

Interactive Whiteboards: Impact on Fifth-Grade Writing Skills

By Danielle Marie Mooney

December 2011

A thesis submitted to the  
Department of Education and Human Development of the  
College at Brockport, State University of New York  
in partial fulfillment of the requirements for the degree of  
Master of Science in Education

Interactive Whiteboards: Impact on Fifth-Grade Writing Skills

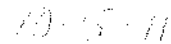
By

Danielle Marie Mooney

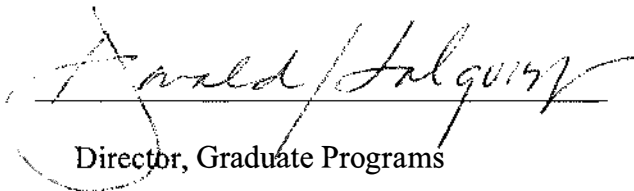
APPROVED BY:



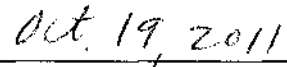
Advisor



Date



Director, Graduate Programs



Date

## Table of Contents

Chapter One: Introduction .....	1
Problem Statement.....	1
Significance of Problem.....	4
Purpose of the Study .....	6
Study Approach .....	7
Rationale .....	8
Summary.....	10
Chapter Two: Literature Review .....	12
Introduction.....	12
Current Trends in 21 <sup>st</sup> -Century Technology .....	13
Pros .....	16
Cons .....	18
Possible Results/Outcomes .....	22
Interactive Whiteboards .....	23
Educational Impact of SMART Boards for Students .....	24
Teachers' Perceptions and Related Studies .....	27
Writing Instruction.....	32
SMART Boards and Writing .....	37
Conclusion .....	41
Chapter Three: Methods and Procedures.....	43
Introduction.....	43
Research Questions.....	43
Research Environment and Participants .....	44
Positionality of the Researcher .....	46
Time Schedule .....	47
Data Collection .....	47
Data Analysis.....	49
Criteria for Trustworthiness.....	50
Procedures of Study .....	51
Limitations of the Study.....	51
Summary.....	52
Chapter Four: Results and Findings.....	54
Introduction.....	54
Part 1: Student Observations.....	54
Part 2: Teacher Individual Interviews.....	63
Part 3: Teacher Survey.....	73
Limitations in Regard to Working with the SMART board .....	77
Summary .....	78
Chapter Five: Conclusions and Recommendations .....	80
Introduction.....	80
The SMART board as a Motivational and Engaging Writing Tool.....	80
The SMART board Promotes Independence for Student Writers .....	83

SMART Board Use Enhances Writing Skills.....	84
Recommendations for Integrating a SMART Board in a Classroom for Writing .....	85
Recommendations for Future Research .....	88
Implications for Current and Future Educators .....	91
Final Thoughts .....	92
References.....	94
Appendices.....	102
Appendix A: Observational Notes Sheet .....	102
Appendix B: Individual Teacher Interview Guide.....	103
Appendix C: Teacher Survey.....	105

## List of Tables

Table 1: Most Common Trends of Observations of Students .....	55
Table 2: Teacher Interview Responses .....	70
Table 3: Teacher Survey Responses .....	74

## **Chapter One: Introduction**

### **Introduction**

We are in the 21<sup>st</sup> Century. Schools are changing. Education is changing. Technology is changing, but technology is also the foundation of many of these changes. The more technology revolutionizes, the more likely people try to change with it, including school districts. When the new I-pod or cell phone style comes out, so do our wallets. Our society yearns for the latest gadget that can make the greatest impact and can be used daily. One purchase often is not enough to hold us over forever. As soon as the new style or features come out, we go out to buy it. The same holds true for schools. In an effort to get the latest and greatest technology in their classrooms, schools strive to find affordable, yet effective forms of technology for student use and to bring their teaching practice up-to-date. In this thesis, I sought to determine the influence of SMART boards for writing instruction.

### **Problem Statement**

Technology is rapidly becoming more and more advanced. Communities, education departments, and schools are recognizing and acknowledging this focus on technology by investing vast amounts of money in technological resources (Hixen and Buckenmeyer, 2009). Schools have been pushing to provide superiority in education while incorporating advancing technology education along the way, “including decades of national, state, and local promotion of educational uses of technology” (Means, 2010, p. 285). The trend toward technology-enhanced

classrooms has escalated quickly during the past five years as students have become increasingly tech-savvy. “In academia, we have likely reached the point where the use of technology is expected, by both students and their parents” (Lavin, Korte, and Davies, 2010, p. 2). With more attention placed on technology mixed with the community pressures to succeed in our growing and technological world, teachers and school districts are focusing their efforts on integrating technology and instruction more readily into their classrooms. The goal appears to be to improve instructional practices and keep up with the developing, ever changing world. The dilemma becomes how much technology should schools be expected to provide and what types of instruction would most benefit students?

Over the past three academic school years, the school district where I work has started implementing electronic interactive whiteboards (IWBs) called SMART boards developed from the company SMART Technologies (SMART Technologies, 2010). An interactive whiteboard or IWB is a large interactive display that combines the simplicity of a whiteboard, power of a computer and front projection (Promethean, 2011). SMART boards are a specific brand of electronic interactive white boards. My district has a device in almost every classroom in the elementary school. I see teachers and staff utilizing these pieces of technology within the curriculum and their teaching on a daily basis. The SMART board is a tool that is incorporated into many subject areas to meet the demands of a wide range of student abilities. Often, the teachers are using the white boards themselves, but they also call the students to the boards to actively take part in the learning. Most of the literacy

components of the school's balanced literacy program are computerized and can be accessed through the SMART board. Teachers take full advantage of these benefits in addition to the Everyday Math program lessons and activities used through the interactive whiteboard. The SMART boards are used in place of chalkboards, dry-erase boards, televisions, movie players, cassette and CD players, head-phones, and sometimes even bulletin boards in many of the classrooms. In my classroom alone, I would say the SMART board is used in some way about 40-50 percent of the day. Teaching and learning definitely center on these devices during some aspect of every school day.

Gorder (2008), a college professor at Dakota State University, suggests teachers' "competence and ability to shape instructional technology activities" (p. 64) according to the needs of their students leads to better outcomes. Still, even with the installation and operation of the SMART board, the question remains whether these machines are improving the learning and success of the students- a major reason given school administrators for integrating them into the educational approaches at my school. Means (2010) proposes that "technology adoption and implementation require not just funding resources but also ongoing effort" (p. 285). It is essential to determine if the cost, energy, and effort to incorporate technology in classrooms influences the literacy outcomes for students' skills, specifically with writing. Traditional learning methods are still being used and will continue to be a means of instruction in some part of an instructional day. Still, even if districts choose a more traditional approach, technology cannot be ignored. On the contrary, schools are



facing demands from the public to combine traditional, meaningful teaching approaches with technology. Legislators and business leaders are demanding that students in today's world be prepared with 21st-century skills needed to succeed and thrive in college, work, and life (Izzo, 2010). Even the simplest exposure to technology for students could be the difference between excelling and falling behind in life endeavors when faced with real life society (Kurt, 2010).

### **Significance of the Problem**

Lavin, Korte, and Davies (2010) state that “the trend toward technology-enhanced classes has escalated quickly during the past five years as students have become increasingly tech-savvy” (p. 2). Classrooms across the nation have become wired to support this change, and textbook publishers now recommend a wide variety of computerized teaching supplements. Without the understanding of technology-related devices, students may lack necessary understanding of technology which is an integral part of the postsecondary experience and the workforce (Izzo, 2010).

“As technological developments accelerate, a new group of students can be identified- the net generation” (Wright, 2001, p. 37). Keeping pace with other countries and educational systems presents another concern related to the amount of technology students acquire and use. In March, 2008, approximately 9.7% of the world's population used the internet (Internet World Stats, 2010). As of September, 2010, that number is approximately 28.8% (Internet World Stats, 2010). The more countries keep developing their own usage of technology, the more the United States

will be expected to keep pace. The internet may likely be one of the most popular and used technologies, but schools in the United States need to promote technology in all forms and expose students to as much technology-based learning as possible (Kurt, 2010).

A standard SMART board can range in price from over \$1,000 to up to \$7,000, depending on features and the model (SMART technologies, 2011). Since school personnel are putting so much research, time, energy, and money into a resource like electronic white boards, teachers need to ensure that technology should offer the most meaningful use of instructional time. While discussion of technology commonly features this tool, districts like mine that are providing them in every classroom should be aware of benefits or restrictions these machines have on student knowledge and success. Izzo, Vreebur, and Nagaraja, (2010) stated,

Although technological skills were not a prerequisite for many jobs in the past, the increasing use of computers to automate simple tasks and a technologically driven world require IT skills. According to the U.S.

Department of Labor employment projections for 2002 through 2012, eight of the ten fastest growing occupations require technological fluency. (p. 96)

Technology-based learning is impacting whether individuals may be prepared to work within certain areas of the workforce. Exploring technology's influence on students may open the door for teachers to discover the influence that technology can have on their own students.

## **Purpose of the Study**

As a long-term substitute teacher, I had a SMART board in my classroom. As a future teacher during a high technology era, I was interested to learn how technology could influence student learning. The objective of my study was to learn if the SMART board actually influenced student development of writing. The goals I sought to explore revolved around teachers' instructional time affecting students' use of the SMART board and whether the SMART board affected student motivation to write. I also was interested to learn if development in writing took place over time. Writing was chosen because I wanted to narrow down to a focus on literacy. I was eager to understand if presenting my students with a variety of writing activities and tools, specifically directed toward the interactive white board, improved and advanced the students' writing skills. Activities provided were literacy enriched, but they were centralized explicitly around writing. Such activities included whole group instruction, small group instruction, independent usage, games, and mini-lessons while using the SMART board. These learning practices were directly related to the writing process, organizational formats, grammar, and editing. My central question to be answered was:

- What effect does fifth-grade students' use of interactive electronic white boards have on their writing skills?

## **Study Approach**

This study featured a combination of qualitative and quantitative data collection. I conducted my research with participant observations and collected my own data for documentation. In addition, I used tools like surveys and other researchers' ideas; therefore, my study was also quantitative. I chose to collect data by observing the students in my fifth-grade classroom. I carried out a set of two observations of the same students weekly in my classroom during a writing block of 30 minutes for a time period of 6 weeks. I collected data regarding my observations of student progress for applying writing skills into their typical writing by using the SMART board. My data was solely collected during writing time from my suburban school district.

Out of my classroom of eighteen students, approximately three were struggling writers, eight were medium-level writers, and six were high-level writers. Clearly, I had a fairly large range of writers. This study assisted me to determine how students progress with exposure to a SMART board. By looking at their different levels, I was able to determine whether technology-based writing assistance would benefit one group or all students. Like other types of instructional methods, technology needed to be evaluated to learn how it might best serve students of all ability levels since teachers are expected to accommodate all students.

Over the six week period, I also conducted teacher interviews and surveys to determine how educators viewed the SMART board and what part they believed these

tools had on student learning outcomes. The participants of my study were teachers with SMART boards throughout my school, but also the students directly in my classroom. I used nine fifth-grade students from my classroom. My observed students were three high-level, three mid-level, and three struggling writers selected randomly. I analyzed their use of the interactive white board with their writing, and tried to understand how their writing developed and progressed while using this technological tool for writing. By learning about the impact of technology now, more teachers can be better informed about the importance of incorporating technology into their instructional strategies.

### **Rationale**

Technology is advancing rapidly in school systems today, and I wanted to learn more about the effect technology can have on student progress. I firmly agree with many of my districts' philosophies, and my school district's mission statement includes the following announcement: "As a district, we believe in: work that is meaningful, relevant, requires a strong ability to obtain, process, and produce information, and incorporates 21<sup>st</sup> Century skills" (School L). I wanted to follow through with this aspect of the mission. While the SMART board is one direction the district is taking, my school is pressing for the use of multiple technologies to promote the skills students will need far after they attend this school district. Exploring interactive white boards is just one step for me in understanding more

effective uses of technology in my teaching. The decisions and reasoning I made may play a significant role in how my students interact with technology in the future.

I personally had a reason for wanting to gain more knowledge regarding SMART board technologies. Based on the fact that I have a SMART board in my classroom that the students love to use, I wanted to gain a perspective on what role or influence SMART boards play in the literacy growth of my students and their writing skills. A large range of writing levels existed in my classroom, so incorporating this device more into my teaching techniques may have been a good route to take if the SMART board is positively influencing students' writing capabilities. Should I be using what is considered a valuable technological instrument daily or will students benefit from a more conventional practice for using and learning about writing skills to improve themselves as writers? I am questioning whether interactive white boards such as the SMART boards in my district impact writing in order to better understand how I could best support the writing and goals of my fifth-grade students.

Technology has always been of interest to me. The more it changes, the more I find schools try to strive towards obtaining more technology. I can see that the students enjoy this fun and interactive tool. They appear engaged and willing to participate when I call them up or ask for volunteers. When they do participate using the SMART board, I sometimes wonder what the benefit of an interactive white board is compared to traditional methods of learning such as chalkboards, white boards, and paper-pencil tasks.

I was eager to provide my students with the opportunity of being technology learners so they are prepared for their futures. The goal for effective learning and preparing a student most successfully for the future is always that of the teacher. From having not done a lot with technology as a newer teacher, I found out that more and more emphasis is being put on teachers to associate student learning with technology. With a SMART board and computers in my classroom, it was essential that I provide students with the opportunities and experiences they need to grasp how to use technology. Still, does this mean a SMART board in every classroom is the way to go?

### **Summary**

Today's changing technology plays a large role in the academic development of students. Schools are picking up the trend of technological gadgets based on the supporting research stating that technology is on the rise and impacts student learning. Computers and the Internet are changing society and the way individuals function in this world (Hixen and Buckenmeyer, 2009). One of these pieces of technology that is entering the picture at a steady rate is the interactive electronic whiteboard called SMART board. While not all schools have this type of technology, they are still finding other ways to immerse other forms of technology into their educational approaches. SMART boards appear to be one of the newest trends in technology that can assist the goals of teachers. As technology becomes further and further advanced, it is important to find out what impact SMART boards play in the

writing outcomes of students. Writing is such a developing, critical literacy area. Are interactive electronic white boards really the best bet over traditional, rigorous writing instruction? By observing students and discovering what factor this form of technology has on students, I believe that teachers can better inform their instruction and decide how to integrate SMART boards into more of writing and other literacy areas of their curriculum. It can also tell teachers and administrators if an instrument such as an interactive white board is the best instructional path to take in order to get the most out of their instructional time- a continuous goal of school districts striving for success for all students.



## **Chapter Two: Literature Review**

People who went to school over 10 years ago or longer may be familiar with computers, typewriters, film strips, and overhead projectors. Chalkboards, markers, pens, books, workbooks and of course the traditional pencil were always within reach for many of these students. The above mentioned items were the central tools in a typical student's daily education. For the most part, many of these instructional tools still exist in today's classrooms. If you were a student within the past 15 to 20 years, you were fortunate to have one computer in the classroom that all the students would vie to use when they had completed their work. Ask an adult who attended school several years in the past regarding what current technologies are present in classrooms and their response is most often computers. On the contrary, computers are only one aspect of the technological resources schools are implementing. Classrooms today are becoming much different than educational settings in the past.

Walk into a typical classroom in United States today and you would probably see not only one computer, but several computers - maybe even some individual laptops for student use. Walk into a typical classroom in the United States today and you would probably see a projector or an ELMO that can display work and assignments for all to see. Walk into a typical classroom in the United States today and you may even see an electronic whiteboard where students get to experience the teaching and learning interactively. Walk into a typical classroom in the United States today and many unique possibilities exist that alter traditional, expected materials and their potential uses. Walk into a typical classroom in the United States today and see

the future of education. We are already there and only growing with each moment of each day. School instructional practices are highly influenced based on the materials and resources available to them.

