it felt to work together during your storytelling activity?
5. Explain to me how you decided exactly how to tell the story of Goldilocks and the 3 Bears using the Interactive whiteboard? Why did you decide to do it in that way?
6. If you could choose any literacy activity you wanted to do in your classroom, what would you choose to do?
7. Is there anything about your storytelling experience that we haven't talked about that you want to tell me?

Thank you for talking to me about your storytelling. I enjoyed talking with you.

VITA

Peggy Suzanne Lisenbee

Candidate for the Degree of

Doctor of Philosophy

Dissertation: INFLUENCES ON YOUNG CHILDREN'S BEHAVIOR, ENGAGEMENT LEVEL AND REPRESENTATION DURING STORYTELLING USING AN INTERACTIVE WHITEBOARD

Major Field: Curriculum Studies with an emphasis in Early Childhood Education

Education: 5/09--Doctor of Philosophy in Teaching and Curriculum Leadership at Oklahoma State University, Stillwater, Oklahoma
8/92—Master of Science in Human Development and Family Studies at University of Missouri, Columbia, Missouri
5/81—Bachelor of Science in Family Relations and Child Development at Oklahoma State University, Stillwater, Oklahoma

Experience: Assistant Professor of Elementary Education; First Grade Teacher; Pre-Kindergarten Teacher; Graduate Assistant in Curriculum and Social Foundations; Adjunct Instructor in Early Childhood Education; Child Development Specialist; Parent Educator; Parent Center Manager; Day Care Director; Evening Supervisor/Preschool Teacher; Infant/Toddler Supervisor; Preschool Teacher; Infant Teacher; Early Childhood Research Institute Assistant Data Manager; Child Advocate; CDA Consultant & Advisor; Council Representative; NCAST Trainer; Research/Teaching Assistant in Human Development and Family Studies; Mom of Kevin, Jessica & Whitney

Certifications: Oklahoma Standard Teaching Certificate in Early Childhood (Pre-Kindergarten to 3rd Grade), Family & Consumer Sciences and Career & Technology Education (6th-12th grade)

Professional Memberships: Golden Key International Honour Society
National Association for the Education of Young Children (NAEYC/SECA/ECAO/TECA)
National Association of Early Childhood Teacher Educators (NAECTE/OAECTE)
Association for Childhood Education International (ACEI)
Association for Supervision and Curriculum Development (ASCD)
International Reading Association (IRA)
Friends of Early Education Member
Oklahoma Institute for Child Advocacy, Kids Count Leader Alumni

Name: Peggy Suzanne Lisenbee Date of Degree: May, 2009

Institution: Oklahoma State University Location: Stillwater, Oklahoma

Title of Study: INFLUENCES ON YOUNG CHILDREN'S BEHAVIOR, ENGAGEMENT LEVEL AND REPRESENTATION DURING STORYTELLING USING AN INTERACTIVE WHITEBOARD

Pages in Study: 168 Candidate for the Degree of Doctor of Philosophy

Major Field: Curriculum Studies with an emphasis in Early Childhood Education

Scope and Method of Study: The purpose of this study was to examine the influences on young children's behavior, engagement level and representation during storytelling using an interactive whiteboard. The study consisted of observations and interviews of four pairs of students as they were re-telling the story of Goldilocks and the Three Bears on an interactive whiteboard. A first grade classroom was identified by a teacher responding to an email. The sole criterion that I gave the teacher was for her to select eight participants that have the ability to complete a storytelling activity independently while using an interactive whiteboard. Each participant was observed as they completed the storytelling and then immediately interviewed about their experience using an interactive whiteboard. The methodological framework was a qualitative, descriptive naturalistic study analyzed through the lens of the Interpretivist and Deconstructionist paradigms. Specifically, I used the Constructivist Theory and Poststructural perspective, Third Space, to explain the data from this study.

Findings and Conclusions: The observations and interviews were transcribed and then coded in order to identify themes. Five themes emerged from the data analysis. The themes were Use of Technology, Representations, Peer Cooperation, Enjoyment, and Dissonance. The validity of the data was analyzed using rich, thick descriptions, peer debriefing, reflexivity, and methodological and theoretical triangulation of data. Interpretations from the data provided support for using interactive whiteboards in classrooms. Students used reasoning to choose images, determine placement of images and dimensions of images during their storytelling experiences. However, students did not make transformative representations. Students cooperated during storytelling, laughed, sang, provided instructional communication, responded with positive affirmations, and exclamations of amazement. Yet, students also engaged in power struggles, negative comments, statements of "no", physically acted against each other, and had issues with technology. The most substantial theme was Dissonance. Since students were in a state of dissonance due to their inability to independently use an interactive whiteboard, the Lisenbee EMSCI Model was created for teachers to use so they could teach students to independently use technological tools.

ADVISER'S APPROVAL: Dr.Kathryn Castle