INTERACTIVE WHITEBOARDS IN THE CLASSROOM

by

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Interactive Whiteboards (IWB) are a relatively new technology in the classroom although they have been used as a business presentation tool since the early 1990s. By exploring the current literature around IWB use in classrooms and documenting my own learning experiences by keeping a detailed daily reflections log, I delve into how a teacher like me who was new to the technology could implement the use of an IWB into the daily literacy activities and routines in the context of a primary classroom. I initially considered the benefits and limitations as expressed in the literature that both informed and guided some of the choices I made with regards to installing and using an IWB in my grade two class. Documenting my learning journey in a daily reflection log rendered some worthwhile observations and insights about my own learning experience that may prove useful to new IWB users. Examining the professional development opportunities afforded for helping a new user of the IWB, at the district and school levels as well as online, emphasized the value of collaboration between teachers seeking to use the technology. It also revealed the lack of guidance for school districts implementing this technology in schools with regards to professional development programs for new teacher users although IWB use is quite widespread in places such as the United Kingdom and Australia. Classroom layout and management tips along with lesson plans and ideas for interactivity are also key considerations if teachers are to truly realize the potential for bettering student achievement by using an IWB. Teachers are constantly seeking for ways to improve their practice and help their students meet learning goals more effectively. IWBs are one way that may provide teachers with the means to bring some of the twenty-first century literacy skills to their classes, but they require a commitment to revamping pedagogy to use the technology in an educationally sound manner.
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This paper has been the culmination of a learning journey that I feel has resulted in some truly valuable professional and personal growth. By tackling the topic of examining the implementation of an Interactive Whiteboard in my classroom, I overcame my own phobic tendencies towards technology and my confidence in being able to learn technology-based skills has increased tremendously. I learned very practical ways in which Interactive Whiteboards can support my teaching. The positive outcome of this project would not have been possible without the help and support of multiple people along the way.

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Introduction

1. **Rationale: Technology is here to stay. ... Educator, educate thyself!**

I approached my Master’s degree, not necessarily with a clear vision of the topic I wanted to explore, but with a personal conviction that teachers, especially in today’s digital world, have a responsibility to be truly committed to this idea of life-long learning. Like other professions that need to stay abreast of the new developments in their field (medicine or law, for example), teachers do well to be dedicated to the ongoing professional development that will keep our practice current. With the growing push for education around twenty-first century skills and strategies on top of the more basic curricular expectations and the three R’s, I was interested in exploring how some of the current technology at my disposal could both enhance my teaching and benefit my students in a manageable way given my own limited technology skills. I feel that society’s demands of teachers in the education system is in a state of flux and the need to be teaching students how to successfully navigate the digital world while learning how to do it ourselves is vital. Being creative and developing critical thinking skills has never before been so vital to students and teachers alike. Finding tools that students can use to access their personal areas of interest will ensure a level of engagement and motivation that teachers often feel is missing in today’s learners.

Perhaps one of the reasons many teachers are reluctant to develop their ICT skills is due to a perception that teachers need to be the experts in the classroom. I do not believe I am alone in feeling trepidation when I am introduced to new technology. I have had nerve-wracking experiences where important documents or information disappeared with the click of a button, when computers froze at inopportune moments usually when I was feeling ill-equipped to trouble-shoot, or where programs were difficult to use because they were written by
programmers who do not understand what it is like to be technologically impaired and in an educational setting rather than a business setting. Like many who would be considered digital immigrants (Prensky, 2001), I have often felt at a distinct disadvantage when using technology in the classroom. It required a mind-shift for me to realize that I could no longer be the resident expert in my classroom, but more of a co-learner. My responsibility was to introduce students to the technology and then allow them the freedom to explore. Once I realized that being a learner in front of my class did not have a detrimental effect on my classroom management, I was able to begin to make the shift from the teacher-as-expert to teacher-as-facilitator or co-learner.

The purpose of this paper is to explore how an Interactive Whiteboard (IWB) has been integrated into the daily literacy routines and activities in my primary classroom. Looking at how this technology has transformed and could potentially transform my teaching practice, taking me beyond the more traditional means of teaching and learning, appeals to the learner within me. In the field of Language and Literacy Education, the emerging issues around digital literacies and how they impact our world as educators are undeniably interesting because there is a sense of untapped potential in this part of the field. Although there are other technologies that offer teachers ways to enhance their practice, the IWB has become increasingly popular for a variety of reasons. An IWB is basically a projector that hooks up to a laptop and an interactive, touch-sensitive screen – originally developed for business presentation, the IWB offers some promising alternatives to the limitations of traditional teaching tools. One of the most common brands of IWB (and the brand I currently have in my classroom) is the SmartBoard; SmartBoard is a company that has devoted a lot of resources to developing the technology from a business tool to one which is well-suited to the more specific needs of the classroom. Throughout this
paper, I will refer to Interactive Whiteboards as IWBs and I will use the term ICT to refer to Information and Computer Technology.

2. Depiction of a grade two classroom with an IWB

"We are very excited about what is happening in the Delta School District with respect to teaching and learning with technology," says Dale Saip, Board Chairperson. "We have a responsibility to equip our teachers and students with the tools and skills they require as our leaders of tomorrow and the Laptops for Learning initiative is a necessary part of the solution to support this direction." – excerpt from the district media release on December 10, 2009

The school district where I work is located in a suburban area about 30 minutes from a major Canadian city. It is a relatively small, conservative school district with gradually declining enrollment. In many ways, there seems to be a progressive attitude towards education although there is a predominantly conservative approach to most district needs with regards to budgets and spending. Under the guidance of the school board and the district administration, there has been a push to bring technology into schools. This recognition of the need to stay current with regards to the changes in society because of technological advances and the digital world of today’s students has been key in the district’s decision to invest quite heavily in both tools and professional development opportunities for staff. The above quote, an excerpt from a recent media release, expresses the stance of the district on this issue of technology and education. It has been backed up with action, and although it does not mean there will not be difficulties in making this vision a reality, these are not just empty words. Among the professional development initiatives supported by the district are Laptops for Learning (a series of workshops dedicated to teaching staff how to use both the software and hardware on district-provided laptops) and the Smartboard Cafes (ongoing sessions with teacher mentors guiding novice Smartboard users in using the technology and developing useful lessons). With budgets becoming increasingly tight and resources becoming more expensive, some would argue that
investing in technology is a waste of precious funds, but in my opinion it is actually an example of forward thinking.

The elementary school I work in has a population of approximately 390 students who come from varying socio-economic and ethnic backgrounds. There is a teaching staff of around 17 teachers, with one administrator and numerous education assistants and support staff. Our current administrator has progressive ideas around technology and is very supportive of the idea that teachers benefit from collaborating. In order to provide teachers with the tools and give opportunities for staff collaboration and learning, he has invested school funds in new technology and found creative ways to work formalized collaboration time into our packed school schedule. Whether or not teachers take the opportunity to collaborate around ways to implement technology in their classrooms is dependent on teacher interest and initiative. Several of our Staff Meetings and school-based Professional Development days have been devoted to helping teachers become more competent and confident with using technology in order to promote its implementation in classrooms. One of the school’s goals is centered on improving the performance of our boys’ literacy skills, particularly those considered to be in the academically at-risk category. I feel the move towards implementing more technology in the classroom could potentially benefit this group of students and aid the school in achieving this goal.