Technology is charging forward with possibilities that remain unknown and yet enticing to grasp. Not only are these technologies influencing how teachers teach, they are also playing a role in how students learn. It seems that the younger students are, the more they are learning to do when it comes to using technology. With the implementation of the Internet and social networking sites, students are using what they learn from technology and applying it to other aspects of their lives (Barone and Wright, 2008). A significant reason for this spike in technology use is because students are using technology earlier, but they simply must learn to use technology in today's changing society. Even though abundant research is being conducted regarding technology, little research has occurred regarding the use of SMART boards in current classrooms. In this chapter, I examined the areas of current research including current trends in 21<sup>st</sup>- Century technology, interactive whiteboards, the educational impact of SMART boards for students, teachers' perceptions and related studies, writing instruction, and SMART boards and writing.

### **Current Trends in 21<sup>st</sup>-Century Technology**

Over the past decade, research and theory has been explored to determine why technology is becoming the heart of many classrooms and why it is captivating schools and students along the way. Coiro, Knobel, Lankshear, & Leu (2008) conclude that "new technology involves new ways of meaning making" (p. 753).

Even low performing, high needs schools have access to some aspects of technology such as computers. Today's students are more exposed to technology and learning to use it as instructional practices in place of other traditional modes of learning.

Students can express their learning in unique ways that appeal to them. According to the U.S. Department of Education, there were an estimated 328,000 K-12 students enrolled in distance education courses during the 2001 - 02 school year (2007).

Clearly, computer and high - tech methods of learning interest students.

Digital literacies and advancements in technology seen at home are changing the way educators approaching. Teachers may become overwhelmed in figuring out what to use: traditional teaching methods, new technologies, and future new literacies that are emerging all the time. The challenge is finding the time to use a wealth of available resources most effectively. The goal according to O'Brien and Scharber (2008) is for students to "leave school literate in the ways of school *and* in the ways of the world" (p. 68). Concern exists over the disproportion of pupils' out-of-school experience (Coiro, Knobel, Lankshear, & Leu, 2008) which widens the divide between what students get in school versus their home environment. Therefore, the challenge is "bridging and complementing of traditional print literacies with other literacies" (O'Brien and Scharber, 2008, p. 67). Students may be getting experience with technology in one setting and not the other. Schools need to find a way to link the two to support student learning.

According to 21<sup>st</sup> Century Literacies (2011), global economies, new technologies, and exponential growth in information are transforming our society and

the way that people live and work in a world of problem solving, collaboration, analysis, and skills. Today's technology-learning involves working with word processing, hyper-text, LCDs, Web cams, digital streaming podcasts, SMART boards, and social networking software. Technology has been on the rise for decades, but the current look of technology in society is far different than it was even five years ago resulting in educators becoming challenged in how to link technology with their teaching while choosing the most productive use of the technology. With higher standards and more importance placed on functioning in a complex world, teachers are faced with a conflict. The inclusion of technology is highly significant to match the needs of careers and learning opportunities, but traditional methods have been around for years. Beliefs about how students learn best continues to be debatable. Clearly, technology is redefining literacy instruction and learning. By providing high-tech practices, schools can provide instructional items they can actively relate to. Today's students face a greater sense of technological experience and opportunities, but that also produces the pressure to conform to new trends in technology. Lee (2010) believes that the humble interactive whiteboard (IWB) is contributing to one of the more significant developments in the history of schooling.

With these new technologies comes pressure to use the resources effectively. McCrummen (2010) mentions that "public schools spend millions of dollars each year on gadgets from text-messaging devices to interactive whiteboards that technology companies promise can raise student performance" (p. 1). Another view suggests the money schools spend on instructional gizmos, gadgets, and instructional

technological tools “isn't necessarily making things better, just different” (McCrummen, p. 1). For example, New York City’s Department of Education plans to increase its technology spending to \$542 million next year (Otterman, 2011).

**Pros.**

As new technologies shape literacies, research is showing that they bring benefits to teachers, staff, students, and parents. Research is currently illustrating the need for opportunities for teachers at all levels to foster reading and writing in more diverse and participatory contexts (21<sup>st</sup>-Century Literacies, 2011). This is leading to more and more teachers who are leaving their “safe” boundaries of instruction in order to expand how they teach and what resources they use on a daily basis.

Clements (1998) asserts that, “Technology offers unique ways to assess student learning by providing teachers with a visible view into what is being learned and applied right in front of them” (p. 2). Teaching with technology can impact significantly the quality of teacher instruction. Using the internet allows teachers to search for lessons and projects they may need help planning (Griffith & Lynch-Brown, 2002). Technology also allows for possible communication through the use of e-mails and websites so parents can be in touch with what is going on in the classroom. So, technology is changing not only how teachers teach, but also their daily decisions and choices as a teacher. This type of communication and planning assistance can be a real benefit in terms of how teachers plan and handle classroom responsibilities.

Other stakeholders involved in school districts share the goal of improving instruction. To attempt to meet the needs of local and state legislation, Dessoiff suggests school districts are changing the way they view typical, continuous instructional and curriculum decisions. Differentiation is taking shape in many classrooms as student populations are becoming more diverse. With technology, especially computers, children have the choice to follow diverse paths towards their goals for learning (Wright, 1994).

Using technology in schools is a good step in opening new approaches to meeting the needs of a growing number of diverse students. It is also a way to get students up and moving in a hands-on approach that allows them to visually see and do the learning. The needs of many types of learners are met with technology while still addressing what needs to be covered on a daily basis as part of a standards-based curriculum for many schools.

Students of many grade levels today are comfortable with technology. They do not view it as something new or complicated that they have to struggle through (Sweeny, 2010). Students use technology outside of school probably more than in school. Some students text, IM, use social networking sites, computers, video games, the internet, and I-pods (Sweeny, 2010). The list is constantly growing. Students sitting in classrooms today have more experience than ever with a wealth of technology- related gadgets. Because most students are so familiar with technology, teachers can be using technology learning as an advantage to keep students engaged,

seeking out information, and communicating their thoughts and ideas in new ways with unique media, formats, and ways to express meaning (Sweeny, 2010).

A benefit of technology such as the interactive whiteboard is identified by the British Educational Communications and Technology Agency (BECTA, 2003). The agency claims that IWBs “facilitate student participation through the ability to interact with materials on the board” (p. 1). Students are engaged and excited to learn when they get to participate in the learning. They get the opportunity to experience the “richer and more complex learning opportunities” (Leu, Kinzer, Coiro, & Cammack, 2004, p. 1599) that could escalate them into the future.

Flynt and Brozo claim that technology in the 21<sup>st</sup> Century allows students to engage with one another in tasks. They also get to “embrace learning from one another” (p. 526). Developing as a person with interpersonal relationships is a component of going to school and technology is supporting this kind of peer interaction. While modeling and explicit teaching are still necessary, sometimes it is ideal for teachers to be the “facilitator and co-learner” (p. 526) as they allow students to explore technology and final products with their peers.

### **Cons.**

Research has shown several concerns related to incorporating technology in classrooms. No matter how much technology teachers are exposed to, it still does not offer a solution for some loose ends to be tied up. According to The Office of Technology (1988), “technology will not be used, and certainly will not be used well, unless teachers are trained in the use of technology (p. 114). Training must be

continuous, help a large group of individuals, but involves extra costs. In 1999, approximately only one-third of teachers reported feeling well prepared or very well prepared to use computers and the Internet for classroom instruction, with less experienced educators signifying they felt better prepared to use technology than their more veteran colleagues (National Science Foundation, 2002). Teachers that feel better prepared are more likely to attempt to use technology than those that are thrown into it by themselves. According to the National Science Foundation (2002), “although half of all teachers reported that college and graduate work prepared them to use technology, less experienced teachers were generally much more likely than their more experienced colleagues to indicate that this education prepared them to use computers and the Internet” (p. 1). For this reason, schools should consider the range of technology skills that their teachers have acquired over the years. By getting the necessary equipment and technical assistance to their educators, schools districts can assist in this (Wepner and Tao, 2002).

Another concern with the interactive whiteboards is the word interactive. The question arises about who is actually interacting with the board: the students or the teacher? Cogill (2006) describes “a tendency for the teacher to dominate the whiteboard lesson and in most of our observed lessons it was usually the teacher using the IWB controls” (p. 1). Even if teachers take in their students’ best interests, even if a tool is titled ‘interactive,’ that does not necessarily mean that the students are participating in the interactive activity. Also, because the technology is often new to the students, teachers are fighting with the need to provide proper instruction and



modeling with the students actually manipulating items on the board. Teachers also must face classroom management for children who are not using the board. One teacher had tried to encourage pupils to use the IWB independently in a group but found that the rest of the class was unsettled; constantly trying to see what the group was doing. This may reflect the fact that IWBs are still a recent and exciting addition to the classroom (BECTA, 2003).

Educational systems in today's society have even more limited funds to provide this professional development. The cost of technology is a significant factor for school districts that face crises in their budgets. Daccord (2003) considers that incorporating computers can bring technical difficulties and interruptions in the classroom as well as time to instruct student on how to use the tools. Setting up lessons and the devices themselves takes up valuable instructional time. Integrating technology into a school's curriculum ultimately "demands effort, time, commitment, and sometimes even a change in one's beliefs" (Clements, 1998, p. 5). It is often not as simple as requesting a device, getting it set-up, and using it. The process is much more involved because it changes the traditional approach that has encompassed learning in the past.

Skeptics to mass technology spending question whether devices are more important than quality, explicit teaching. In an article in the *Washington Post* (McCrummen, 2010), it was written, "There is hardly any research that will show clearly that any of these machines will improve academic achievement," said Larry Cuban, education professor emeritus at Stanford University. "But the value of

novelty, that's highly prized in American society, period. And one way schools can say they are 'innovative' is to pick up the latest device" (p. 1). Therefore, if districts are motivated to spend hard-earned tax dollars on new technology, they better have a rationale for acquiring them. Districts need to keep the cost of the tool in mind, but also the maintenance and running of technology in focus. Federal dollars for educational technology, quite limited up until the end of the 20<sup>th</sup> century, grew to more than \$800 million in 2010, and estimates are that federal, state and local expenditures will total \$16 billion in 2011 (McCrummen, 2010).

A lot of money and resources has been invested in purchasing hardware, tools, and software for schools and classrooms across the United States. According to the U.S. Department of Education, average annualized cost of technology systems in schools is about \$400 to \$600 per student if a reasonable amount of staff training and development is provided while implementation costs can be even higher (U.S. Department of Education, 1997). There also involves the total cost of ownership. For some districts, the cost of investment may be worth the chance for additional success for their students. Unfortunately, this spending does not always involve a return of investment with high student achievement. Additionally, this massive spending does not always match the spending needed for professional development for educators (Torgerson and Zhu, 2004). Without professional development and the feeling of confidence to do well, teachers tend to take alternative routes or use more familiar methods when using technology. It is up to school districts and communities to provide the training, support, and instruction of technology to teachers and school

staff in order to allow them to provide the most useful teaching for the most effective learning. Teachers do not necessarily need to be experts at technology, but they do need awareness if their students are going to learn from them.

A big realization for teachers and districts is that employing technology is not always appropriate or beneficial depending on the curriculum or social setting of the students (Clements, 1998). With so many technological advancements open to the public for use, districts and teachers need to determine what would be the most meaningful to have in their own classrooms versus other technology instruments that could possibly be just as valuable to their teaching. Just picking one piece over another and expecting things to go smoothly does not always happen. Things do not always fit in place or go exactly to plan. Due to this, teachers need to be ready for anything. Wepner and Tao (2002) suggest that “teachers need to be prepared for things not to work as expected. The “Plan B” phenomenon is very real when working with technology, and teachers need to know how to immediately shift gears when something goes awry technologically” (p. 649).

**Possible results/outcomes.**

Even with budget problems, lack of funding, limited teacher training, and hard decisions to be made, several researchers support the claim that schools all across the United States are moving right along with technology. Davis (2007) discussed the claim that schools constantly are intending to acquire this piece of technology - even gradually. School budget deficits are currently up, yet SMART boards are entering many United States classrooms. The cost of SMART boards varies on style and

features, but an average SMART board is approximately \$5,000 (Smartboards.com, 2011). The challenge for teachers is learning about these devices and determining how they are best to link them to their best instructional practices and deliver their instruction. Ironically, the SMART board itself becomes a best teaching practice. SMART boards are seen as a chance to articulate student learning of literacy in newer ways than ever before (Fortuna, 2007). Ultimately, interactive whiteboards of any type pay for themselves by allowing for effective teaching and participation from the students in a hands-on nature (Loschert, 2004).

### **Interactive Whiteboards**

The interactive whiteboard is getting the name for “the hottest trend in education technology” (Loschert, 2004, p. 30). The interactive whiteboard is one of the up-and-coming tools that are quickly finding their way into classrooms across the country. Interactive whiteboards come in many brand names including SMART boards, Numonics, Promethean, Polyvision, Mimio, and eBeam (Wikia, 2011). Interactive whiteboards are an all-in-one tool that can do the job of several technological tools at once.

Interactive writing includes students participating through a “shared pen” approach (Wall, 2008, p. 149). The interactive process becomes a collaborative and shared approach for students. By repeating the procedures of interactive writing, research has shown students’ own writing becomes more complex and improved (Brotherton & Williams, 2002; Button, Johnson, & Furgeson, 1996; Craig, 2003; McCarrier et al., 1999). When incorporating writers’ workshop, the writing process,

interactive writing, and technology, students have the opportunity to learn their writing skills while learning how to utilize technology in the process. Digital whiteboards allow for incorporation of the internet with a hands-on approach (Solvie, 2004).

Individuals have different perspectives about whiteboards. Some people feel that interactive whiteboards lead to a redefinition of literacy where these resources are “hailed as a revolutionary resource for raising pupils’ literacy levels and their motivation” (Le Breuilly, 2004, p. 25). Other questions arise whether it is the board that is interactive and/or does the use of the board encourage an interactive style of teaching where the teacher must produce the interactivity for the students to partake in, like any other activity? (Shenton and Pagett, 2007). According to Pamela L. Solvie (2004), there exists a need as a teacher “to be cognizant of the need to vary activities, use authentic reading and writing materials and experiences, and incorporate movement and change of location” (p. 487). By allowing for the manipulation of aspects of a lesson, students can begin to take charge in their learning while transforming them into more proficient readers and writers. Bush, Priest, and Coe, et al. (2004) find that boards make teaching more visual and learning more interactive, which produces students who participate more and are more motivated and concentrated on their tasks.

### **Educational Impact of SMART Boards for Students**

The impact of these technological tools is becoming more and more addressed. As more schools and professionals integrate SMART boards into their

teaching techniques, researchers strive for answers. A current concern for schools and educators alike is bridging the gap between how students experience literacy in school versus when they are at home (O'Brien and Scharber, 2008). It is one thing to want to teach students with effective practices and it is a completely different thing to bridge the new with the old ways of learning. If we can close the gap between types of activities and how well they engage students, we can "gradually transform how youth express ideas and learn in schools using new emerging literacy tools" (O'Brien and Scharber, 2008, p. 67).

According to Loschert (2004), before a district can consider getting a SMART board into a classroom, it is vital to understand that schools need to have access to computers. In 2005, nearly 100 percent of public schools in the United States had access to the Internet, as compared with 35 percent in 1994 (National Center for Education Statistics, 2011). Unfortunately, that does not mean every classroom in the United States has computers. Based on costs, availability, and need, SMART boards may be viewed as more necessary or sought-after in one classroom as compared to another. Public schools have made consistent advancement in escalating the amount of Internet access in instructional rooms. Still, because not 100 percent of classrooms have this type of technology, its significance is much more important in some classrooms as compared to others.

Research is showing that the IWB appears to be an instrument that promotes engagement of learners. It appears to keep students focused and interested. Dessoff (2008) notes that "kids are really in with technology...it's in their mindset" (p. 51).

Interactive whiteboards allow for social learning in classrooms - providing an environment where students can interact and at the same time learn from others (Smith, et.al, 2005). Likewise, it is also a technology device that promotes student learning and the diverse developmental needs of children (Solvie, 2004, p. 487). According to Vygotsky (1978) and his belief of social learning, the teacher directs their students and leads the students to learning. Vygotsky's theory also relates to students working and discovering with other students along the way. Psychologist Albert Bandura (1977) states:

Learning would be exceedingly laborious, not to mention hazardous, if people had to rely solely on the effects of their own actions to inform them what to do. Fortunately, most human behavior is learned observationally through modeling: from observing others one forms an idea of how new behaviors are performed, and on later occasions this coded information serves as a guide for action. (p. 22)

Anderson and Balajthy (2009) believe that whiteboards encourage peer learning, differentiation of instruction, and scaffolding of instruction. Teachers typically differentiate when using regular printed materials, but when they go to use technology related equipment, there was inclination to step back and use technology without investigating and observing to see if it was suitable for their students' direct needs As Solvie (2008) found, by providing support to model and guide students as they use the white board, teachers can engage their students while also scaffolding their instruction to conform to their developmental needs.

## **Teachers' Perceptions and Related Studies**

Most teachers try to find new instructional strategies to attempt with more diverse demographics of students year after year. While presenting teachers with alternative teaching techniques and instructional methods, a big concern for educators and school personnel is getting the support they need to be the most successful with using technology with their up-to-the-minute, progressing students. In terms of support, teachers need intellectual, emotional, and material support in order to provide the best, most effective teaching using the tools (21<sup>st</sup>-Century Literacies). The task is not always easy. In fact, two thirds of teachers experience the feeling of unpreparedness and lack of training to use technology in the classroom (Barone and Wright, 2008).

In 1988, the Office of Technology (OTA) asserted, "Most teachers want to use technology, but few have found ways to exploit its full potential" (Moore-Hart, 2008, p. 177). Personal feelings about technology are unique. Recent research in this area has also found that technology integration across the curriculum is affecting teacher's instructional and pedagogical practices in the classroom (Liu and Szabo, 2009). Changing your way or taking the additional time to figure out the curriculum and the technology to use with it is tough. Leu, Kinzer, Coiro, and Cammack, 2004) relate this challenge: "Teachers will be challenged to thoughtfully guide students' learning within information environments that are richer and more complex than traditional print media, presenting richer and more complex learning opportunities for both themselves and their students" (p. 1599).



During a four-year research study, two-hundred seventy-five in-service teachers in a Midwestern university participated in a study. Using a questionnaire, teachers were asked their concerns regarding the innovation of technologies. A scale ranged from 0 (not true of me now) to 7 (very true of me). The seven stages were as followed: (1) Stage 0 – Awareness (e.g., ‘I am not concerned about the Internet.’); (2) Stage 1 – Informational (e.g., ‘I’d like to know more about the Internet.’); (3) Stage 2 – Personal (e.g., ‘How will the use of the Internet affect me?’); (4) Stage 3 – Management (e.g., ‘How much time do I need to get my materials ready when using the Internet?’); (5) Stage 4 – Consequence (e.g., ‘How will my use of the Internet affect my students’ learning?’); (6) Stage 5 – Collaboration (e.g., ‘I am concerned about relating my use of the Internet with other instructors.’); (7) Stage 6 –Refocusing (e.g., ‘I have some ideas about how something may work better.’). The results showed that teachers differed significantly regarding their level of using technology. Concerns were the greatest in Information, Personal, and Refocusing meaning teachers are concerned with their knowledge, how it will affect them and their classrooms, and their visions for how technology can work in their classrooms (Liu and Szabo, 2009).

Becoming more and more technological is not confined to older elementary or higher education students. “Over 80 percent of kindergarteners use computers, and over 50 percent of children under age nine use the internet” (Olson, 2007, p. 21). Therefore, teachers need to be aware of this knowledge and expose technology when appropriate and available to their students. As with any thing, students have differing

ranges of levels, proficiency and experience, but the fact that the current generation of students are more inclined to read online and use computer technology (Anderson and Balajthy, 2009). Research on technology and young children are leading to the implications rather than the need for it in such young classrooms. According to Douglas Clements (1998), professor of education at SUNY Buffalo, young children have revealed ease and confidence in using emerging software.

In a study of several primary classrooms in England (Shenton and Pagett (2007), the responses from teachers about interactive white boards in the classroom were distinct and yet similar in nature. One teacher said it had changed her teaching completely, “allowing me to experiment, to be creative’.” Most of the teachers, however, saw the IWB as an extra resource, although a powerful one, to support their teaching. “I’ve got a whole bank of resources now that I can use every year but improve every year,” one commented. Another described the ‘flexibility’ that the IWB afforded – “that’s a big thing for me, the ability to store things, work on ideas and come back to it.” Yet another commented on how the IWB had helped with classroom organization – “it’s enabled me to do more things so, for example, you might be having a lot more handouts and papers that might distract them (without the IWB) – fewer distractions.” One teacher recognized that it could lead to more “whole class, teacher-led lessons – the teacher teaching from the front using pre-prepared PowerPoint presentations” (p. 132).

A study was conducted to investigate teachers’ use and perceptions regarding the interactive whiteboard as an instructional tool, 30 teachers participated in a 67-

item survey. The respondents to the survey were familiar with whiteboards. Outcomes of the study signified a high degree of user satisfaction about using the interactive white board. Most responses indicated that the teachers could be creative, involve their students, and promote higher level thinking. 89 percent of 29 teacher claimed they ‘strongly like’ or ‘like’ the interactivity of the board while a combined 85 percent said that they enjoyed note-taking with the board. 100% of the surveyed individuals felt that their students responded positively to the board and had a successful first use. The negatives addressed were inadequate training. Overall, this whiteboard survey displayed a positive light about the device.

It is not all happiness for all teaching professionals. Many educators are frustrated and confused with how to integrate technology into an already loaded curriculum and schedule. As researcher Linda D. Labbo puts it, “many educators are grappling with how to effectively use computer technologies for literacy instruction because the goal for doing so is not clear” (p. 21). Questions arise about using technology over traditional print-based instruction, the internet, a full class day and current curricular resources that may stall the process (p. 21). Teachers are attempting to focus about today, in-the-moment events that are shaping their students. With the ever demanding state mandates and standards, that is a worthy goal. Still, teachers are also faced with the aspirations to prepare their students for the future- a feat both challenging and necessary. Balancing these two purposes can confuse a teacher into how to approach changing technologies. Is it more important to prepare your students for the future when the challenges are present today?

No matter what type of technology or quantity of tools a teacher has to work with, research suggests the important part is the teacher. Technology is “supplemental to classroom teaching by qualified teachers who really know how to look at student writing and respond to their kids about it” (Dessoiff, 2008, p. 53). A teacher uses what he or she has to work with in order to try to best meet the needs of their students. Writing is individualistic and teachers need to celebrate this and embrace it. The technology gives teachers a path in order to direct their instruction and match what their students need to what their technology can assist them with. Teachers have differing results when they use interactive whiteboards. In a study/survey of 85 teachers who were asked to teach two lessons to two classes - one with a white board and one without. Robert Marzano noted that 23 percent of the teachers reported higher test scores without the whiteboard, and some even accounted that lower scores resulted in using it. “It looks like whiteboards can be used in a way that can lull teachers into not using what we consider good instructional strategies” (McCrummen, 2010, p. 1). Clearly, like any instructional approach, the role of the teacher and his or her teaching skills and decisions may far out way any product that companies promote. While they can support this path, they are not the path itself. Teachers need to guide along the way if the benefits and capacities of technology can ever truly be reached.

Sadly, the way teachers are trained for instruction and their incoming knowledge differs. Cutler and Graham (2008), in a study of the knowledge of primary grade teachers, claim only “20% of the teachers in the survey said they were prepared

to teach writing when they entered the classroom” (p. 275). On the positive side, 72% said they concentrate on students’ processes, abilities, and skills. By keeping this in mind as they teach, the teachers state they “try to create classrooms in which students actually engage in writing, and when they do, their writing processes are dynamic” (p. 275).

### **Writing Instruction**

Writing is a complex process and research is supporting this. Writing ideas on paper and then writing a first draft and revising on paper can be hard work, drawn-out, and discouraging for kids (Dessoiff 2008). There are many “simultaneous processes engaged in by 21<sup>st</sup>- century writers” (Hanson and Kissel, 2011, p. 271). Such processes include using the writing process, considering their audience, using visuals, and searching for relevant content that will become the topic of their work (Hanson and Kissel). Writing instruction is more complex also because of the world we are placing our youth in. With a higher demand to meet the challenges of writing effectively for many purposes this is the time to really focus on writing to get students ahead of the game. Sometimes students have trouble getting their thoughts on paper. Using a social approach to learning, the teacher can support their learners in writing that they might not be able to generate independently (Read, 2010).

According to Sweeny (2010), “writing has taken on new importance and plays a prominent role in the way they [student] socialize, share information, and structure their communication” (p. 121). It appears that writing is becoming more important than ever given the nature it plays in daily living. The way we write is a strong

predictor in the “academic and/or job success, creates opportunities for civic participation, maintains relationships, and enhances critical thinking” (National Council of Teachers of English, 2008, p. 1). How we write reflects how we think and sometimes how we compose ourselves in speech. By reflecting high-quality writing, writers prove to others their skills and advantage in working with them. Writers need this direction at times though. With expectations that are more explicit, overt, clear, teachers are more likely to increase the likelihood that students will feel successful as writers of many genres and writing types (Read, 2010). Read also claims that “writing can be a solitary endeavor, but the process becomes less isolating when authors participate in writing communities” (2010, p. 125). By working as a team of writers, students can get feedback, suggestions, tips, and new ideas to bring to their own writing experiences.

It is no secret to school professionals that student writers are entering their classrooms with more diversity than ever. This diversity extends to “diverse needs and skills, including multiple languages, grammars, cultures, and extracurricular literacy practices” (National Council of Teachers of English, 2008, p. 1). With diverse learning styles and more demanding standards, writing should be of high importance. The challenge is to transform the writing lessons to meet the demands of these unique groups of students. Teachers need to ease the process carefully as to not overwhelm their students in incorporating both digital and traditional writing.

Some students struggle with what to write when they actually sit down and start to write. Topics need to be appropriate yet appeal to the interest of the writer.

According to Dyson (2008), children in a first-grade classroom were assigned the task of writing texts that has significance to them and mattered. When their teacher asked them to write narratives and even modeled it for them, the students still struggled with what to write about. It was after recess while using pine cones to act out war that they had heard about. The teacher eventually banned this type of writing. Dyson explains, the lack of freedom to create and write on a topic of interest “does not help children experience writing as a way to create texts that matter to them” (2008, p. 273). This is just one example of how students may view writing in school. For slightly older students, texting and social networking are ways for students to practice writing, but “most students do not recognize this type of communication as writing” (Sweeny, 2010, p. 124). All too often, these individuals see this type of writing at home and work as being disconnected from what they do in school. Fortunately, many of these students feel that “while technology can help them compose, edit, and present their ideas, it cannot improve the quality of the ideas themselves” (Lenhart, Arafeh, Smith, & Macgill, 2008, p. 10). New literacies are allowing students to now put their stamp on how their writing looks and even where it is viewed. According to Sweeny, “this changes the dynamic of writing from something that is done to receive a grade to place it in a social context where form, style, and understanding of audience take on increased importance” (p. 127).

While reading and mathematics are on the rise, especially in terms of No Child Left Behind (McCartney 2008), writing is also a major concern with regards to how students at all levels perform (Dessoff, 2008). NCLB has affected teacher morale

as well as the nature and amount of writing instruction, but school contexts figure into teachers' instruction. When it comes to the focus of instruction to meet the needs of students, teachers from high-income schools often feel more freedom to teach writing the way they want to since their schools consistently made adequate yearly progress, while teachers from lower-income schools often believe they have to follow the packaged programs to get their students to a respectable point (McCartney, 2008). For this reason, districts differ in how much instruction to writing they provide and value. With such differing approaches to instructional practices due to the effects of NCLB, schools across the country are taking writing instruction into their own hands. This may mean integrating reading and writing for a strong approach or putting it off in response to buckling down on the more sought after reading and writing.

Still, no matter how much writing a district chooses to use on a daily or weekly basis, many districts are still incorporating it into their curriculum and instructional decisions. More importantly, research shows that “digital technology enhances writing and interaction” (21<sup>st</sup>-Century Literacies, 2011, p. 2). It has been determined that “students who write with computers produce compositions of greater length and higher quality and are more engaged with and motivated towards writing than their peers” (21<sup>st</sup>- Century Literacies, p. 2). Levy (2002) claims teachers are not wasting time getting their own writing on the board. Instead, content and writing material is already on the board so the students can do comprehend or complete the work instead of the teacher taking up that time to write it all down too. This in turn leads to more of an active approach to learning.



New tools for writing and literacy have developed and materialized due to a changing social world which allows for communication of new ways (Coiro, Knobel, Lankshear, and Leu 2008). With writing tools such as computers, phones with texting, and projectors including SMART boards, the traditional act of teaching a skill and having the students write may not always be the best approach. Since students are becoming familiar with using new forms of technology outside of school, some educators believe that “they are bored writing on paper” (Dessoff, 2008, p. 51). This creates a challenge for teachers to make sure they are teaching to keep the students interested, engaged, and continuously growing as writers. Balancing traditional versus modern writing instruction can be difficult.

A big hurdle for teachers is how to fit more writing into an already tight schedule. Current studies reveal that the time that teachers and schools are dedicating to writing instruction has actually been on the decrease for over a decade (National Council of Teachers of English, 2008). In stark contrast, the needed time to be put into writing is completely the opposite. By promoting a good amount of time allocated to writing instruction and assessment, teachers are putting their students in a good path for facing a changing world for living and working. Sweeny (2010) believes that “by integrating new literacies into writing instruction, teachers can provide a bridge to emerging forms of writing and communication and make writing more meaningful and engaging for students in the digital era” (p. 121).

New approaches to writing instruction are evolving quickly. The internet, digital technologies, and computer-based programs are allowing writing to advance

past the traditional printed page that writing has looked like for years. This may even include mediums such as instant messaging, text messaging, computer typing, blogs and e-mails (Sweeny, 2010). There is clearly a rationale for using multiple forms of writing instructional practices. The stated media are readily available and used in our society so the question becomes 'should they be used in the classroom as well?' By providing more practical ideas for writing instruction, teachers can reduce the division that students face in and out of school with using and learning from technology (Sweeny, 2010). Teachers need to keep in mind a need for traditional writing which students must still be able to use on standardized tests and daily life activities.