My classroom is one of two in our school that have an IWB mounted on a wall. Both the Learning Assistance teacher and the English as a Second Language teacher had Smartboards last year, but for a variety of reasons (many of which I also encountered to a degree) the ESL teacher was willing to offer her IWB to another staff member in the hopes that it would be utilized more frequently. One of the reasons I was selected from the group of interested staff members to have
the Smartboard is because I expressed a willingness to share my discoveries around using this tool with other staff members in a presentation at one of our professional development days. As will be discussed later in this paper, I have also worked collaboratively with the Learning Assistance teacher and with staff members from other schools to further our competence in addressing both Smartboard hardware issues and developing lessons using Notebook 10 software.

I teach in a fairly typical grade 2 classroom. There are 20 students enrolled in my class. I have been teaching for approximately 9 years and just this year returned to teaching primary after spending 3 years teaching grade 7 – so besides learning how to implement the use of an IWB, many of my usual teaching strategies have also undergone a shift this year as I am dealing with much younger students. I am currently teaching 4 days a week, with a teaching partner coming in on Wednesdays. As in many primary classrooms, there is a large carpeted area and the walls are devoted to word walls, number charts, bulletin board displays, and galleries showcasing student work. My class composition is also quite typical in that it reflects a broad range of skill levels across the subject areas – with some students receiving significant home support and others requiring additional support at school for basic literacy, numeracy, or social skills. When I questioned my class and their parents at the beginning of the school year in order to set up an online reading program, only 1 of the 20 students did not have ready access to a home computer and the Internet. My students have all had some exposure outside of school to the use of computers – a factor which probably contributed to their ability to quickly absorb instructions around using the Smartboard. Overall, I feel that use of the Smartboard in my classroom resulted in lessons that were effective in moving my students’ learning forward and it transformed my teaching in that, for a variety of reasons which will be further explained later in
this paper, it enhanced my ability to convey concepts to students more effectively than if I had used traditional tools such as the overhead projector or the chalkboard.

**Literature Review**

Although the research around IWBs in the Classroom is relatively sparse, more and more research is emerging that offers both suggestions and observations that are practical for teachers wishing to use this tool in their classroom. While reading through the most recent research involving the use of this technology, I found 3 recurring themes: (1) benefits and limitations, (2) teachers’ professional development and competence with IWBs and (3) suggestions for using the technology more effectively. For my project, I used my own personal reflections around the use of an IWB in my grade 2 classroom and my skill progression from beginner to more advanced IWB user, as well as the observations of other educators and researchers to build a better understanding of how to best make use of this promising technology. My focus from the outset has been to try to truly use the interactive aspect of the IWB, as I believe that is the feature that differentiates it from other available technologies.

1. **Benefits and limitations of an IWB in a classroom setting**

   a. **The Benefits**

      There are grand claims about the benefits of having an IWB in the classroom – but all of them are somewhat open to debate. Many proponents of this technology claim that IWBs increase engagement and motivation, make lessons flow more smoothly, and lead to gains in student achievement. Kennewell and Beauchamp (2007) assert that UK teachers felt the IWB is effective in gaining students’ attention, keeping their attention for longer, stimulating thinking and maintaining a focus on the subject matter rather than on the teacher or other students. The oversized visual display was suggested as the main factor in yielding these benefits (Kennewell
& Beauchamp, 2007). I would argue, however, that all of these benefits are very dependent on the competence of the teacher in terms of ICT skills and willingness to incorporate the technology thoughtfully into his or her practice. I have found plenty of observations in the research that concur with my own findings in my classroom.

In a study exploring the usefulness of IWBs in developing the communication skills of a group of 6 to 8 year old low-functioning autistic children who were integrated into regular classrooms, Shannon and Cunningham (2009) explained that the main draw for using an IWB was the potential “benefits of ‘untethered’ interaction” (p. 2) that this form of advanced technology affords. They felt using an IWB would be better able to address the needs of these students than other options they explored. Teachers are untethered in that they are able to be wandering among the students and more able to monitor students as they accomplish tasks rather than being tethered to the blackboard or the overhead projector and monitoring from a stationary position. If the lesson has been planned to incorporate the interactive capabilities of the IWB, teachers are able to direct students to use the IWB as they help those who are struggling.

The ability to present material in a visually appealing way with relative ease and to create lessons that incorporate immediate feedback or reinforcement are definitely further benefits of the IWB. Marzano (2009) notes that this feature contributes to an increase in student engagement because teachers can quickly access excellent graphics and visuals such as downloaded pictures and video clips from the Internet or Google Earth, and graphs and charts to aid in presenting information. He also mentions that another positive feature is the ability to use audible signals like virtual applause that reinforce correct answers while dragging and dropping correct answers in a specific location on a T-chart, Venn diagram, Vortex or some other graphic organizer.
A particularly useful feature of IWBs is the ability to incorporate material developed in other programs such as MS Word, Excel, or PowerPoint into lessons and to work within those programs collaboratively with students. This is echoed by Zevenbergen and Lerman (2008) who state: “Projecting PowerPoint work or other resources sets up fast-paced lessons and greater control of pupils’ behavior” (p. 121). Beauchamp and Parkinson (2005) point out another advantage of using the IWB - “at the end of the activity, teachers can either save the results for future lessons, reveal the correct solution on the next page of the presentation, print the results or just scrap everything and be left with the starting page for future use. Try working out how to do this using a blackboard or an overhead projector and you will begin to see the potential of the IWB even used at its most basic level of functionality” (p. 99). There is little doubt that “traditional classroom media – the ordinary black/whiteboard, the textbook, the worksheet, the blank piece of paper ... are more limited in their affordances and much less flexible in their constraints than new digital media” (Kennewell & Beauchamp, 2007, p. 240). This flexibility allows for the teacher to alter his or her lesson to follow both the needs and interests of the class.

In a two year study of 10 elementary classrooms using IWBs in the UK (Lewin, Somekh, & Steadman, 2008), the authors elaborate on how this technology can help overcome the limitations of very young writers or special needs students who may have penmanship difficulties or other written output issues. “Young children with limited writing skills, and older pupils with special educational needs are highly motivated by being able to demonstrate their skills and knowledge with the tapping and dragging facilities of the IWB” (Lewin, Somekh, & Steadman, 2008, p. 292). Manipulating items on the IWB allows students to demonstrate and develop their understanding without being hampered by written output issues and give students who would otherwise not have the courage to participate in group discussions the ability and
motivation to take a more active part in the lesson. Indeed, the IWB can alter the ebb and flow of discussion in a class because as Smith, Higgins, Wall and Miller (2005) note “the ‘boon’ of IWB technology lies in ... the opportunities [it] holds for collective meaning making through both dialogic interaction with one another, and physical interaction with the board” (p. 99).

b. The Limitations

However, along with these positive factors come the challenges that are encountered when incorporating any new technology into the classroom setting. There are several areas which teachers find challenging when using IWBs in the classroom including the need to trouble-shoot technical problems as you go, issues around the layout of both the hardware and software, and some concerns around the potential of shallow learning depending on how the teacher chooses to use the technology.