### **SMART Boards and Writing**

Writing - a practice that has typically has always involved a writing utensil and paper. Now, in the 21<sup>st</sup> century, writing is entering new phases and products based on emerging technology in so many classrooms. The access to SMART boards is also becoming more significant. Loschert claims that "more than 100,000 classrooms in 65 countries use the technology [Smart boards]" (p. 30). Writing with many forms of technology is becoming more sought-after in school systems. More specifically, SMART boards are taking the place of traditional whiteboards and teaching methods. While technology and writing are often investigated, SMART boards are a multi-used tool that can provide multiple technologies in one device. SMART boards bring writing, the writing process, and interactive writing all into one. When students are working with the SMART board, teachers have the

opportunity to watch the manipulation of writing take place firsthand. According to McCrummen (2010), Smart boards are “usurping blackboards in classrooms across America” (p. 1).

SMART technologies claim that using the SMART board as a teaching tool is valuable to schooling in the United States (SMART Technologies, 2011). Through research over the course of recent years since SMART boards have been available to the public, SMART technologies promotes the implementation of the interactive white boards to contribute to student engagement, motivation, and success. As one of the leading interactive whiteboards available, schools are really targeting the funding to get these tools into their classrooms and school districts (SMART Technologies, 2011).

A new area that is being researched is SMART boards and writing. The SMART Board permits teachers to highlight actually show important concepts in visual form that students can see or do themselves (Solvie, 2004). Writing can be a tedious, tiresome task, but with the SMART board, sharing and processes can be demonstrated for the students. They can also be addressed by the students individually or with their peers. According to the research of Kristen Loschert (2004), SMART boards produce a setting where students are working together and manipulating text and ideas with a hands-on approach. The SMART board contains colored pens, highlighting tools, lined paper features, graphic organizer tools, and various fonts and presentation capabilities. Students get the opportunity to create their own creative writing while working on their writing skills and goals. Lessons can be

created, found via the internet, or purchased, but the teacher most importantly needs to choose activities and skills based on the students' needs. As Solvie (2004) suggests, "such activities help to create, meaningful links from activity to application and activity to other reading and writing tasks in literacy instruction" (p. 486). As for writing, the software reflects the writing process by providing templates, maps, graphs, clip art, and virtual tools including keyboards for typing. Sylvester and Greenidge (2009) advise that the extensive ways that students can participate in the writing process are causing people to think how they alternatively teach expression with writing.

Writing is also being based on how well teachers structure their time. In an age when more and more instructional time is getting filled with growing requirements, standardized testing and content material, writing instruction and the long process it entails can sometimes take the backburner. Teachers may feel the need to focus on the skills at hand instead of the complexity of throwing a piece of technology in the mix as well. If their essential composition skills are not mastered, why waste time having students learn and use technology? Writers' workshop and authentic writing experiences provide a simple, yet valuable way to attend to students' writing needs (Wall, 2008). Interactive writing cans be implemented and students can work independently and at their level to develop writing. Others feel teachers are completely capable of extending writers' potentials to "reflect the needs of students living and learning in a digital world" (Sylvester and Greenidge, 2009, p.

284). So, while technology may complex the situations, once the foundation is set, the learning can take off.

A study of sixth graders working with English Language Arts strands based on a novel study where technology was used was conducted. Students were requested to fill out a survey depicting their experience with using the SMART board. Generally, the students enjoyed using the technology and commented that the SMART board was “more motivating and allowed them to express themselves with greater variety” (Huck & Schmitz, 2010, p. 14). Their answers showed that they had a comfortable feeling with using multimedia. Educators truly need to help their students understand, communicate, and utilize both traditional and emerging forms of technology (Semali, 2001). Goals are important pieces of using the SMART board. Huck and Schmitz put it best: “instead of having a goal of handwriting a five-page essay, if the goal is to know how to learn what a five-page essay is and how to structure it, simply removing the medium from the goal allows for multiple methods of flexibility in delivery” (p. 19). Simply put, technology such as the SMART board can assist in teaching the set-up of writing while allowing students to go their own direction. With the use of the SMART board, there is more of a possibility that students will imagine “new ways to articulate their acquisition of literacy” (Fortuna, 2007, p. 18) and likely this includes their writing. These pieces of technology can transform how their work is represented and the writers make those choices (Fortuna). With the large financial investment that SMART boards require, schools often become wary as to if such investment will produce an even greater return in

student learning. On the other hand, Loschert (2004) claims, SMART boards are “a steal” (p. 31) considering the cost of other technologies that are dated and not often used. For a tool that has more than one purpose, it is a versatile technological device that is believed to be a worthy investment.

### **Conclusion**

A common theme across the literature is that schools are becoming continuously changing settings for teaching and learning. Additionally, students are gaining new knowledge day in and day out and more often these days; this includes how to use technology. Schools will remain educational locations where learning and gaining knowledge will always be present. This process of learning is complex and with a greater shift in technology, new technologies are changing how learning occurs. Interactive SMART boards are becoming one significant tool to accomplish the goal of reaching more modern aspects of technology. SMART boards have already been noted as devices that support student learning, peer learning, differentiated instruction, and scaffolding instruction. As more districts continue to providing their school and professionals with this type of learning device, SMART boards will produce even more interest and importance of supplementing SMART boards into the daily curriculum of more and more classrooms. Interactive SMART boards have generated engagement for students and excitement for teachers in creating more interactive and unique learning situations directly related to their students' needs.

The research on SMART boards continues to develop, grow, and expand how teachers perceive using technology and students explore during learning. As more data and research about SMART boards and related technologies is exposed to the public, the further understanding and significance these technological pieces will produce for others in the future. The more time and effort that is put into learning about SMART boards now, the more progress and success students can benefit from far into the future in and out of their school journey. Teachers have a duty to set their students up for success into the next year and beyond. In today's society, the more we set students up early, the further they will go into the future and truly find that success. As Fortuna (2007) shares, "SMART board interactive technology is the norm of tomorrow in a world where new literacies are commonplace" (p. 19). The advances of tomorrow are shaping their way today. Technologies' new literacies are making that happen and research is supporting this.

### **Chapter Three: Methods and Procedures**

As a long-term substitute teacher who was placed in a classroom with an interactive SMART board, I started to see the potential technology can play in my instruction. Specifically, I wondered how much I should include SMART boards in my instructional techniques. The objective of my study was to learn if the SMART board influenced student development of writing. The goals I investigated focused on how teachers' instructional time affects students' use of the SMART board, whether the SMART board affected student motivation to write, and if writing development progressed over the course of the six weeks. I tried to determine if this emerging form of technology, as compared to traditional writing techniques, was more meaningful to the modern day expectations of students. I further tried to understand what role the SMART board can play in these writing skills and what effect it can have on my students' writing development. During the course of this study, I observed and interviewed fellow teachers regarding how they used the SMART board during writing instruction and how they felt this aspect of technology influenced the learning of their students. I also collected data from interviews so my research was both of a qualitative and quantitative foundation in order to produce the most insight.

#### **Research Question**

During my study, I focused my attention on the following research question:

- What effect does fifth-grade students' use of interactive electronic white board have on their writing skills?



## **Research Environment and Participants**

The participants included nine students from my classroom in a K-6 school in western New York State with a population of 750 students. About 94% were Caucasian, 4% were African-American, 1% were Hispanic or Latino and 1% are Asian. Among classroom participants studied, three students were high-level, three were mid-level, and three were struggling writers who tended to struggle with several aspects of the writing process. The students were randomly selected according to academic abilities to ensure a variety of student levels for data collection and analysis reasons. The students all ranged between the ages of 10 and 11 years old. They were also all Caucasian decent. The students came from a range of economic backgrounds varying from lower class to upper middle class. I documented how their writing developed while using this technological, modern tool. It was my goal to understand how a SMART board played a role in student writing outcomes

The students participated in writing during a 30 minute block. The school's literacy program highlights writing formats and skills that the teacher should ideally try to use on a daily basis. Writing lessons can end up being enacted on the decisions of the classroom teacher about how the lessons are portrayed to the students and what direction to take. On several occasions, we did free (creative) writing where students used individual aspects of the writing process to try to complete pieces. Students enjoyed using the computers to type their final pieces. Most of the writing instruction does not occur with the help of the SMART board as other components of the literacy program do.

I asked for consent from students' parents and assent from the nine student participants. During my observation recording, I only collected data on my students if they granted consent/assent for me to do so.

The teachers I selected were not random but represent a purposeful selection described in the following paragraph. Of the teachers interviewed, three were females and one was male. The years of teaching experience ranged from four to twenty-two years. Three of the classrooms are general education and one was a special education consultant teacher in grades two, five, Kindergarten, and grade five Special Education. I chose this district because I wondered how the implementation of SMART boards impacts student learning and writing in the district where I work and spend the most of my time and energy. Additionally, I chose to research in this district due to convenience. To maintain confidentiality and privacy of all participants involved, I used pseudonyms of the students and teachers throughout the study.

Before the 2008 school year, SMART boards were rarely seen within the district. The teachers selected for this study all obtained SMART boards approximately three years ago. Each teacher submitted a grant request through our technology department to obtain the technology. The only requirement for acquiring the grant request was to demonstrate how the SMART board would benefit their classrooms and that they were interested in acquiring this kind of technology. Today, the school is finding ways to get a SMART board into every classroom even without appeal from the teacher. Administrators do not provide any conditions regarding how the SMART board is used or how often it is included in the learning of the students.

Still, the technology department staff inquires about teachers' usage of the SMART board and offers trainings and workshops to teach the features of the SMART board. Out of 40 classrooms and special education settings, 26 teachers have a SMART board in their classrooms. The teachers I worked with have had some SMART board training, but it has been limited.

Two of the teacher participants in my study only have had a professional connection to me while the other two participants had a personal connection. I have known one of the teachers for over 15 years, and she has been a family friend. Another teacher was a friend I met when I began subbing in the district. One of the teachers is in on my grade level team, and she was a teacher I substituted for when she went on maternity leave. Finally, I did not interact regularly with the male teacher who taught in a separate part of the building.

The thirty teachers who were asked to complete a survey all have classrooms with SMART boards. I requested that teachers return completed surveys. I was interested in how they view their technology device in their room and if they believed it has played any role into the literacy and, specifically, writing skills of their students.

### **Positionality of the Researcher**

I am a graduate student in the Childhood Literacy Program at The College at Brockport. I am currently pursuing my master's degree in childhood literacy and have one additional semester prior to completing my degree. I graduated from The College at Brockport and am New York State certified in Childhood Inclusive education in

grades K-6. I have four years of substitute teaching experience in grades Pre-K to 6<sup>th</sup> grade, involving all content areas. I have had three long-term placements at the 5<sup>th</sup> grade level so 5<sup>th</sup> grade literacy is very near and dear to my heart. My student teaching placements took place in a suburban school with SMART boards and other technologies and in a city school with very limited technologies and no access to a SMART board.

I teach in the same school and classroom in which my study was conducted. I have also had exposure to SMART boards in the past through other long-term substitute appointments. I have used the SMART board the least with writing, which is why my research study focuses on the interactive whiteboard and writing. The students in the study became my students in February of 2011. I learned about my students daily and felt I had a good idea about their academic levels and what they need as learners.

### **Time Schedule**

I started collecting the data in early May and continued for six weeks. I needed to consider the daily schedule in my classroom as well as the impending NYS testing schedule. I met with teachers for interviews on a one-time basis when it was most convenient for them.

### **Data Collection**

My data collection was conducted during 30 minute writing blocks, two times per week for a total of six weeks. I rotated the group of students I focused on each observation. The instruments consisted of a teacher interview, an observation record,

and a survey that were administered to all the teachers in the elementary school. The first data instrument was an observation record (Appendix A) which I used each time to observe a focal group. The observation record was utilized to document student behaviors in relation to specific areas of writing. It was an open-ended recording sheet designed to include all the differing behaviors and actions throughout the observation. I conducted a total of twelve observations- four for each sample group of students. Observations occurred during instructional and independent writing time. I collected an adequate amount of information to learn about my topic and to make sufficient recordings in that time frame. I created my own sheet that leaves room for any number of observations.

The second instrument I employed was a teacher interview (see Appendix B). The interview was designed to understand how the teacher feels about, uses, and understands the SMART board in his/her classroom. I wanted a better idea about how other teaching professionals use the same tool that I do and if they felt it is meaningful to their instruction and more importantly their students. The teachers have all had their SMART boards for approximately 3 years, but they all utilized it daily. For this reason, it interests me how other educators use the SMART board in literacy, but especially within the writing component of literacy. The teachers were willing to take part in this short interview that will last a total of 15 minutes each. The format remained consistent, but I did add a few questions to have teachers elaborate when needed. I did not observe any of the actual writing instruction going

on in any of their classrooms. All the teacher participants remained anonymous through the use of pseudonyms.

The third instrument I brought into my data compilation was a teacher and student survey. I surveyed my nine participants in the student survey, and all elementary teachers who currently had a SMART board for the teacher survey. I did not expect all the teachers to complete and return the survey, but I made a request. I provided a list of questions (Appendix C) that everyone will receive. The students had to provide assent and their parents had to provide consent. The questions in the survey varied from how often they use the SMART board to how they feel it helps them with their learning and their writing. The students were able to write their responses anonymously. It was my hope that these three differing instruments would provide for effective data collection using varying sources.

### **Data Analysis**

I chose to use the instruments of an interview and survey data to report on each teacher individually. Under each of their pseudonyms, I recorded the interview responses of each teacher. When I looked at and note their individual responses, my goal was to try to find ways to organize my data and common responses to how the SMART board influences their students, their instruction, and themselves as educators. I reviewed the four teachers' comments thoroughly and made a chart regarding their responses. The interview questions attempted to show how much of an interest and willingness they had for using the SMART board.

The observation records were analyzed by ability groups and then individually by the students in those groups. The evidence indicated what the students find engaging and how well their writing skills may have improved. I took a writing sample before the observations were conducted and a writing sample after for all nine students. I had to keep in mind the limited time of my study when analyzing the effectiveness of the SMART boards on student performance in writing. All three levels of students were analyzed for patterns, growth, and similar interests.

The teacher and student surveys consisted of similar questions, but the teacher survey additionally asked some questions from an instructional standpoint. As I had the participants share their comments, I compiled the data based on these comments and shared all the responses, including noting repeated reactions in an effort to determine commonalities among responses. My findings linked back to my original research question to provide the most insight to my topic.

### **Criteria for Trustworthiness**

First, my six-week study reflected my prolonged engagement with my research. I did my best to keep my personal connections out of any aspect of the research, process, or resulting thesis. My current understanding of my students did not interfere with providing a nonbiased study. My persistent observation of one hour a week for six weeks supported this. All my sources of data were reviewed together and compared including my setting, participants, and materials. These qualitative research practices provided valid research procedures.

## **Procedures of Study**

I conducted one initial observation of each student group while interacting with the SMART board during writing time. All three groups had similar tasks, which also included a pre and post study writing sample. The area of writing instruction was based on our writing goals for the week, but I altered this and applied the writing to the SMART board. I further conducted approximately a 15-minute interview with each teacher. The interviews were based on my questions about their use and feelings towards having the SMART board in their own classrooms. I analyzed my collected data to find similarities and differences into how the SMART board plays into their writing instruction and the outcomes for their own students. I conducted a survey of all the teachers with SMART boards in my school as well as the nine participating students who had the opportunity to experience the SMART board with their writing. All my students had similar opportunities, but I only documented my focal groups' data. I analyzed how the teachers and students felt the SMART board influences writing as a process. I based conclusions and recommendations on this data.

## **Limitations of Study**

Several limitations resulted as I conducted this study. The teachers were all from the same suburban school district with very similar demographics. Since the participants of this research represented only one school in Western New York State, I felt that the generalities in the data collection and analysis could be transferred to other settings, but it would be difficult based on considering only one setting.