If schools are expecting teachers to make full use of the potential this technology affords, they do “need support when technical difficulties arise immediately prior to and during lessons” (Smith, Higgins, Wall & Miller, 2005, p. 98) and the research further suggests that this is best done with collaboration between teachers who are using the technology. Having a patient and understanding ICT support team is also a vital key in ensuring that teachers will continue to develop their expertise with any new technology.

Another problem that Shannon and Cunningham (2009) mention, and this one is not easily addressed unless you are lucky enough to have a more expensive rear-projection model of IWB, is the silhouette that is cast by the user. This shadow is annoying and students slowly learn to stand to the side to reduce the impact to the visibility of images on the screen. One issue they mention as problematic, but that has not been a part of my own experience, is that to “create a reasonably sharp image, the lights of the classroom must be dimmed” (Shannon & Cunningham,
A rear projection system may address this issue, but if a regular system is being installed in a classroom, which wall you choose to mount the board in relation to where the windows are needs to be taken into account. "Many teachers also report difficulties in movement of the board or projector, especially when the board is not permanently fixed, as this causes the calibration to be disturbed requiring re-alignment; a major inconvenience if it happens every time a pupil tries to use the board" (Smith et al., 2005, p. 98). This need to re-orient the screen can disturb the flow of a lesson, and the article suggests that where the projector is set up needs to be carefully considered.

There are also concerns mentioned in the research around the IWB being more of a business presentation tool rather than classroom- and student-friendly. For example, Shannon and Cunningham (2009) noted that the IWBs were "positioned at a height on the wall that seemed more appropriate for use by the teachers than the children ... further reinforcing the impression that the IWB is primarily for use by the teacher" (p. 3). Since the interactive capability of this technology is one of its main draws, this is a valid concern that manufacturers need to address.

Lastly, the question around whether or not IWB lessons actually result in improved student performance came up across many articles. Although Marzano (2009) noted significant improvement in many cases, he tempered his very positive findings by saying it was interesting that 23% of the teachers in his study had students who achieved better results when the teachers did not teach with an IWB in their classroom. Marzano found that the reasons for this phenomenon could be attributed to a lack of proper pacing or organization of the content, too many visuals, or not clarifying the content when students elicited a correct or incorrect reinforcement during use of the IWB. To be both interactive and an effective teaching tool,
IWBs need to be thoughtfully embedded into a teacher’s classroom routines and activities. “A possible danger … is that the IWB reverts to being a classroom projector and loses the interactivity that is essential in maintaining motivation and developing interconnections between areas of learning and previous work” (Beauchamp & Parkinson, 2005, p. 101). Given the expense of SmartBoards, it is important to utilize the capabilities of the technology as fully as possible and this is only possible with trained teachers who are confident in developing their skills around using IWBs more effectively.

2. Teachers’ professional development and competence with IWBs

Kennewell and Beauchamp (2007) acknowledge that to a great degree IWBs are being embraced by policymakers and practitioners in the UK as cutting edge technology that is a must-have in classrooms. In order to meet the expectations around how IWBs affect student achievement, they suggest that “there may need to be a new wave of professional development in ICT which takes into account of the extended list of ICT’s features and the need to embed them in teachers’ pedagogical knowledge and reasoning” (p. 240). In their study in a South African secondary school setting, Slay, Sieborger and Hodgkinson-Williams (2008) mention that students had shared “concern that if a teacher is not ICT competent, but still tries to incorporate ICTs into their teaching environments, it can actually detract from the learning experience. … When the teacher was both ICT literate and ICT competent, the eBeam allowed them to focus on the class rather than the content they were delivering … learners commented that the eBeam was beneficial to their teacher “because he could pay more attention to us than writing on the board”” (p. 1333). This study makes it clear just how valuable providing teachers with support and time to develop their IWB skills is if these relatively expensive tools are to be effective in changing student achievement.
Another area which has both positives and negatives with regards to IWB use is around lesson planning and classroom management. Lesson planning using an IWB is different in that it involves more of a dynamic script ... because of the electronic format, slides or outlines are “stored from year to year and ‘tweaked’ to suit different situations. [Lessons] are often developed collaboratively ... and can be used by supply teachers and students on placement” (Lewin et al., 2008, p. 299). This feature affords a high degree of flexibility in that lesson plans and slides or pages are easily altered to suit changing needs however it can also be detrimental in terms of creative teaching. “It is essentially the teacher who determines what resource to use and how it will be utilized. ... With a growing number of ‘ready-made’ electronic teaching resources created for the large screen, it is possible that a teacher may be controlled by the design of the software [or] take on the role of software operator” (Wood & Ashfield, 2008, p. 94-95). If creative teaching is to happen in the classroom, it can be enhanced by tools such as the IWB only if the teacher makes that possibility a reality. Various classroom experiences showed two approaches – one where the technology and software did the teaching and the teacher was merely a conduit between the program and the children and one where the teacher used and developed material that gave students opportunities to discuss their thinking in pairs and groups with some modeling their thinking on the IWB (Wood & Ashfield, p. 92). Again, it is not so much what resources or tools an educator has at his or her disposal, but how these resources or tools are used to create the most positive learning experience for students. Lewin notes that “new pedagogical practices relates to the development of strategies to keep the rest of the class mentally engaged while one child is working at the IWB. In the first year, ... the pace of a lesson slowed appreciably when pupils came up to the board, and the rest of the class was left watching but inactive and often visibly bored” (Lewin et al., 2008, p. 299-300). Careful
planning is necessary to off-set the limitations of the technology if it is not used in an educationally sound way.

I have not looked into other manufacturers of IWBs, but I do know that SmartBoard is actively involved in developing their product to suit the needs of the classroom. Their technical support and online resources are growing rapidly and other teachers I have talked with have shared similar feelings. As Lewin et al (2008) put it: “The situation is still fluid. Manufacturers continue to improve IWBs and add to their modalities, and teachers continue to improve their usage as their experience as IWB users accrues” (p. 302). Along with this developing level of experience, companies that supply resources are developing material that is easily used with the technology, and a growing body of research is beginning to explore and share practical ways this technology can be applied effectively to the classroom setting.

3. Suggestions for using the technology more effectively

As with any expensive tool or resource, districts that want to incorporate IWBs into classrooms need to do so keeping the suggestions of some of the research in mind. In other words, do it in a productive way or do not expect to achieve any significant change or positive results. In the South African study, a teacher suggested “a gradual roll-out of technology where teachers are first given a laptop and a projector and shown how to teach with the new technologies. ... She then suggested that after a year or so, when teachers have proven that they could and wanted to incorporate the laptop into their teaching, they should be given an eBeam”(Slay et al., 2008, p. 1337). Her suggestion was based on the fact that the interactive aspect of the IWBs was not being utilized because of a number of factors: improper installment of the boards, frustration and lack of technical support, and insufficient teacher training with the new equipment.
If IWBs are to be used enough to justify their cost, they also need to be easily accessible and properly set up. "Teachers’ development with IWBs depends on easy and frequent access ... teachers preferred to use their regular classroom rather than disrupt the class and move to another room, even if timetabled for IWB access. ... Indeed it has been argued that use of the IWBs as a ‘transformative’ device is only possible when they become part of the regular fabric of classroom life" (Smith et al., 2005, p. 98-99). It is only when the IWB is no longer a novelty and has been absorbed into the regular routines of a classroom that teachers and students can really experience the benefits this technology affords.