I was also limited in the time I could spend interviewing each teacher. I had no time during my instructional day to actually observe them teaching with and having their students interact with the SMART boards for writing. The children they assign to use the SMART board may change daily or the extent of using the SMART board for writing purposes may change often.

My own limitations for the observation of my own students also existed. They were all similar in demographics. Even though they are of differing abilities, they were not significantly different. All my students had a pretty basic idea of the writing process and had experience using the SMART board. A sampling of completely different group of students may have produced slightly different results. My small number of students and my small number of group observations constricts my statistics. With a lack of data at times, my results may show limited findings or ability to extend results to other classrooms and districts that implement the exact same technology with the SMART board.

## **Summary**

My interest was to determine the effectiveness that an interactive whiteboard has on student writing. Through this study, I focused on the student response to the SMART board as well as the growth in their writing while answering my question: What effect does fifth-grade students' use of interactive electronic white board have on their writing skills? With a meaningful group of participants, six weeks of data was accumulated. Data for this research was collected through teacher interviews,

classroom observations, and anecdotal notes. While there were some limitations to my data and information, my research provided for an authentic study.

## **Chapter Four: Results and Findings**

The objective of my study was to learn if the SMART board actually influenced student development of writing. The main goals of my study were to determine how teachers' instructional time affects students' use of the SMART board, if the SMART board affected student motivation to write, and if writing development took place over time. The study was conducted to focus on whether the SMART board impacted the development of students' writing. My data collection occurred by means of student observations, teacher interviews, and teacher surveys. These data collection tools helped me to answer my research question:

What effect does fifth-grade students' use of interactive SMART boards have on their writing?

### **Part 1: Student Observations**

#### **Use of the white board.**

Over the course of a six week time frame, I observed three high-level, three mid-level, and three struggling students in twelve lessons. During each observation I was seated separately from my class, but in close range should they need any assistance. Table 1 illustrates common themes among observations.

Table 1  
*Most Common Trends of Observation of students*

Common Trends-Comments	(9) "This is fun."	(7) "I like this better than writing."	(5) "When is it time to switch?"	(5) "Let me help you."	(3) "How do you do this?"
Student Responses or Observations	(7) Writing improved	(8) Growth in application of skills	(9) Engagement of writing	(9) Peer learning	(8) Prefer SMART board over traditional writing practices

**Note.** The numeral in parentheses shows number of students, of a total of nine, represented by the comment.

To verify change in my students' writing, I asked them to write what they had done over the weekend at the beginning of the study and repeated the assignment at the end of the study. I analyzed the samples for the differences after the observations of my nine students. The high-level students' strengths were organization, word choice, and conventions. The mid-level students' strengths were organization and word choice and the struggling students' strengths were restating response questions and conventions. Overall, the biggest weaknesses of the entire nine students were generating ideas, writing a conclusion, and grammar. The length of their writing was

quite short, and several of the students commented, “I don’t know what to write about today.” This often occurs at the beginning of the writing process, but it extends to the rest of the process depending on the writing task. All nine students shared similar weaknesses of prewriting, drafting and revising. One of my struggling students, Rachel, could restate the question but could not determine what to write next. When asked to read through her writing due to fragments and incomplete thoughts, she could not fix her writing and left it as is. For one of my mid-level students, Eric and my high-level student, Seth, seeing problems in their writing was less of a problem but still noticeable to me. All three of my high-level students usually earned a proficient score for graded pieces, yet they could have added a little more detail at times. I always provided a graphic organizer to all my students due to their lack of prewriting skills. All the students typically lacked adding sufficient detail to support their writing also as evident from their initial writing samples.

### **Motivation.**

I found many similarities during my twelve lessons/observations. Of all nine writers participating over the course of my observations, my students were mostly motivated to work on writing. As shown by Table 2, nine of nine students were engaged during writing time, and eight of nine preferred the SMART board to traditional writing. Through my observations, it was evident that students were engaged in the writing task since time on task was not wasted and viewed by all students as valuable. I recorded three comments from all three ability levels I was

watching. One of my high-level writers used comments such as “I know what to do” and “that was easy.” One of my mid writers was working on figuring out what he wanted to say to support the main idea. He had a great idea but struggled to find the perfect way to say it. John (pseudonym) said, “I think that’s it. It might sound better this way.” Finally, my struggling writers were excited to take part, but I could definitely see a gap as compared to the other six students. They required a lot more support from their peers, but I noted the extra help assisted the students. One student used the phrase “Oh, I see now,” when one of my high-level writers provided some assistance. The perseverance to write of my high-level and mid-level learners was evident.

During the total of twelve observations that I observed in my classroom, the students were mostly engaged, motivated, and responded well to use the SMART board even without me standing there and monitoring their usage. As Table 2 displays, nine of nine participants commented “This is fun” and nine of nine students learned through peer learning, which also contributed to their motivation. They enjoyed the time they got to work with their classmates and friends. The type of resources on the SMART board included templates, games, various methods, approaches and techniques, as well as writing topics that the students had to work with their groups to compose. Students did sorts, brainstorming, filled in graphic organizers, filled-in blank statements, and edited sentences. With different group sizes, presentations, activities, tasks, and friends, my students participated in a wide range of experiences to assist with writing. Their Smart board writing experiences

were more outside-the-box approaches and different from traditional writing process activities. They did not just grab a pencil and their writing notebooks and go write. I did not stand in the front of the room and present a mini-lesson. They enjoyed the tasks where they took control of the learning. I could tell based on their expressions and comments including during lesson six - "this is better than writing in our notebooks." Therefore, their stamina for time spent on writing was positively influenced with the SMART board as a resource.

I noticed some differences that took place between my high-level, mid-level, and struggling writers that affected their motivation. My high-level and mid-level writers took control and found the tasks uncomplicated for the most part. They especially thought that the editing tasks were "easy." My struggling writers looked to the others for assistance often, which seemed to contribute to their motivation to participate. One girl, my lowest writer, asked me if she could choose a friend to help her. I willingly agreed, and with the help, she was able to complete the job and appeared more stimulated to do so. My struggling writers were quite apprehensive of participating at times due to working in a group where they did not want to mess up as everyone watched. I think they felt the support but also the pressure to do group work so openly. Everyone was watching individual actions taken. The high-level and mid-level writers seemed to participate slightly more versus my lower writers. Nine of nine students were engaged and associated in peer learning. When I polled them at the end to see if they enjoyed the SMART board over writing workshop, 8 of 9 students raised their hands. The student who did not raise his hand came from my

high group. Seth likes to take control and sharing roles was sometimes challenging for him. This could have contributed to not raising his hand.

I found that it was definitely more of a duty to redirect the students with this piece of technology, as compared to regular instruction. Working in a small group and using tools or websites that they were not completely familiar with made me feel obligated to be available. In lesson twelve with the transitional words, the concept was more unfamiliar so my students were lacking direction. Students were asked to identify transitions and write sentences on the lined paper feature of the SMART board using several of the transitions as practice. I had to show them some specific examples and model what they would be doing. When they lacked knowledge about what was expected of them, I noticed they lacked attention which produced a lack of writing. For that lesson, I pulled up a YouTube video ([www.youtube.com](http://www.youtube.com), 2011) that explained about transitions and ways to use them. The authentic visuals and fun music appealed to my students as a fun way to learn a concept. They were very motivated to participate when they saw YouTube.

In lessons two and ten, I used more websites including [internet4classrooms.com](http://internet4classrooms.com) and <http://grammar.ccc.commnet.edu>. The websites were easy to display and the students liked the game-like atmosphere. Using websites that were pre-made with information was convenient, but I had to make sure they were grade-level appropriate for my students. The websites were easily available for single use on the computer or a SMART board which inspired my students to use the sites during independent



computer time. Once I got into the sixth lesson, I had a good idea about what the students could do by themselves and what types of lessons I needed to complete with them. I did notice some competition for using the board during very fun activities such as the parts of speech vortex. As I watched, the vortex appealed to the students and turn-taking took the backburner. I did step in to assist at this time, directing the students to take turns. The students responded well to this re-direction. By the end of my observations, my students were quite comfortable with using the SMART board. They were not stressed out or nervous about writing. I think I finally realized that, with SMART board instruction, proper initial instruction and stepping back produces the most motivation and stamina for students.

### **Writing Development.**

Prior to the first observation, I collected a writing sample from all my students to determine their current stages of writing development. The samples were obtained from an independent activity during guided reading time. At the end of my observations, I noted a lot of growth in my students. I compared a post writing sample to students' initial writing sample. I was quite pleased with their progress in such a short amount of time, but even more pleased at their stamina for writing. The SMART board kept them interested and excited to write for a longer period of time. Before these lessons with the SMART board, writing was something they were forced to do, but all the students are now motivated to participate based on their conversations and positive attitudes. When asked why they liked using the SMART board when writing, students commented that "It is not boring" and "We get to work

with our friends,” even though they were still mostly producing their own work. The students’ final writing sample looked better too based on comparisons from the first sample. There were clearer introductions, more substance, and better grammar. My high-level students remained pretty consistent as they already have overall proficient writing, but their ideas appeared to improve based on final samples. My mid-level writers progressed in conventions and grammar while my struggling writers advanced in conventions, grammar, and word choice.

I noted the SMART board played a significant role in how my students progressed in a short amount of time. I concluded eight of nine students grew in application of writing skills. The ninth student was my lowest writer who preferred to be inactive in the classroom, which I feel contributed to the results. Since not nearly all the students could use the SMART board at once, I supplemented writing for the students not using the board with additional writing activities that positively influenced their writing as well. These activities were writing task-based in hopes that they would be applying the skills from the SMART board.

Throughout the data collection process and my data analysis, all the student participants verified the effectiveness of the SMART board. I noticed a few common trends with my students as I observed them. First, the students showed me that the SMART board can be used with writing. Their learning and improvement of skills were slightly significant to the pre-research writing samples I took. I concluded that 7 of 9 students had improved writing while 8 of 9 had a growth in the application of

skills. While a six week research time length was short and did not produce overly considerable results, the study's findings indicate students' use of technology and teachers' alternative forms of writing instruction may have caused improvement in some of the grammatical skills of my students as well as showing my students additional topics to write about. Their length of writing improved and word choice was more advanced. They replaced words like *good* and *fun* with words like *excellent*, *superior*, *pleasant*, *amusing*, *entertaining*, and *pleasurable*. Thus, the SMART board seemed to play a role in the writing skills and current outcomes in their how they approach their writing based on their expressions and analysis of writing samples.

It was obvious to me that many of my students grew in how they applied the skills they were learning to their own writing. The motivation and peer learning, which made an influence on their writing development in a short amount of time, were the most clear to me which made an influence on their writing development in a short amount of time. My students developed a lot more in their writing by sharing with others and learning from each other. The students shared similar questions and comments in my opinion because they can all really relate to the SMART board. They were learning the skills and applying them in typical writing in the end.

## **Part 2: Teacher Interviews**

My interviews were with four elementary teachers who each had a SMART board in their classroom and who have had at least 3 years of experience incorporating this technology into instruction.

### **Amanda.**

Amanda was a teacher on the same fifth- grade level team as me. Amanda has taught fifth-grade for six years. She was also a math teacher prior to teaching fifth-grade. She has had a SMART board for three years and has had training at least twice a year over the course of those three years. At one point, I was a long-term substitute in Amanda's classroom during a maternity leave. Amanda was the first teacher I chose to interview because she uses the SMART board in her classroom extensively. I was also curious to see how her teaching and student learning compared to mine because we are so similar in teaching styles. She has great creativity and brings a lot of ideas regarding integrating her SMART board into her instructional approaches. Amanda creates interactive charts, games, and uses interactive websites based on instructional manuals.

Amanda described a typical writing SMART board interaction experience for her students. She uses it predominately for Math, Language Arts, and for spelling activities such as word sorts and charts but she self-creates a majority of her writing slides and activities. Amanda likes that she can demonstrate with the SMART board and that it is a focal point in the room. While the SMART board plays a role in her

writing block, Amanda said she uses the overhead projector far more than the SMART board for writing instruction. Based on the fact that the writing curriculum is on transparencies and is whole-group based, she prefers the overhead to teach the writing material that is required. To balance this, she allows the students to use the SMART board during small group and Language Arts time where skills that support their writing are often addressed. According to Amanda, “even while not using the SMART board during writing time, my students still get effective instruction of writing while associating with the SMART board. I provide many of my graphic organizers on the SMART board, but the students of course also have writing materials for accountability purposes.” She also puts the writing process steps on the SMART board individually during different weeks to meet the theme of the literacy study that week. Students get the opportunity to see the effectiveness of the process and examples she provides.

According to Amanda, the SMART board has several advantages and a few drawbacks for writing instruction with her fifth- graders. According to Amanda, the main advantage was that she could model a skill very easily so everyone could see. She referred to it as “an interactive, creative way to teach not only writing, but all other content areas.” Amanda also enjoyed that the students could see how other students composed sentences and organized their ideas. She stated that “my only dislike is that only one person can really write on the board at a time. So, time is limited but also classroom management is at risk. Still, since my students are focused on SMART board, it is not as challenging as it sounds.” Because the screen is

dependent on one user at a time, Amanda was accurate to note that only one student can touch the screen and use the markers while the board is in use. She uses it predominantly for note taking, modeling, and manipulation of objects. She depends on it 80-90% of her instructional day. While using the device makes it “so worth creating and saving lessons,” Amanda shares that “it is a lot of work to get there.”

Amanda said the pros definitely outweigh the negatives. She stated “I love the SMART board and cannot imagine my instruction without. When it broke for a short time this year, I was really lost. It really makes a difference in how I teach and how my students learn.” The use of the SMART board is something she has incorporated more into her teaching of writing this year. She believes “this technology allows my students to see the entire writing process, follow along, and yet participate along the way. It changes the way I approach teaching writing and my students are becoming better writers, I feel, because of this. Even direct modeling is all it takes to provide the clear instruction my students need.” The SMART board plays a big impact on Amanda’s instructional time, including writing, which she feels “positively affects my students.”

**Sherry.**

Sherry is a fifth-grade special education teacher who is also on my grade-level team. Sherry is the teacher who has had a SMART board the least amount of time of my four interviewees. I have known Sherry for many years, and she has been a family friend for several years. She has been a teacher at my school for 22 years. She

often has trouble with the SMART board, so her responses were of interest to me. During instruction, “especially writing,” she has had issues with the sound, getting a SMART board tool to work properly, and having the board freeze up. Sherry felt, as a special education teacher, that “SMART boards are fun, engaging tools when they actually work.” Sherry’s board tends to stop working when she needs it the most, and then she must come up with a back-up plan quickly with her special education group of students who already get easily distracted. Sherry commented that the SMART board is a motivating writing tool that allows everyone to participate. Sherry said “A SMART board, as well as any technology, does not replace good teaching.”

In terms of writing, Sherry stated she very rarely will use the SMART board for writing because “it is hard to write effectively on the board when it shifts where you are writing. Then, you need to stop and align it.” Sites she uses do not always work as well resulting in the need for a plan B when something does not work properly. When teaching writing, Sherry says traditional writing works best for her students. If anything, she will use the SMART board as “a blank screen to write on like a projector because I do not have a chalkboard anymore.” She still prefers pencil and paper writing, though. Sherry is a believer that the SMART board could be a useful tool to her and so many others if the proper training and technical issues were addressed.