SmartBoard comes with Notebook 10 software that has a large gallery of visual tools and games to enhance presentations and lessons. In examining what worked best for the purposes of education, Marzano (2009) has several helpful suggestions for teachers: (1) Organize content and then design digital flipcharts accordingly ... even insert pages that remind the teacher to pause and reflect with students on the new information – build in time for processing the content, (2) Visuals should be chosen selectively and used only to focus on the important ideas, (3) Use IWBs thoughtfully, incorporating what we already know about best practice. The caution is towards keeping the learning intentions clear and not becoming caught up in all the widgets.

4. Literature Review Conclusion

For the most part, the literature exploring the use of IWBs in the classroom is quite positive. The benefits or limitations of having an IWB in a classroom depend rather heavily on whether or not the teacher has developed an appropriate level of confidence and competence in using the technology. It is true that the learning curve for using both the hardware and software components of an IWB is relatively steep for someone who is not comfortable with technology, but my experience concurs with the research in concluding that this particular technology has the
potential to be a powerful asset in the classroom. In my experience, taking on the challenge of
learning how to use an IWB has reaped benefits in terms of my own confidence and ability with
incorporating technology in multiple ways and it has therefore been well worth the effort.

One recurring theme that appeared in different forms throughout the research was the
idea that to use the IWB effectively, we need to adopt a “co-learner style of teaching” (Lewin et
al., 2008, p. 298). This concept fits well with my philosophy of teaching as I truly do learn more
with and from my students than I ever anticipated. “As teachers move beyond a technical
apprenticeship, the IWB changes from being a rigid skeletal framework to a more fluid medium
through which teachers can deliver not just ideas, but also challenges, opportunities and open-
ended frameworks for pupils to develop metacognition (Beauchamp & Parkinson, 2005, p. 102-
103). Understanding that learning is an on-going process we engage in throughout our lives is a
vital part of a full education; letting students see their teachers actively engaged in learning to
use technology such as an IWB is surely beneficial to the learning climate of the classroom.

**Making Connections – Implications for Practice**

As indicated in the first two sections of this paper, the major goal of my inquiry project is
to answer the following focus questions: How can an Interactive Whiteboard (IWB) be
integrated into the daily literacy routines and activities in a primary classroom? Given that the
technology was new to me and my students, it has involved a steep learning curve in a number of
key areas that would prove useful to explore as districts consider investing in this type of
technology. I was particularly interested in the ways that best utilize the interactive capabilities
of this technology. I have noticed shifting stances in my educational philosophy as I have
reshaped my pedagogy around having ready access to a Smartboard this year. These changes
have significantly impacted my classroom environment and the learning experience of students in my class.

After a brief introduction, my own reflections follow organized around the three key ideas of the literature review: (1) Benefits and Limitations of an IWB in a classroom setting, (2) Teachers' professional development and competence with IWBs and (3) Suggestions for using the technology more effectively. Each section is prefaced by a chart outlining the main points specific to that section.

When I first received the news that I would be one of two teachers to have a Smartboard installed in my class, I was very excited. I had seen one used in a grade 6 class, had read a few brief articles promoting their potential as an educational tool and I was glad to have an opportunity to actually learn how to use one myself. On the heels of that excitement came a certain level of trepidation because I am well aware of my own limitations with technology. However, I decided that if I was going to expect my students to take learning risks, I needed to be willing to take part in my own learning journey.

I decided to chronicle my experiences, feelings, and impressions as I learned to use this technology and this developed into a detailed reflection journal as the year progressed. It included my earliest frustrations and moments of triumph to revelations around lesson planning ideas and resources that developed along with my level of experience with an IWB. A lot of my time was spent learning how to handle the necessary hardware and software issues with the help of other Smartboard users in the district, as well as learning how to appreciate my grade two students as co-learners in this whole process. Looking back to the earliest days of my reflection log, it becomes clear how quickly we can absorb new technology into the everyday fabric of classroom routines. Over the course of six months, I went from being a true beginner to an
intermediate user of the technology with a level of expertise that enabled me to share my growing knowledge with my colleagues on two professional development occasions. This experience has definitely been a journey, one that has not yet ended because even as I consider my own growing confidence with using the technology I am aware that I still have plenty to learn and am constantly refining my Smartboard lessons and developing new ways of using the IWB more effectively.

1. Benefits and Limitations of an IWB in a classroom setting

Figure 1 is a chart that organizes my reflections about the key benefits and limitations of having an IWB in my classroom which I categorized under two main subheadings: (a) Student engagement and motivation and (b) Troubleshooting – a hardware and software learning curve. For further details and discussion, there is a paragraph devoted to each of the bullet points listed on the right-hand column on the chart.

| a) Student engagement and motivation | i.  Ability to create visually appealing materials  
ii. Ready access to the Internet  
iii. The “untethered” teacher  
iv. Saving work done as a whole class  
v. Participation for students with written output issues |
|--------------------------------------|--------------------------------------------------------------------------------------------------|
| b) Troubleshooting – a hardware and software learning curve | i. Hardware setup and takedown  
ii. Re-orienting the board  
iii. Projector and mouse issues  
iv. Notebook 10 and InkAware  
v. Other programs like MSWord or Excel on the Smartboard |

Figure 1: Key findings about benefits and limitations of using a Smartboard

a. Student engagement and motivation

i. Ability to create visually appealing materials

One of the IWB features that encourage student engagement is the appealing visuals that teachers can create with relative ease. As I learned from the literature, the large visual display is
credited with increasing student engagement and performance (Kennewell & Beauchamp, 2007). I found that being able to project visuals on a large screen, add text, and manipulate those visuals definitely kept my students more engaged in the lesson. The motivation factor increased as I learned to develop lessons that involved student interaction with the Smartboard and began to incorporate features such as virtual applause for correct answers. The games and animation features in the Notebook 10 Gallery and Activity sections also helped with student engagement and motivation.

**ii. Ready access to the Internet**

One feature that altered the way I teach is the ready access to the Internet. I find that whenever a question arises, it is so easy to pop onto the Internet and share information with the class that we would otherwise have had to put off until Computer period or Library. For example, when discussing the Arctic during a Social Studies lesson, someone asked what a narwhal was. Watching a quick National Geographic clip on narwhals in Canada’s Arctic waters was a lot more engaging than looking up information in an encyclopedia. Being able to make notes, highlight points, and circle or label key items on a website and then save those digital ink marks for the next time we access a website is another useful feature of the Smartboard.

**iii. The "untethered" teacher**

Shannon and Cunningham (2009) explored the benefits of the teacher being “untethered” and more able to interact with students during the course of a lesson using an IWB. Indeed, the fact that during a lesson I can be either at the IWB or on my computer with students performing functions on the Smartboard is extremely handy. No longer do I feel like I have my Overhead Projector tied to my hip. If I am using the Smartboard for presentation, I can use a remote control to move through the presentation slides or send students up to the Smartboard as needed.
iv. **Saving work done as a whole class**

With the frequent use of charts and class-generated posters, I found that being able to save our work on the Smartboard enabled me to have ready access to it whenever we returned to the lesson. So often, paper copies of a chart are messy and awkward to change, but with the digital chart-making capabilities of the Smartboard, teachers can pull out charts or posters and change them at will. Even if there is a need to use a chart during a Smartboard lesson, there is a split-screen function that enables the user to access both Notebook 10 pages simultaneously.

v. **Participation for students with written output issues**

Having recently switched to a primary class from upper intermediate, I found that because of my students' limited level of writing skills, the IWB has been extremely helpful during guided writing mini-lessons. By providing the words on the SmartBoard, we are able to address writing issues and students are not as hampered by incorrect spellings or lack of vocabulary. I also found that some of my most challenged students are eager to have a turn at the Smartboard when before they would have avoided calling attention to themselves. This concurs with what Lewin, Somekh, and Steadman (2008) expressed in the findings of their study of British primary and special needs students. Given an alternate way to show their understanding, students who are normally impeded by written output issues are given an opportunity to share their understanding by merely manipulating text already provided on the IWB.

b. **Troubleshooting – a hardware and software learning curve**

i. **Hardware setup and takedown**

Along with all the benefits, there are a number of limitations that need to be acknowledged. One of the most inhibiting factors for implementing technology in the classroom is the learning curve that seems to be an unavoidable part of using computers. Both setting up
the hardware components and navigating through the software was initially a barrier when I was considering how to use the Smartboard more consistently at the beginning of the year.

In my reflection log there are numerous mentions of my concerns around making the process of setting up the IWB an easier process, but I must admit that over time it has increasingly become second-nature. One of my first entries in my reflection log demonstrates my struggle with taking care of the hardware set-up and take-down that I relayed to a teacher who dropped in to see my Smartboard and ask some questions; “I admitted to her that there were days when the hassle of setting up the equipment was enough of a deterrent that I skipped using the technology altogether – it always left me feeling guilty at the end of the day because here sat this unused technological tool that I wasn’t really using as it could be used.” Another of my early reflections illustrates my ruminations on the matter of training my students to set up the projector-laptop-speakers-IWB: “I do think they’d be able to set up the Smartboard ... but there are so many cords and cables – it’s a little daunting for me. So, until I get comfortable with it, maybe it’ll be my job to set it up. It sure is a pain though not to have it up and ready to go when I am ready. It’s with stuff like this that I’m so beyond my comfort zone ... but I will learn.”

What I have found is that even though I was able to train my grade 2 students to set up and take down the Smartboard, it was more time-efficient for me to set it up at the beginning of the day and leave it up until take-down. At the end of the day, students do a partial take-down as the projector-speakers-laptop combination is expensive enough that it has to be locked up for the night for security purposes.

ii. Re-orienting the board

As I have become more familiar with the Smartboard, I have learned how to find my way around many things that were problematic each time I sought to use the IWB. The Smart Tech
support that can be found online is an extremely useful resource in regards to troubleshooting. For example, I learned that to re-orient the board (an issue that arises anytime someone bumps the projector and creates a disconnect between the projected image and the touch-screen of the IWB) the user just needs to simultaneously press the two buttons at the base of the Smartboard and press the 9 touch-points. This procedure is a fairly regular occurrence, and students can easily remedy the problem of re-orienting the board without my guidance. They recognize the problem immediately when they try to use one of the writing tools and the digitized mark is off-base from where they are writing on the IWB touch-screen.

iii. Projector and mouse issues

An interesting side-note on hardware issues is that I repeatedly encountered issues around my projector – something that has arisen repeatedly with other teachers in the school who have a laptop-projector set-up. One of the comments from my reflection log expresses this concern: “Nov 23 - Plug pulled on projector – shut lesson down midstream. Frustrating. Half the problems are from projector issues – maybe I should read the manual for the projector in all my spare time.” Besides pulled plugs, the projector sometimes shut down without warning or reflected images where the resolution was wonky or stretched. Sometimes if the projector was plugged in to my Macbook and the Smartboard, I would have a black screen on the laptop and be unable to troubleshoot from the back of the room when students were using the Smartboard. Other times, both myself and the Learning Assistance teacher experienced situations where we could not control our mouse or the whole system would freeze. This seemed to be more of a problem when we switched from PCs to Mac and I wondered if there were compatibility issues between the Mac operating system and either the projector or the Smartboard. Having limited understanding of the IT world, when this problem arose I felt very limited in my ability to deal
with the problem. It was frustrating and stressful when it occurred without warning sometimes during the middle of a lesson. Our principal has been the on-site person I have asked for help with these issues and he directed me to put in a work order to get one of the techs in to figure it out – it’s important given that our school has invested heavily in the technology. He also expressed the need for things to be easy or teachers will go back to what works. There are times when I missed the technological savvy ways of my grade 7 students from last year – although, to be fair, several of my little grade 2s show promise in becoming the go-to technology experts of the future, a useful skill to develop at such a young age.

iv. **Notebook 10 and InkAware**

With regard to software, the Notebook 10 program that is used to run many of the Smartboard applications can require a steep learning curve for a novice user. Although it is chock-full of excellent resources, particularly in the Lesson Activity Toolkit section or the Gallery, it can be tricky to use without some guidance. The Ink Aware application, one of the most promising tools at an educator’s disposal, is not as easy to use as I imagined. It worked fairly well when using the pages I developed using Notebook, but I ran into difficulty with saving the digital ink when it was super-imposed on a website or embedded document.

v. **Other programs like MSWord or Excel on the Smartboard**

I also encountered software difficulties when I imported documents, tables and graphs from outside programs like Word or Excel. For example, when importing the Word Sort table for our small group spelling program, each line in the table had to be selected, grouped, and locked or students were unable to manipulate their spelling words without messing up the tables. When using documents created in Word, like a Class Morning Message or an example writing passage for a lesson in editing, the whole passage could be manipulated, but individual words
could not be fixed or added. There are probably easy ways to deal with these issues, but some of them are rooted in the fact that the IWB was initially intended as a presentation tool for the business world and not for interactive use in the classroom.