**Pete.**

Pete is a second-grade teacher and one of the only male teachers in my school with a SMART board. He has been teaching for five years. I interviewed him because I thought I would get two important perspectives from him. First, I was curious to learn how a male might approach this type of technology. Second, I was interested to learn how the SMART board works in a classroom setting with younger students. Pete uses the SMART board every day mostly for whole group English Language Arts, Writing, and Math instruction. While describing a period of SMART board interaction in his classroom, Pete shared that “there is total interaction. My students get to use the SMART board and take part in the learning.” Pete was a supporter that the SMART board “appeals to multiple intelligences and you can monitor and adjust as needed to promote differentiation in your classroom.”

Pete promoted the SMART board for being a piece of technology.

It replaces several pieces of technology into one engaging piece. Before, you had to get a video player, television, easel, projector, and computer. Now we just go to one device and use it for multiple purposes. My students with special needs get the opportunity to focus them and incorporate many of their learning styles at once. Everyone participates and my high-level and mid-level students assist my struggling students that need a little extra support.

He is a big supporter of the gradual release of responsibility that many of his students, of all needs and levels, need to start developing. Pete concluded that the best



thing about the SMART board is that “the students can see a split screen incorporating many pieces of the writing process at once.” Pete means that while students are looking at one writing piece on the screen, he can also project a completely different screen at the same time. Pete’s only con was that “you need to go Old School and a Plan B if something should go wrong because you learn to depend on it.” He has had problems like this before and his class this year was not patient. The students’ impatience disrupted his classroom management as he was “trying desperately to get the thing back on track before total chaos ensued.” He ended up just going back to the teacher’s manual and stated he had to “re-tool his mindset in how I was going to present the material to the students.” Even through frustrations, Pete is enjoying trying “something new and entertaining on behalf of my students.” The SMART board plays a crucial impact on his instructional time and his students’ use of the SMART board.

**Lauren.**

Lauren is a kindergarten teacher. This is her fourth year teaching, but only her second year teaching kindergarten. Lauren is the most recent addition to the staff of the four individuals interviewed. She has had access to a SMART board for two years, but had exposure to it for an additional year while serving as an Academic Intervention Services (AIS) math teacher. I wanted to learn how the SMART board impacts the teaching and learning of such a young group of students so I chose kindergarten and Lauren as my interviewee. Lauren gave an insightful perspective

about students with less exposure and familiarity with the SMART board. In terms of writing, Lauren feels her students “stay focused” and they can visually see what is going on, directing their attention when writing. They enjoy moving things around and formatting the letters they have been learning all year long. According to Lauren, the SMART board is “a lot more exciting than pencil and paper.” Even though only one student can work at a time, they are still watching the process and learning, especially in anticipation of participating. While she uses paper for her students, she feels the SMART board “helps my students build sentences and skills to later apply to their writing.” This is evident to Lauren while the students write independently. Many of the skills covered on the SMART board appear in their writing. She uses the writing curriculum, yet finds clever ways to present it, including during calendar time when she asks one student a day to help her write a daily message to the class. By identifying spacing, capital letter, punctuation, and even high frequency words for word choice, her students receive integrated writing instruction in a short amount of time. Lauren stated,

I do traditional writing with my kindergarten friends. Of course, they need it at their age. The SMART board is a different way of getting them to take in the basic skills and then apply it to their own writing. That is where I get to see my students use the skills they took from the SMART board and my other strategies such as posters, charts, easels, sentence building, and modeling. It makes for a nice balance of resources. I do not rely on solely on one over the other.

The SMART board plays a vital impact on her instructional time which guides her students along as they use the board even at a very young age.

Table 2

*Teacher Interview Responses*

1. How long have you had access to a SMART board in your classroom?	(0) Less than 1 year	(3) 1-1 ½ years	(0) 2-2 ½ years	(1) 3 years
2. What do you predominantly use your SMART board for?	(1) Reading	(1) Writing	(1) Content Areas	(1) Math
3. Describe a period of SMART board interaction in a classroom.	(0) Peer-learning	(2) Teacher-Led	(2) Interactive	(0) Student/Teacher Mix
4. When do you use the SMART board in your instruction?	(3) Beginning/Intro of the lesson to Model	(1) During lesson	(0) Wrap-up/ Conclusion	(0) The entire lesson
5. Describe how the SMART board influences your instruction with writing or your students' experiences with writing.	(1) Differentiation of Instruction	(3) Engaging and Motivating	(0) Unique way of modeling of Skills by Teacher	(4) Writing Skills
6. What are the advantages with using the SMART board for students?	(1) Fun and Engaging	(2) Multiple purposes to use it for included with premade lessons	(1) Interactive	(0) Using technology in the classroom
6. What are the disadvantages with using the SMART board for students?	(0) Takes too long to prepare lessons	(0) Disadvantage to other students who are waiting to use it or lack the chance.	(2) Does not always work when needed-need a "Plan B"	(2) Classroom Management
7. What is your role while students are using the SMART board?	(1) Participates with the student	(0) Student participates alone	(1) Assist often and lead the students during most of the lesson	(2) Guiding-Gradual Release of Responsibility
8a. How often do you include the SMART board in a literacy lesson?	(1) At least once a day during literacy	(0) Once a week	(2) Every literacy lesson	(1) Never

8b. How often do you include the SMART board in a writing lesson?	(0) Once a day	(0) Once a week	(3) Every writing lesson	(1) Never
9. In what ways does writing while associating with the SMART board impact student's development?	(0) Demonstrates whole writing process	(0) Provides modeling	(2) Motivation to write	(2) Provides for scaffolding and gradual release of responsibility
10. What does the use of the SMART board look like for students with special needs?	(0) Differentiation	(1) Visuals	(2) Creative Interaction for motivation	(1) Assists multiple intelligences
11. In what ways does writing instruction (with the SMART board) run in your classroom?	(3) Mini-lessons/ Modeling	(0) Introduction of new skills	(0) Example of writing	(1) Students use during writing
11a. How does the teacher monitor student use of the SMART board closely?	(1) Modeling	(2) Drawing their attention	(0) Participation	(1) Specific tasks
11b. How and when is there modeling and prompting?	(0) All the time-during all lessons	(3) Often-during most lessons	(1) Sometimes-during some lessons	(0) Rarely- not during the lessons
11c. What other teaching techniques do you implement during this time?	(1) Easel or Pocket Charts	(1) Worksheets or Workbooks	(1) Dry Erase board or Chalk board	(1) Other forms of technology-ELMO, projectors, computers, etc.
12. What kinds of changes have you seen in students in the past as compared with the current students in your classroom with interacting with technology such as the SMART board?	(4) Outstanding Progress	(0) Great Progress	(0) Fair Progress	(0) No Progress
13. In what ways do you feel the SMART board positively influences your teaching and instructional techniques?	(1) More sharing of resources	(1) Meet the Students' levels	(0) Collaboration/ Peer learning for Students	(2) Students are more focused
14. In what ways do you struggle with using the SMART board?	(1) Technical Problems	(1) Time to create/prepare lessons	(1) Releasing power to the students	(1) Lack of Training
15. Explain how the SMART board impacts your teaching and student learning of the writing process.	(3) Use it to teach the entire process	(0) Show student samples	(0) Modeling	(1) Using during many content areas to reinforce writing

**Note.** The numeral in parentheses shows number of teachers, of a total of four, represented by their answers.

**SMART boards impact teachers' instructional time which affects students' use of board.**

All four respondents shared some similar replies to several of my questions as I inquired about the role of the SMART board in their classrooms and how it affects their students' daily use of the technology. The four interviewees all shared a need to do modeling and mini-lessons with their students during writing instructional time, leading to more direction and eventual independence. Seventy-five percent of participants felt that the SMART board positively promoted learning and especially literacy and writing in their classrooms. Teachers Amanda and Sherry felt that writing was especially influenced because SMART boards created more engagement and motivation to write where before many of their students lacked the confidence and aspiration to sit down and write. Pete and Lauren felt the SMART board provided scaffolding and gradual release of responsibility. Seventy-five percent of the teachers interviewed use the SMART board to teach the writing process. They feel their students' writing abilities benefit from use of the SMART board. All four teachers said that, when they used the SMART board, modeling and scaffolding led to better results with the board because of the time they used before and during instruction as needed.

Three of four participants said that the engaging and motivating factor definitely helped develop their students' writing. The interviewed teachers shared common thoughts regarding disadvantages of the board. Teachers needing a "Plan B"

and classroom management were universal for the teachers. While everyone had different writing techniques such as easels, charts, workbooks, regular white boards, and other forms of technology that they implement during writing time, they all mentioned they incorporate the SMART board. Sherry said she does not often use it for writing with her students, but the skills she addresses fall in at other times of the day or when she needs to cover them in a lesson. While their alternative techniques, mentioned earlier, to the SMART board differ, they all supplement their instruction and do not rely solely on the SMART board during any aspect of their days; most notably, they do not replace traditional writing practices. They balance writing with other teaching practices, leading to more variety and authentic writing for their students.

### **Part 3: Teacher Survey**

My teacher survey invited all teachers with SMART boards in my elementary school to provide feedback regarding the interactive whiteboards in their classrooms. Twenty-four of thirty teachers completed and returned the survey. Many of the teachers who took the survey seem to have similar outlooks about the SMART board. I noticed that their ways of using the SMART board differed slightly. Their ideas for students with special needs were unique, yet all twenty-four educators mentioned experiencing the SMART board with their students.

Table 3

*Teacher Survey Responses*

The SMART board is an effective teaching tool.	(20) Strongly agree	(4) Agree	(0) Disagree	(0) Strongly Disagree	(0) N/A
I replace some of my traditional teaching with the SMART board.	(17) Strongly agree	(6) Agree	(1) Disagree	(0) Strongly Disagree	(0) N/A
My students respond well using the SMART board.	(18) Strongly agree	(6) Agree	(0) Disagree	(0) Strongly Disagree	(0) N/A
I use the SMART board to teach writing and it appears to work well.	(16) Strongly agree	(4) Agree	(2) Disagree	(0) Strongly Disagree	(2) N/A
I include my students in teaching with the SMART board.	(13) Strongly agree	(11) Agree	(0) Disagree	(0) Strongly Disagree	(0) N/A
My students' writing has improved since using the SMART board.	(13) Strongly agree	(18) Agree	(2) Disagree	(0) Strongly Disagree	(3) N/A
The training I have received for using the SMART board has been adequate.	(5) Strongly agree	(8) Agree	(10) Disagree	(1) Strongly Disagree	(0) N/A
The SMART board helps me become a more effective teacher for the growing diversity of	(16) Strongly agree	(6) Agree	(2) Disagree	(0) Strongly Disagree	(0) N/A

students.					
The SMART board is more engaging for my students than traditional teaching methods. Note: (A few teachers wrote down why: more fun, time efficient, meets all learning styles, and levels, everyone can use it easily)	(21) Strongly agree	(3) Agree	(0) Disagree	(0) Strongly Disagree	(0) N/A
The SMART board makes an impact on the learning of my students.	(21) Strongly agree	(3) Agree	(0) Disagree	(0) Strongly Disagree	(0) N/A

**Note.** The numeral in parentheses shows number of teachers, of a total of twenty-four, represented by the comment.

### Use of white board

Each surveyed teacher (100%) answered that the SMART board makes an impact on the learning of their students so they use it to benefit their students. Thirteen strongly agreed and eleven agreed that they “include their students in teaching with the SMART board because they feel it promotes valuable learning opportunities.” All but one teacher reported the SMART board helped them “become a more effective teacher for the growing diversity of students.” These statistics demonstrate that the teachers mostly prefer to include their students when using the SMART board during instructional time.



### **Motivation.**

Surveyed teachers also felt their students are more motivated to write as compared to paper and pencil tasks. While 24 either agreed or strongly agreed “that the SMART board is more engaging for my students than traditional teaching methods.” Technology is big with students right now. A few teachers wrote down why their students are more motivated to write and practice skills on the SMART board: “more fun,” “time efficient,” “meets all learning styles and levels,” and “everyone can use it easily.” Twenty-four teachers said their students “respond well to the SMART board.” Twenty-four also agreed that they “include their students in teaching with the SMART board which may be a result for letting the students take control of their writing and learning.”

### **Writing Development.**

Quite significantly, about 80 percent of the staff said their “students’ writing has improved since using the SMART board.” All the teachers commented that the SMART board was “an effective teaching tool (100 percent).” A few teachers marked additional comments. One said “it is a great tool for showing writing samples” and “modeling effective writing.” One teacher also commented, “I like it and my kids’ writing is doing well but I value my teaching skills more. It is just another resource to teach writing effectively.” Those varieties of responses were evidence to me that the white board is a commendable resource to promote writing development of skills.

## **Limitations in Regard to Working with the SMART board**

The teachers I surveyed shared three limitations that they felt were interfering with their Smart board instruction. These were made as additional comments on my surveys. First, the piece of technology can lead to some distractions. Teachers commented on the “red button” that occasionally shows up, meaning that the machine needs to be unplugged, not touched for a bit or alignment is needed. Next, only one child can touch/ use the board at a time. Classroom and behavior management need to be addressed and students sometimes need to be reminded of their tasks while not coming up to use the SMART board. Supplemental activities need to be available because all the students cannot work on it at once. Overall, students I observed were engaged and on-task. The situation of keeping the students not using the board focused on an assignment while I knew they were interested in what was taking place with the board was a challenge. Finally, the SMART board is a relatively new tool in our school. The teachers were interested in more training opportunities. They said trainings do not cover the majority of questions they have or teaching options they could use with their students. One teacher wrote, “I feel there are great things available, but I teach myself a lot of it or discover it along the way. Using it to teach writing is the least of my concerns if I do not know where to go next with it in general.” If they cannot teach themselves, they just do not spend their valuable time trying to figure the ins and outs of the SMART board. Over one-third of surveyed teachers said their training has not been adequate. As I observed my students, I saw a lot of these limitations play out right in front of me. I could tell the distractions and

conflicts that arise when more than one student is stationed at the SMART board. In most cases, I did not interfere and my students worked through their problems, but I concluded that this took away from their time for learning and gaining more writing practice. While the SMART board appears to be a great resource, students need to be monitored to an extent as with any other instructional practice. The training and time devoted to the resource is more involved too. One teacher surveyed wrote, "I use it, but it is a lot of work to create what you want and also need your kids to learn."

### **Summary**

I learned valuable information from all four participants and the staff with SMART boards in my school. Their experiences with the SMART board, creative ideas, and clever tips such as word sorts, websites, and writing functions all contributed to my new knowledge. The four colleagues were pretty similar in their belief in the effectiveness of the SMART board as each of the teachers commented that the SMART board was a positive teaching and learning tool in their classroom, even Sherry who has struggled with the resource. Twenty-two of twenty-four teachers agreed or strongly agreed that the SMART board helps them be a more effective teacher for the diversity of their students. They noted that the SMART board made a difference not only in the literacy skills of their students, but especially in writing and getting the opportunity to present material very visually. All stated that while the SMART board was used for several activities and lessons, they did not feel that it overpowered their teaching. One hundred percent of participants said that if anything,

the SMART board opened up new possibilities and slightly improved their students' learning as compared to past years. The student observations validate my teacher responses of how SMART boards work and benefit student writing skills. They use the SMART board with that result in mind.

Throughout the data collection process, all participants offered opinions and actions with regard to the SMART board. By observing, interviewing, and collecting comments from all participants, I was able to draw significant conclusions and findings. First, I determined that teachers' instructional time affects students' use of the SMART board by offering sufficient experiences for their students to interact with the boards. Next, students are motivated to write with the board. Finally writing development and progress took place over time with my students. All data collecting reinforced the key components I considered: a strong impact of teachers' instructional time on student outcomes, constructive student motivation, and improvements in writing development. By offering independence yet classroom management and guidance, students used the SMART board resource effectively with their peers. The SMART board appears to be an effective literacy and writing resource that offers the practice of necessary skills in a motivating manner. While the SMART board should not be solely relied on as a resource, it is a fun, engaging and valuable tool that produces interest and enthusiasm for writing purposes.

## **Chapter Five: Conclusions and Recommendations**

In my study, the purpose was to learn if the SMART board actually influences learning, specifically, student development of writing. I also learned ways interactive SMART boards influence teacher instruction which can directly impact student writing. After analyzing my data, several conclusions resulted: the SMART board is a motivational and engaging tool for writing so teachers view SMART boards as positive tools that encourage student writing, the SMART board promotes student independence, and the SMART board enhances writing skills.

### **The SMART board as a Motivational and Engaging Writing Tool**

During my surveys, interviews, and observations, one idea was definitely evident to me. Interactive whiteboards are just that for writing- interactive and engaging. During my teacher surveys, I noticed statement nine- “the SMART board is more engaging for my students than traditional teaching methods, as 100 percent of participants answered either strongly agree (88%) or agree (12%).” A few participants wrote additional comments such as “my students enjoy using it either with me or without me sitting right there” and “They like working together and find it fun to learn with.” During observations in my own classroom, I rarely had to remind my students to get back on task, versus the typical writing assignment the rest of the students were working on at their seats. The activities with the SMART board during these observations engaged the students and also assisted students in their learning from peers which made the work motivating for the students. I could tell the students

were engaged and learning from each other because of their conversations, raising their hands, supporting comments, volunteering, gathering closely to the board and active participation. They were providing tips while they were not using the SMART board themselves. If a student took too long, their classmates let them know with comments such as, “I think it is my turn now” and “I only got to touch the board once.” The anticipation to use the board was quite evident based on these student comments. I did not need to monitor behaviors or participation for a majority of the time my students worked on the board. Since the SMART board was so motivating to participate with, the students expressed enthusiasm to complete writing skill activities. The SMART board definitely supports motivating students to write.

Many teachers are currently highly interested in this piece of technology. Their use of the SMART board during writing suggests that they value technology and the impact it has on their students’ writing levels. As research also illustrates, teachers are currently illustrating the need for opportunities to foster reading and writing in more diverse and participatory contexts (21<sup>st</sup>-Century Literacies, 2011). A common teacher perception is that the SMART board supports the writing skills of students so the students choose to use the board and are also motivated to use it. The teachers I interviewed showed me that while SMART boards take a lot of work, they can highly influence classroom environments for writing instruction and encourage students to write. During the teacher interviews, the teachers all commented that, compared to traditional methods, the SMART board played a significant role on student writing and also writing instruction. Pete shared that “it changes how you

teach writing and changes the way your students think and approach writing.” All the teachers I surveyed were asked if they used the SMART board to teach writing. Since out of 24 surveyed, 16 (67%) strongly agreed, 4 (17%) agreed, 2 (8%) disagreed, and for 2 (8%) it did not apply, I have concluded that SMART boards definitely influence teaching of writing for the teachers with SMART boards at my school. This is a result of allowing students to take part in the writing process, but in a unique way. They are practicing writing skills but it does not feel like work to them. The students’ positive reactions and how they choose to use the board influence the writing outcomes of students and the attitudes and practices of teachers.

The teacher interview participants commented that the SMART board was a tool they enjoyed because it was so interactive and promoted student learning related to writing. Amanda, the fifth-grade teacher, shared,

My SMART board has made a huge impact for my students, especially in terms of reading and writing activities. Over the years, I can see a change in how activities can keep their attention and promote learning at the same time. I rarely have to tell my students to get back on task. They find writing and learning the skills for writing far more enjoyable than just sitting still with a paper and pencil. It’s a nice way to teach the skills while allowing students to later apply the skills to their actual writing. Teachers play a significant part in guiding students on the right path to writing success with the SMART board.

These comments lead me conclude that a teacher's choice to use the SMART board leads to positive student behaviors during writing.

### **The SMART board Promotes Independence for Student Writers**

Pete, the second grade teacher, predominately uses the SMART board for writing instruction. One of his responses was,

This tool definitely gets my students trying new things independently while writing. I can keep their interest up by modifying the components I provide on the SMART board to accommodate needs in a non-limited, open way that allows them not to be completely dependent on me. Since the interactive white board is hands-on, interactive, visually-appealing, and allows for creative learning opportunities, students of differing needs are drawn to it.

Pete's comments display that that the SMART board supports developing student independence to write in an alternative way, freeing the teacher to work with students in small groups or independently. It is a resource that makes students want to use without the teacher taking all the control. BECTA (2003) noted that the boards "facilitate student participation through the ability to interact with materials on the board" (p. 1). My students showed me that the SMART board can be used with developing writing skills in an independent manner. SMART boards need to be used as interactive white boards to remain hands-on learning for students.



## **Enhancement of writing skills**

Students' writing is impacted by visually seeing the writing and manipulating items accordingly. My students enjoyed the games, applications, and website activities. Their handwriting was not perfect, but writing skills such as use of conventions and providing details improved based on writing samples. I can tell, based on my interviews and surveys, which this is the case for other students in my district as well. After completing my observations, one of my struggling writers, Mady, pulled me aside and said, "That was a lot of fun. I think my writing is better a little bit. It was fun trying something new." When I looked at writing samples from Rachel, another struggling writer, I noticed her writing contained more details, length, and usage of skills.

Technology is all about trying new things. The true result regarding SMART boards is still being determined, but by looking at current research and my own data, I feel the SMART board is on the verge of changing how students learn and definitely what they learn about writing. The SMART board is definitely an effective tool for teaching writing. As evident from observations and actual writing, my fifth- graders made great strides in a short period of time. As a supplement to traditional modes of instruction, the SMART board allowed for showing students how they could compose writing in a fun way, therefore leading to bringing those skills into their own writing pieces. I have taught similar lessons without the SMART board. For the most part, I have seen similar or more effective results based on the interactive white board versus

traditional methods. It addresses many skills and allows for interactive ways to practice these skills.

### **Recommendations for Integrating a SMART board in a classroom for writing**

After completing my observation, interviews, and surveys, I have made some recommendations for integrating a SMART board into a classroom for writing. These recommendations are based on the input of my participants, but also my direct observations of my students. I based my recommendations for integrating the SMART board around common ideas which involve traditional writing, back-up plans, supplemental activities, providing proper training, and effective writing instruction no matter what resources are implemented.

First, the SMART board should not replace traditional writing practices, especially the pencil and paper process. Many teachers, including me, employ several effective techniques for teaching. Just because one or more pieces of technology are introduced into a classroom, this should not mean formerly successful instructional strategies should be ignored or limited. Students still need to use traditional writing to grasp the idea of composing texts for when they may be in an environment without a SMART board one day (O'Brien and Scharber, 2008). A quality balance is needed, connecting technology and other instructional methods to classroom learning time. Writing composition is a skill that will always exist even if it involves a computer. Learning the skills with any resource is only one piece of the puzzle. Practicing skills traditionally through mini-lessons and teaching through the writing process is another important piece that cannot be replaced even if the instruction and practice involve

technology. Students still need general, traditional practice to just write. Technology is “supplemental to classroom teaching by qualified teachers who really know how to look at student writing and respond to their kids about it” (Dessoiff, 2008, p. 53).

Second, SMART boards need to be used carefully and teachers should keep in mind a back-up plan should something go wrong. All my teacher interview participants commented on times when something did not go correctly and they had to revert back to a manual or previous way the writing activity was done. It is tough for students to have to go back to another way of doing something when they have grown so accustomed to a more modern approach that appeals to them. While the students can easily listen to a mini-lesson, write in a writer’s journal, or practice traditional writing on their own, comfort levels and motivation to write may be affected. Second grade teacher, Pete, commented that “your mind set is completely different when something does not work properly.” Teachers can always go to another writing resource, but the sudden change alters what they had planned and how the students may respond. As Wepner and Tao (2002) suggested, “teachers need to be prepared for things not to work as expected. The “Plan B” phenomenon is very real when working with technology, and teachers need to know how to immediately shift gears when something goes awry technologically” (p. 649). Still, the interactive, fun activities cannot just be replaced as easily as in the past. Students living in today’s technology-filled world need more focus-driven activities that meet several different needs and appeal to their interests. Teachers cannot and should not ever rely on only a few resources. Educators need several options to provide to their students

just in case of a flaw in technology or any other resource. Simply relying on the SMART board is not enough, especially if a situation develops where the interactive white board cannot be in use. Relying on one resource, especially a technology-based one, may produce challenging situations for teachers.

Third, due to the fact that not all students can write at once, teachers should have supplemental writing activities readily available to students who are not using the SMART board during a particular lesson. Since my SMART board observations took place during writing time, I allowed students not using the interactive white board to do writing practice in their writing journals, practicing and applying the skills they were learning with the board. The SMART board was influencing good quality skills for my fifth- graders, but I had to consider if they were practicing these skills in their writing which they were! I feel this typical writing time was very significant to my results, but without supplemental work, time is wasted and the skills are not actually being applied to writing pieces. While not all students can use the board at once, they can be applying the skills they have learned by means of the SMART board and their prior knowledge.

Finally, in order to supply the correct instruction, teachers need to plan, be trained, and be prepared to provide useful writing instruction. Many of the teachers I surveyed and interviewed said they were lacking the proper training and support in general, especially regarding how the SMART board can be used for writing purposes. It is evident that this fact could be a drawback to what students get in terms

of practice with skills such as writing via the SMART board. Finding alternative resources and getting them on the board is time-consuming as well. Teachers can save materials for the future, but without the knowledge or additional time to do so, this can become a challenge. Providing traditional writer's workshop and allowing students to just write sometimes becomes the answer. The teachers I interviewed and/or surveyed provided lack of proper training and practice as a considerable drawback, but the interest in writing for their students was worth the struggles this problem presented them with.

### **Recommendations for Future Research**

As a result of my research and findings, I have suggested three recommendations for future research. My recommendations include increased research about the device, benefits of more SMART board training for educators, and determining actual effectiveness the SMART board has on writing. Each of these topics needs more attention and research to support using the SMART board more readily in school settings.

First, I discovered that because SMART boards are rather new to education settings, the research on its effectiveness is rather limited and biased because the existing research tends to originate from the companies producing and marketing interactive whiteboards. Future studies should definitely be conducted regarding this device, including multiple brands of interactive white boards. Future studies could add to the current, developing research that claims that digital whiteboards allow for

incorporation of the internet with a hands-on approach (Solvie, 2004). This research could be the difference between a school district choosing one piece of technology such as the SMART board over another piece of technology. McCrummen (2010) suggests that the money schools spend on instructional gizmos, gadgets, and instructional technological tools “isn't necessarily making things better, just different” (p. 1). The future research collected may lead researchers to conclude that SMART boards in classrooms make instruction more meaningful and hands-on for students. Future studies could possibly lead to the use of the SMART board in relation to other technology and how it compares to other forms of technology. Companies are producing a product they want to sell. Considering all the options presently available may lead to one choice over another.

Second, training for teachers as well as professional development to stay current on SMART board applications would then need to be considered as well. As mentioned previously, two thirds of teachers experience the feeling of unpreparedness and lack of training to use technology in the classroom (Barone and Wright, 2008). Interviewees in my study agreed in relation to use of the SMART board. Just having a tool may not be enough. Professional development that includes more information on classroom management, peer interaction, and learning would give teachers better understanding about ways interactive whiteboards are stimulating to students as they work together as well as ways to supervise the SMART board's use with or without teacher assistance. In a previous study, Shenton and Pagett (2007) conducted to investigate teacher perceptions regarding the interactive whiteboard as an

instructional tool, inadequate training was the only negative addressed. Teachers need to explore whether the benefits of SMART boards outweigh the challenges that a SMART board brings to the user. Clements (1998) maintained that, integrating technology into a school's curriculum ultimately "demands effort, time, commitment, and sometimes even a change in one's beliefs" (p. 5), which supports the claim that more of these ideas needs to be explored.

Finally, my research was conducted in a short amount of time. I would be highly interested to learn the extent that the SMART board really had on my students' writing and on writing in general. While the preliminary data looks significant, I think far more time and research needs to go into expanding this topic's data results. The role the use of a SMART board can have on student writing, as well as the SMART board's effect on students' literacy learning in general is still relatively unknown. Stephanie McCrummen, (2010), shares the comments of Larry Cuban in her article in the *Washington Post*, "There is hardly any research that will show clearly that any of these machines will improve academic achievement," said Cuban, education professor emeritus at Stanford University (p. 1). Other research claims that digital technology improves writing and interaction when used properly (21<sup>st</sup>-Century Literacies, 2011). Since research shows no conclusive finding, more research and time dedicated to uncovering these ideas would greatly benefit teachers and schools in getting the most out of the school day.

## **Implications for Current and Future Educators**

By studying the SMART board and its influence on student writing outcomes, I have now concluded a few implications. These implications relate to me, current educators, and future educators who may experience the SMART board in a classroom setting. These implications involve proper training for educators, thinking ahead before using the SMART board for writing purposes, and providing effective initial instruction prior to students' working independently.

Teachers definitely need to consider working with their school administrators to make sure all teachers are getting the proper training if these devices are being installed in their classrooms (Barone and Wright, 2008). This comment was the most common concern to having a SMART board that I determined from the teacher participants in this study. Consistent preparation, professional development, and guidance can positively influence students' needs as independent writers. This support for teachers would be valuable prior to implementing a SMART board in a classroom setting.

Overall, teachers need to think ahead before they use the SMART board in their classrooms for writing. The teachers surveyed shared that they love having a SMART board now, but it has taken time, energy, and work to get to that point. Teachers need to prepare themselves as well as their students in its use and what their responsibilities are as they use it - with or without the teacher using it. Teachers should also keep in mind the resources that are readily available to them via other



teachers, the Internet, or saving their resources over time. Even if they start small, the SMART board allows teachers to save materials to be used over and over again for years to come.

While working with the SMART board as an instructional tool, I observed that proper initial instruction and eventually having the teacher step back produces the most motivation and stamina for students. When using SMART boards with writing, the opportunities can be endless. Teachers should determine what works best for their students and keep everyone's goals in mind when determining how students will be expected to use the board independently. Whether with a SMART board or other instructional method, good teaching using the chosen technique is key to growth and success. The SMART board definitely can have a positive role in teaching students writing skills that will follow them into the future, but like any instruction, modeling and proper direction is essential. The direction and amount of guidance taken is up to the teacher to decide. To be interactive, students need support but also self-sufficiency to apply what they know how to do.

### **Final Thoughts**

In today's society, technology is becoming a popular option, but research on the academic gains in a classroom with an interactive whiteboard versus one without the device is still unknown. The SMART boards' impact is still questionable, yet is appealing to consider. Before investing the time to study these devices, school administrators and educators should consider the academic success in areas such as

writing that the SMART board may offer students. Teachers should do their own research in this area. No matter what, effective instruction is essential. As interviewee, Amanda, stated, “I value the SMART board greatly, but I value my efforts as a teacher even more. The SMART board, like many resources, supports my teaching and student learning.” My research question was answered: What effect does fifth-grade students’ use of interactive white boards have on their writing skills? I saw the positive impact that SMART boards have on student writing. The SMART board appears to be a resource that truly supports teaching and learning, but also persuades and motivates students to actually take part in their learning. Still, I am eager to see what more time and research on this topic would further confirm. I feel I got a taste of what interactive whiteboards can do for the academic success of students. The purpose of my study was fulfilled as I gained wonderful insight into how SMART boards can positively influence student writing based on my own students.