One of the most promising aspects of the Smartboard is the ability for users to write on the surface of the board and it can then be recorded and saved for further use on the computer. This feature reminds me of the way digital cameras have so thoroughly replaced film because of the ease with which the user can record and delete images. After writing on the blackboard, whiteboard, paper, or overhead transparency, those words or symbols are static. In the case of the IWB however, the digital ink can usually be easily manipulated. Working with young children, however, I have learned that there are some issues teachers need to be aware of when using this feature. First, only the tip of the writing utensil (Smartboard pen or finger) can touch the board – if the side of the user’s hand touches the screen, it messes with the text or image being produced. As an adult with the ability to produce tidy penmanship, this is not an issue. Secondly, if the printing or handwriting is untidy, the word recognition feature of the software cannot function and is not able to turn the word into text. For students who struggle with penmanship, they can opt to use the digital keyboard by pressing that feature button at the bottom of the Smartboard, but at grade 2 most of my students are still at the hunt-and-peck keyboarding stage so it can be a very slow process. In general though, working together, we have learned to overcome or work around most of these difficulties and have become more competent users of these promising features as the year has progressed.

In one of my January reflections, I stated, “No one has time to fiddle with technical difficulties in the middle of a lesson and we’re teachers not ICT people.” This reflection occurred after a particularly disappointing lesson where being able to use the Smartboard as I
intended would have been so much more effective than the back-up lesson I had hastily put
together. I wonder though, if troubleshooting is not going to become more of the norm as we see
more and more technology finding its way into classrooms. Observing how far I have come in
learning to conquer technological difficulties with my students often looking on or helping, I
believe we will not be so intimidated by the process as we become more experienced with the
process. As I mentioned in my literature review, at the UBC Summer Institute Smartboard
course, our professor urged us to shift our attitude around troubleshooting – to look at the
problems that arose as a challenge that would be fun to overcome. I have to admit that I have not
always been able to maintain such a positive outlook towards the technical difficulties that arise.
Being a self-proclaimed technophobe, I would prefer that someone else do the ICT
troubleshooting for me and provide me with the tools to do whatever I need to do. I suspect,
however, the reality is that technology is here to stay and therefore so is the need to become
comfortable with troubleshooting.

2. Teachers’ professional development and competence with IWBs

Figure 2 is a chart showing the three areas of professional development that enabled me
to develop the ability to use my Smartboard more effectively.

| a) ICT support from the district | i. Hardware / Software installation and setup
|                                | ii. Smartboard Cafes
|                                | iii. Laptops for Learning (L4L)
| b) Collaborative learning with other Smartboard users | i. UBC Summer Institute
|                                | ii. At-school and online collaboration
|                                | iii. Literacy Coach Technology focus group
| c) Resource development and learning communities | i. Smartboard and Technology Conference folders
|                                | ii. Professional Development presentations

Figure 2: Three key areas of professional development
a. ICT support from the district

The question of whose responsibility it is to help teachers update their ICT skills has arisen in several different contexts this year. In September, I noted the following in my reflection log:

"Everything I have learned about Smartboards so far is a result of training on my own initiative. Perhaps that’s going to just be a part of the package of being a teacher ... every trade has its tools and we need to familiarize ourselves with how to use the tools of our trade.” With computers, however, this can be a daunting task. I believe that many teachers could relate to my experience in that they see the potential for using new technology in their classrooms, but they are unsure about how to go about making it a part of the fabric of their classroom. I have been encouraged, however, with the attempts at both the district and school level to support teachers if they choose to embrace technology. The success of these attempts varies according to the differing levels of confidence and expertise each teacher has in the area of ICT.

In my experience, there have been varying attempts at the district level to support teachers who are trying to implement the use of a Smartboard in the classrooms. Some of these attempts have proven useful and, in other ways, they have reflected the understanding gap between ICT support employees with all their technological savvy and the less tech-savvy end-user or the teacher. I chose to focus on three district-initiated attempts to help teachers using Smartboards: the installation and set-up of various hardware components and software programs such as Notebook 10, the Smartboard Cafes, and the Laptops for Learning (L4L) program.

i. Hardware/Software installation and setup

Installing and set-up of the hardware and software that are part and parcel of using a IWB was initially done by district ICT staff. The ICT staff mounted my Smartboard on the wall I had chosen when considering the layout of my class. Although I had already downloaded the
Notebook 10 software onto my personal laptop because I needed it for a summer course, district ICT staff installed the program on all the teacher Macbooks that were part of the Laptops for Learning initiative I will discuss later. However, when Macbook users began experiencing difficulties with Notebook 10, we were informed that we needed to uninstall the program and download it again because it had been installed incorrectly. For a new Macbook user and someone who may be new to using technology in the classroom, this can be intimidating, and many people found ICT staff could be frustrated with the lack of expertise in the user group they were supposed to support. The need to re-install programs or even update software occurs quite regularly and supporting teachers in this area is not easy. If there are issues, ICT staff are only an email away, but that is cold comfort when you are in the middle of a lesson and the program is not responding as expected.

\textit{ii. Smartboard Cafes}

In the late fall, the district also promoted some after-school professional development information sessions on Smartboards. These sessions were called Smartboard Cafes and they were hosted by a school that has a lot of technology and were facilitated by a very capable Learning Assistance teacher who had made her Smartboard as central to her instruction as the chalkboard is in most classrooms. I attended the sessions with the expectation that expert mentors could teach me how to more effectively use various functions that I was finding difficult, such as using the InkAware tool on Notebook 10. In the end, the Smartboard Café proved to be more of a collaborative learning venue with participants sharing lessons they had developed and tips or tricks they had discovered. We did get to hear one of the experts from Smartboard who shared some invaluable ideas around how to organize your Notebook 10 files and develop useful units. She basically helped me to understand how to make many of the
suggestions Marzano (2009) made a reality with the scattered Notebook files I had developed as I learned how to use the technology. At the last session of the year, people expressed the wish to continue the Smartboard Cafes, but the facilitator shared that the funding for the Smartboard Cafes was non-existent for the following school year and warned us not to get our hopes up. Ultimately, the collaboration between colleagues from different schools was the most valuable part of the Smartboard Cafes and the participants expressed the desire to explore ways to continue our collaboration online, at the very least.

**iii. Laptops for Learning (L4L)**

Another district level initiative I have already mentioned in this paper is called Laptops for Learning or L4L. In January, we saw the first part of the roll-out of this initiative which put Macbooks into the hands of teachers. The second part was to provide each school in the district with Macbook carts that consisted of a wireless hub, 16 Macbooks, a laser printer and a projector. I was very excited about the potential for using the Macbooks in conjunction with my Smartboard, but the reality in my classroom meant that during lessons with the Macbooks, my Smartboard was a useful presentation tool that was not necessarily being used interactively. I discovered that teaching with laptops needed to be done in a very thoughtful and structured way if students were going to develop their abilities to use the Macbooks. I predicted that as students became more familiar with both the computers and the Smartboard, they would be able to develop their own Notebook 10 pages or use the interactive capabilities of the Smartboard by linking to various websites or using the InkAware function and the games. This happened to a limited degree in my classroom by the end of the school year. I was thrilled to see how students quickly became adept at using the Macbooks and were increasingly able to problem-solve or help each other find out new features of the programs we explored. For example, when using
Google Earth, the ability to move around the world on the Smartboard screen was somewhat different when it was set-up linked to my Macbook, but through experimentation I observed three students learn how to use the technology without my intervention. Their understanding of the Macbook touchpad because of the L4L initiative and their own experiences with the Smartboard in our classroom enabled this discovery. The district invested heavily in this project, but if the L4L technology (the Macbooks, projectors, printers and carts) is to actually be used regularly in classrooms instead of gathering dust in a back room, continued support and opportunities for teachers to develop their ICT skill and competence provided at the district level would be very beneficial. Teachers, like all learners, need time to talk about, play with and explore the programs, tools, and resources in order to become more capable users of technology.