## References

- Anderson, R., Balajthy, E. (2009). Stories about struggling readers and technology. *The Reading Teacher*, 62 (6), 540-542.
- Bandura, A. (1977). *Social learning theory*. Englewood Cliffs, NJ: Prentice-Hall.
- Barone, D, & Wright, T. E. (2008). Literacy instruction with digital and media technologies. *Reading Teacher*, 62 (4), 292-303.
- BECTA. (2003). What the research says about interactive whiteboards. Retrieved March 2011, from [http://becta.org.uk/corporate/publications/documents/Research7\\_Whiteboards.pdf](http://becta.org.uk/corporate/publications/documents/Research7_Whiteboards.pdf)
- Brooks, S., & Byles, B. (2010). 5<sup>th</sup> Grade Writing Skills. Retrieved from [www.internetforclassrooms.com](http://www.internetforclassrooms.com)
- Brotherton, S., & Williams, C. (2002). Interactive writing instruction in the first grade Title I literacy program. *Journal of Reading Education*, 27(3), 8-19.
- Bush, N., Priest, J., & Coe, R., et al. (2004). An exploration of the use of ICT at the Millennium Primary School Greenwich.
- Button, K., Johnson, M. J., & Furguson, P. (1996). Interactive writing in a primary classroom. *The Reading Teacher*, 49(6), 446-455.
- Capital Community College Foundation. (2011). Repairing Run-On Sentences. Retrieved May 1, 2011, from [http://grammar.ccc.commnet.edu/grammar/quizzes/runons\\_quiz.htm](http://grammar.ccc.commnet.edu/grammar/quizzes/runons_quiz.htm)

- Clements, D. (1998). *Young Children and Technology*. Retrieved March 2011 from <http://eric.ed.gov/>
- Cogill, J. (2006). How is the interactive whiteboard being used in the primary school and how does it affect teachers and teaching? Retrieved April 2, 2011 from <http://www.virtuallearning.org.uk/whiteboards>
- Coiro, K., & Lankshear, L. (2008). *Handbook of research on new literacies*. New York: Routledge.
- Craig, S.A. (2003). The effects of an adapted interactive writing intervention on kindergarten children's phonological awareness, spelling, and early reading development. *Reading Research Quarterly*, 38(4), 438-440.
- Daccord, T. (2003). *Teaching History with Technology*. Retrieved on May 4, 2011, from [http://www.besthistorysites.net/teachwithtech/article\\_tech.html](http://www.besthistorysites.net/teachwithtech/article_tech.html)
- Davis, M. (2007). Whiteboards inc.: Interactive features fuel demand for modern chalkboards. *Education Week's Digital Directions*, 1, 24-25.
- Department of Education. Washington, DC. Office of Educational Technology. (2007). Retrieved May 2011 from <http://www2.ed.gov/about/offices/list/os/technology/index.html>
- Dessoiff, A. (2008). Righting the writing process. *District Administration*. 51- 53.
- Dyson, A. H. (2008). The pine cone wars: Studying writing in a community of children. *Language Arts*, 85 (4). 305-315.
- Education Place* (2011). Graphic organizers. Retrieved May 10, 2011 from [www.eduplace.com](http://www.eduplace.com)

- Flynt, E.S., & Brozo, W. (2010). Visual literacy and the content classroom: A question of now, not when. *The Reading Teacher*, 63(6), 526-528.
- Fortuna, C. (2007). Look! Johnny *can* read: Enhancing the literate lives through SMART board interactive whiteboard technology. *SMART Technologies*. 2-25.
- Gorder, L. (2008). A study of teacher perceptions of instructional technology integration in the classroom. *Delta Pi Epsilon Journal*, 50, 63-76.
- Griffith P., & Lynch-Brown, C. (2002). Owning technology. *The Reading Teacher* 55(7), 614-615.
- Hansen, J., & Kissel, B. (2011). K-12 students as writers. *Handbook of research on teaching the English language arts*, 39, 271-276.
- Hixon, E., Buckenmeyer, J. (2009). Revisiting technology integration in schools: Implications for professional development. *Computers in the Schools*, 26, 130-146.
- Huck, K., & Schmitz, D. (2010). Report on the use of the SMART board interactive whiteboard to enhance literacy in children with learning disabilities. *SMART Technologies*, 1-29.
- Internet World Stats (2010). Internet growth statistics. Retrieved February 19, 2011 from <http://www.internetworldstats.com/emarketing.htm>
- Izzo, M. V., Yurick, A., Nagaraja, H. N. (2010). Effects of a 21<sup>st</sup> century curriculum on students' information technology and transitions skills. *Career Development for Exceptional Individuals*, 33, 95-105.

- Jefferson County Schools*. (2011). Transition words. Retrieved June 4, 2011 from <http://jc/schools.net/write/transition.htm>.
- Kurt, S. (2010). Technology use in elementary education in Turkey: A case study. *New Horizons in Education*, 58, 65-76.
- Lavin, A., Korte, L., & Davies, T. L. (2010). The impact of classroom technology on student behavior. *Journal of Technology Research*, 2, 1 -13.
- Le Breuilly, M. (2004). Benefits of the interactive whiteboard. *Primary English Magazine*, 9.5, pp. 25–28.
- Lee, M. (2010). Interactive whiteboards and schooling: The context. *Technology, Pedagogy and Education*, 19, 133-44.
- Lenhart, A., Arafeh, S., Smith, A., & Macgill, A. R. (2008). *Writing, technology, and teens*. Washington, DC: Pew Internet & American Life Project.
- Leu, D.J., Jr., Kinzer, C.K., Coiro, J.L., & Cammack, D.W. (2004). Toward a theory of new literacies emerging from the Internet and other information and communication technologies. In R.B. Ruddell & N.J. Unrau (Eds.), *Theoretical models and processes of reading* (5th ed., pp. 1570–1613). Newark, DE: International Reading Association.
- Levy, P. (2002) Interactive whiteboards in learning and teaching in two Sheffield schools: A developmental study. Sheffield: Department of Informational Studies, University of Sheffield.
- Liu, Y., & Szabo, Z. (2009). Teachers' attitudes toward technology integration in schools: a four-year study. *Teachers & Teaching*, 15, 5-23.

- Loschert, K. (2004). Bye bye blackboards. *National Education Association*. 30-31.
- McCarrier, A., Pinnell, G. S., & Fountas, I. (1999). *Interactive writing: How language and literacy come together, K-2*. Portsmouth, NH: Heinmann.
- McCartney, S. J. (2008). The impact of no child left behind on teachers' writing instruction. *Written Communication*, (25), 462-505.
- McCrummen, S. (2010, July 11). Some educators question if whiteboards other high-tech tools raise achievement. *The Washington Post*. retrieved April 2011 from <http://www.washingtonpost.com/wpdyn/content/article/2010/06/10/AR2010061005522.html>
- Means, B. (2010). Technology and education change: Focus on student learning. *Journal of Research on Technology in Education*, 42, 285-307.
- Moore-Hart, M. (2008). Supporting teachers in their integration of technology in literacy. *Reading Horizons*, 48, 177-200.
- National Council of Teachers of English. (2008). Writing in a changing world. *Writing Now*. 1-8.
- National Center for Education Statistics. (2011). <http://nces.ed.gov/fastfacts/display.asp?id=46>
- National Science Foundation. (2002). <http://www.nsf.gov/statistics/seind02/c1/c1s8.htm>
- NCTE'S James R. Squire Office of Policy Research. 21<sup>st</sup> century literacies. (2011). *National Council of Teachers of English*, Retrieved June 5, 2011 from [www.ncte.org](http://www.ncte.org)

- No Author. (2005). Literacy teaching practice: Differentiation. *Australian Journal of Language & Literacy*, 28 (3), 225-235.
- O'Brian, D., & Scharber, C. (2008). Digital literacies. *Journal of Adolescent & Adult Literacy*, 52, 66-68.
- Olson, L. (2007). NAEP writing exams going digital in 2011. *Education Week*, 26(27): 23.
- Otterman, S. (2011, March 29). City schools, tech spending to rise despite cuts. *The New York Times*, 1.
- Promethean (2011). Interactive Whiteboard Solutions. Retrieved June 1, 2011 from <http://www.prometheanworld.com/>
- Read, S. (2010). A model for scaffolding writing instruction: IMSCI. *Reading Teacher*, 64(1), 47-52.
- School L website. (2011).
- Semali, L. (2001). Defining new literacies in curricular practice. *Teaching Every Student*. Retrieved May 2011 from <http://www.cast.org/teachingeverystudent/tools/>
- Sharma, P. & Hannafin, M. J. (2007). Scaffolding in technology-enhanced learning environments. *Interactive Learning Environments*. (15)1, 27-46
- Shenton, A., & Pagett, L. (2007). From 'bored' to screen: the use of the interactive whiteboard for literacy in six primary classrooms in England. *Literacy*, 41, 129-136.
- SMART technologies. (2011). Retrieved March 2011 from <http://smarttech.com/>



- Smartboards.com. (2011). Retrieved March 2011 from <http://www.smartboards.com/>
- Smith, H., Higgins, S., Wall, K., & Miller, J. (2005). Interactive whiteboards: Boon or bandwagon? A critical review of literature. *Journal of Computer Assisted Learning, 21*, 91-101.
- Solvie, P. (2004). The digital whiteboard: A tool in early literacy instruction.p.484-487. *International Reading Association*.
- Sweeney, S. M. (2010). Writing for the instant messaging and text messaging generation: Using new literacies to support writing instruction. *Journal of Adolescent and Adult Literacy, 54* (2), 121-130.
- Sylvester, R., & Greenidge, W. (2009). Digital storytelling: Extending the potential for struggling writers. *The Reading Teacher, 63* (4), 284-295.
- Torgerson, C., & Zhu, D. (2004). Evidence for the effectiveness of ICT on literacy learning. In R. Andrews (Ed.), *The impact of ICT on literacy education*. London: Routledge Falmer.
- U.S. Department of Education. (1997). *Investing in School Technology: Strategies to Meet the Funding Challenge*. <http://www2.ed.gov/pubs/techinvest/chap3.html>
- Vygotsky, L. S. (1978). *Mind in society: The development of higher psychological processes* (M.Cole, V. John-Steiner, S. Scribner, & E. Souberman, Eds. & Trans.). Cambridge, MA: Harvard University Press.
- Wall, H. (2008). Interactive writing beyond the primary grades. *The Reading Teacher, 62* (2), 149-152.

- Wepner, S., & Tao, L. (2002). From master teacher to master novice: Shifting responsibilities in technology-infused classrooms. *The Reading Teacher*, 55, 642-52.
- Wikia (2011). Interactive Whiteboards. Retrieved April 2011 from [http://schoolcomputing.wikia.com/wiki/Interactive\\_Whiteboards](http://schoolcomputing.wikia.com/wiki/Interactive_Whiteboards)
- Wikipedia. (2011). SMART board definition. Retrieved February 18, 2011 from [http://en.wikipedia.org/wiki/Smart\\_Board](http://en.wikipedia.org/wiki/Smart_Board)
- Wright, C. (2001). Children and technology: issues, challenges, and opportunities. *Childhood Education*, 78(1), 37-41.
- Wright, J. L. (1994). Listen to the children: Observing young children's discoveries with the microcomputer. In J.L. Wright & D.D. Shade (Ed.), *Young Children: Active learners in a technological age* (pp.3-17). Washington, D.C.: National Association for the Education of Young Children.
- YouTube. 2011. Swindler, C. Duncan, C. and Gibson, D. English 103 Grammar Presentation - Transitions and Modifiers. Retrieved June 2011 from [www.youtube.com](http://www.youtube.com)

Appendix A : Observational Notes Sheet

Observational Notes Sheet

Date: \_\_\_\_\_

Observations of Student Behaviors	Interpretations/Evidence/Explanations

## Appendix B: Individual Teacher Interview Guide

### Teacher Interview Questions

Participant: Job Title \_\_\_\_\_

#### Interview Questions:

1. How long have you had access to a SMART board in your classroom?
2. What do you predominantly use your SMART board for?
3. Describe a period of SMART board interaction in a classroom.
4. When do you use the SMART board in your instruction?
5. Describe how the SMART board influences your instruction with writing or your students' experiences with writing.
6. What are the advantages and disadvantages of using the SMART board for students?
7. What is your role while students are using the SMART board?
8. How often do you include the SMART board in a literacy lesson? In a writing lesson?
9. In what ways does writing while associating with the SMART board impact student's development?
10. What does the use of the SMART board look like for students with special needs?
11. In what ways does writing instruction (with the SMART board) run in your classroom?

- a. How does the teacher monitor students' use of the SMART board closely?
  - b. When and how is there modeling? Prompting?
  - c. What other teaching techniques do you implement during this time?
12. What kinds of changes have you seen in students in the past as compared with the current students in your classroom with interacting with technology such as the SMART board?
13. In what ways do you feel the SMART board positively influences your teaching and instructional techniques?
14. In what ways do you struggle with using the SMART board?
15. Explain how the SMART board impacts your teaching and student learning of the writing process.

### Appendix C: Teacher Survey

Survey Questions- I will invite all teachers in the elementary school with SMART boards in their classrooms to respond through the following survey.

Directions: Please fill in the bubble that describes how you feel about each statement.

<p>1. The SMART board is an effective teaching tool.</p> <p style="text-align: center;"> <input type="radio"/> Strongly Agree              <input type="radio"/> Agree              <input type="radio"/> Disagree              <input type="radio"/> Strongly disagree              <input type="radio"/> N/A         </p>
<p>2. I replace some of my traditional teaching with the SMART board.</p> <p style="text-align: center;"> <input type="radio"/> Strongly Agree              <input type="radio"/> Agree              <input type="radio"/> Disagree              <input type="radio"/> Strongly disagree              <input type="radio"/> N/A         </p>
<p>3. My students respond well when using the SMART board.</p> <p style="text-align: center;"> <input type="radio"/> Strongly Agree              <input type="radio"/> Agree              <input type="radio"/> Disagree              <input type="radio"/> Strongly disagree              <input type="radio"/> N/A         </p>
<p>4. I use the SMART board to teach writing and it appears to work well.</p> <p style="text-align: center;"> <input type="radio"/> Strongly Agree              <input type="radio"/> Agree              <input type="radio"/> Disagree              <input type="radio"/> Strongly disagree              <input type="radio"/> N/A         </p>
<p>5. I include my students in teaching with the SMART board.</p> <p style="text-align: center;"> <input type="radio"/> Strongly Agree              <input type="radio"/> Agree              <input type="radio"/> Disagree              <input type="radio"/> Strongly disagree              <input type="radio"/> N/A         </p>
<p>6. My students' writing has improved since using the SMART board.</p> <p style="text-align: center;"> <input type="radio"/> Strongly Agree              <input type="radio"/> Agree              <input type="radio"/> Disagree              <input type="radio"/> Strongly disagree              <input type="radio"/> N/A         </p>
<p>7. The training I have received for using the SMART board has been adequate.</p> <p style="text-align: center;"> <input type="radio"/> Strongly Agree              <input type="radio"/> Agree              <input type="radio"/> Disagree              <input type="radio"/> Strongly disagree              <input type="radio"/> N/A         </p>

8. The SMART board helps me become a more effective teacher for the growing diversity of students.

0 Strongly Agree    0 Agree    0 Disagree    0 Strongly disagree    0 N/A

9. The SMART board is more engaging for my students than traditional teaching methods.

0 Strongly Agree    0 Agree    0 Disagree    0 Strongly disagree    0 N/A

10. The SMART board makes an impact on the learning of my students.

0 Strongly Agree    0 Agree    0 Disagree    0 Strongly disagree    0 N/A