b. Collaborative learning with other Smartboard users

There was very little mentioned in the research articles I read about how teachers became more competent with using IWBs in their classroom; instead, there was just the acknowledgement that it was necessary to make the technology useful in the classroom. What I have found as the year has progressed is that there is a vast array of online resources (blogs, wikis, chatrooms, and manufacturer supported websites) that point to one thing – the value of collaboration between teachers who are using Smartboards. In this section, I discuss three arenas where I have discovered some invaluable collaboration that has enabled me to grow and develop my IWB competency: the UBC Summer Institute course on Smartboards, at-school and online collaboration, and the Literacy Coach Technology focus group.

i. UBC Summer Institute

The summer before I received a Smartboard in my classroom, I attended the UBC Summer Institute course at a Vancouver elementary school that was a pilot school for using
Smartboards in the province. This school had a Smartboard in every classroom and the teachers had made a commitment to meet regularly to collaborate around how to effectively use the technology in their classrooms. Along with a very helpful professor and mentors that were either teachers or students at the school, the course provided teachers with three levels of instruction. Being new to the technology, I signed up for the novice section along with sixteen other teachers or teacher-librarians. In that course, we were given instruction that ranged from how to create title pages on Notebook 10 to how to use Flash animation in our presentations. I walked away with a preliminary Calendar Notebook 10 file that I intended to use with my new grade two students the following September – it ended up being constantly revised as I discovered what worked and what needed to be added as the year progressed. The on-line learning community that was set up in blog format by the Summer Institute professor also provided a first experience for me in using the Internet’s opportunities for collaboration. Students were able to discuss difficulties and share discoveries or resources. Some of the tips I learned at the Summer Institute are outlined later in the Appendix section of this paper. I noted in my reflection log early in September that “the SB Summer Institute and course at David Livingstone Elementary has proven absolutely vital to my feeling even minimally equipped to use the SB in my classroom. Having the opportunity to play with the technology, with mentors who are readily available is the ideal set-up for useful Pro-D (Sept. 25)”.

ii. **At-school and online collaboration**

Another useful collaboration opportunity involved developing some material with the other Smartboard user in my school (the Learning Assistance teacher) for use in the classroom. Although the session became one which primarily dealt with troubleshooting projector, mouse, and resolution issues, it made me realize the value of having an on-staff person who I could go to
with both ideas and trouble-shooting issues. Because we were both learning the technology, we
are constantly discovering new features and developing lessons using Notebook 10 Gallery items
that would be useful to share. In January, it became apparent that we are both still relatively
novice Smartboard users when we both had difficulties with the mouse-Smartboard connection.
In my reflection log, I note that “my principal needed to put in a work order to get one of the
techs in to figure it out - it’s important given that our school has invested heavily in the
technology. He also expressed the need for things to be easy or teachers will go back to what
works. No one has time to fiddle with technical difficulties.” Using the technology should not
be a detriment to our lesson, so these tools need to be sufficiently user-friendly and adapted to
the needs of the school environment if they are going to be part of the fabric of everyday
classroom life.

Regardless, even if there is no on-staff colleague that teachers can collaborate with, the
online learning communities around Smartboards are phenomenal. The lessons and page ideas
shared on the SMART Exchange website cover everything from attendance ideas to whole units
on a huge variety of themes. Blogs of teachers using Smartboards often contain links to
interactive online games that are Smartboard-friendly or tips for troubleshooting. The online
support and learning possibilities are fairly endless. It is useful, however, to have a collaborative
group of supportive Smartboard users that are operating within the same system in order to
address more local concerns like curricular expectations.

iii. Literacy Coach Technology focus group

To that end, I found that working with other teachers in my district through the Literacy
Coach program was very useful. The program supplied release time for teachers to collaborate
within loosely formed focus groups. I joined the Technology Literacy focus group and learned a
lot of things that were either specific to using Smartboards or were useful in a much broader sense in that they involved the implementation of all kinds of technology in the classroom including wikis and blogs. The Technology Literacy focus group met in two sessions. In the first one, four teachers and the two district literacy coordinators met to discuss the use of Smartboards in our classrooms. On December 17th I noted in my reflection log that “What I enjoyed most about this session, however, was not that I learned so much more than I already knew about the SB (although I did pick up some pointers such as using a tennis ball for a writing tool – apparently works better than a pen – will have to try this out) … it was the collaboration with other teachers. The ideas that were bouncing around that room – that’s what’s so valuable.” For example, one teacher shared some of the sites she had been exploring in anticipation of receiving her Smartboard. One site was a blog of an Oregon teacher who had a ton of great suggestions and ideas. We looked at all kinds of interactive games sites, creating a Jeopardy game while exploring its compatibility with the IWB. We shared the Gallery tools and Activities in Notebook 10 that we had found particularly useful and also several of the lessons and pages we had developed. Overall, this was time well used. These colleagues are now people I can bounce questions and ideas off of when developing more resources.

c. Resource development and learning communities

i. Smartboard and Technology Conference folders

In conjunction with the Smartboard Cafes, one of the most useful results of time spent with district colleagues in various models of collaboration is the development of a Smartboard Resource Conference folder on our district website. This is a site where the district’s Smartboard users can share ideas, frustrations, and resources. It is gradually becoming more widely used as
people begin to develop their own resources and explore websites for information and lesson ideas that are specific to their grade groups.

Many teachers do not have an IWB in their classroom, but as one of the articles I read suggested, the laptop-projector combination has plenty of potential and is a good starting point for teachers to build up their confidence and competency with technology (Slay, Sieborger and Hodgkinson-Williams, 2008). With that in mind, in January, several teachers on our staff decided to spend some professional development time collecting websites and ideas for using technology in our classrooms which we would then file in the Technology Resource Conference that our principal set up in the school’s folder on the district network. These were to be sites and lesson ideas we thought fit our school’s literacy goal or some of the other initiatives that were school-based. Like many other good ideas, this project needs more time as it is only partially developed and we plan to use some of our future collaboration opportunities to continue developing this resource into something staff will find useful.

ii. Professional Development presentations

Having the opportunity to learn to use a Smartboard has given me the motivation and courage to become a technology proponent with our staff. Although many staff members are very technologically savvy, there are others who have expressed the same trepidation I felt early on in the year. To encourage those people, I offered to make a presentation around my journey from total novice to more experienced IWB user on the final professional day of the year. My hope was that staff would be able to relate and see that it was alright to adopt a co-learner approach to technology when we use it in our classrooms. I titled my presentation “Technophobe to Technofan” and used www.prezi.com to share my ideas. I then used my Smartboard to show the presentation and tried to interweave some of the Smartboard’s features
into it. Not all staff will likely receive or even want a Smartboard, but at least they will have some idea of what the technology is capable of doing in terms of enhancing their own classroom practice.

3. Suggestions for using the technology more effectively

My reflections about what particular routines and strategies worked well as I implemented the use of the Smartboard in my classroom are organized on this chart into two main categories: (a) Classroom layout and management and (b) Lesson planning for interactivity.

| a) Classroom layout and classroom management | i. At the carpet  
|                                          | ii. Wires, cables & setup, takedown  
|                                          | iii. Placement of the IWB on the wall |
| b) Lesson planning for interactivity      | i. Whole group activities  
|                                          | ii. Small group activities  
|                                          | iii. Taking turns  
|                                          | iv. Smartboard as Learning Station |

Figure 3: A chart of practical findings to make an IWB more interactive and effective

a. Classroom layout and management

Classroom layout and management of a classroom are important considerations when a teacher seeks to successfully establish routines and expectations that are vital to create a positive learning climate for students. As noted in my reflection log early on in September, “These students need a lot of training around expectations in the classroom with regards to boundaries – teacher space, hands and feet to self, taking turns ... I’d forgotten. Regardless, my philosophy of teaching is bent towards the classroom being our space ... I don’t adhere to the school of thought that my classroom is my own personal little fiefdom. We’ll be exploring what works for us as a class. Adding the Smartboard to the mix – an expensive tool which is necessarily linked to my own personal laptop – is going to be interesting.” Indeed, it did involve experimentation before I began to find what worked well for both my own comfort levels and the students’ learning needs.
i. At the carpet

With regards to the layout of the classroom, a large (9x12 foot) carpet area has become the space I use most for teaching my class. It is where my Smartboard is mounted, and I have access to a magnetic whiteboard on the other wall. Initially this caused some concern because I feared that a careless student or an unknowing on-call teacher would write on the Smartboard with a whiteboard pen. This has not happened and as time passed my fear of people damaging the IWB has lessened. Space to have a carpet area for learning is a luxury afforded to primary grade classrooms because of the smaller class sizes. There are fewer desks and chairs, no big binders with multiple textbooks, and smaller students. An intermediate teacher would have to carefully consider where to mount an IWB because it impacts the options for arranging your class in groups or rows if you intend to make the best use of the tool or use it frequently. The carpet in my class is labeled with three rows of Velcro strips establishing where students are to sit during lesson time at the Smartboard. I have a seating chart for both the desk area and the carpet area. This helps me manage problem behaviours and the participation of various students during lessons that use the Smartboard.

ii. Wires, cables & setup, takedown

As I mentioned in the literature review section of this paper, the model of Smartboard that I have in my classroom requires me to plug in the IWB to a LCD projector and a laptop. The projector and my laptop sit on a table that juts into the carpet space. I needed to teach my students rules specific to having a Smartboard in the classroom. They learned to be careful not to trip on the wires and cables, to walk around and not in front of the projector when it was in use, and to avoid making distracting shadow puppets during lessons. Students have often impressed me with their patience as I struggle with technical difficulties and, although they are
not as able to help solve these difficulties as older students could be, my grade 2 students have become very capable of checking the obvious possible problem areas (plug-ins, cable connections, etc.). One of the classroom jobs is Audiovisual Assistant and my students seem to really enjoy having an opportunity to plug-in all the various cables and turn on the switches. They were increasingly capable with setup and takedown of the hardware as the year progressed. Having used a Smartboard in another classroom where the projector is mounted overhead, I noticed many of these layout issues didn’t exist, however the principal informed me that properly mounting the projector was cost prohibitive ($700 approximately) so we have just become accustomed to our classroom’s particular layout.

iii. Placement of the IWB on the wall

Another layout consideration that teachers need to make before installing an IWB on a classroom wall involves the question of whether you intend to use the technology as a presentation tool primarily for teacher use or something that students can readily use to further their own learning. As I mentioned in the Literature Review, Shannon and Cunningham (2009) were concerned that IWBs were being installed in ways that made them relatively inaccessible to students, negating the technology’s ability to be used interactively by students. If students are going to be expected to use the Smartboard, I have found that it needs to be mounted at a level where they can reach most parts of the board in order to manipulate objects projected on the screen. Our Learning Assistance teacher had a step built to solve this problem, but I found that a small pointer with a plastic tip worked just as well. Also, many of the functions (arrows, control keys) can be moved around the screen to lower areas so shorter users can reach them.
b. Lesson Planning for Interactivity

From the beginning of the year, my intention has been to utilize the interactive potential of the Smartboard and considering that I was very new to the technology, I have been successful in this to varying degrees depending on the lesson or activity and the learning intentions. I began using my Smartboard with my whole class on the carpet in front of it. After students had mastered some of the procedures around using the technology, I then implemented some small group activities which, for the most part, were teacher guided. Lastly, I tried a variety of ways to use the Smartboard as a Learning Station. Some of the Notebook 10 pages and suggestions I gleaned from each stage of these implementations are included in the Appendices at the end of this paper.

This year, I was familiarizing myself again with the primary classroom after teaching grade 7 for three years and Calendar, such a prominent part of most primary classrooms, seemed a natural place to begin implementing the use of the Smartboard. I initially began by having students sign in using various Notebook 10 Attendance slides. By October, I had developed a Calendar routine that became an expected and anticipated morning event in our classroom. In September, while still experimenting with different Notebook 10 pages I had developed, I made the following observation: “Only 1 person can be manipulating the SB at a time. They all desperately wanted a chance – but couldn’t make this happen. How will I use this? I want to emphasize the interactive aspect of the SB, but it’s not interactive to be sitting watching others manipulate things -September 21.” Initially, the newness of the Smartboard was enough to keep the students attentive and engaged, but I soon learned that I needed to have them actively engaged by either partner talk, mini-chalkboard participation, or frequently changing who was
manipulating objects or writing on the Smartboard. Having one of these tasks to do as they waited for a turn at the Smartboard made the experience more engaging for students because they are accountable for participating.

i. Whole group activities

I frequently used the Smartboard with whole-class instruction when I wanted to reinforce a concept or explore a new idea utilizing the ready access to the Internet. For example, while discussing the equator, the continents and the oceans during Social Studies, being able to use Google Earth was extremely fun and engaging. We also used the projectable books from Reading a-z to practice our reading skills and look closely at what authors do. Writing lessons around punctuation and capitalization were easy to do using an IWB and the ability to save our observations and highlights using digital ink proved a useful feature. We developed a whole class “Said is Dead” page that we projected and added to during creative writing periods. We also used the same features to project songs during Music, adding our own alterations to familiar songs such as “She’ll Be Coming ‘Round the Mountain.” These whole class lessons or lesson augmentations sometimes used the Smartboard more as a teacher presentation tool than an interactive student learning experience, but it is a useful tool regardless.

ii. Small group activities

Some of the small group activities that I planned to increase student interaction with the board involved Spelling Word Sorts, cloze activities, and math manipulatives games. I found that with a small group, students were more relaxed about the fact that they would get a turn at the board and would concentrate on the intended learning outcome. These small group activities also allowed me to have a clearer picture of which students were grasping the concept and who needed more experience with what we were learning. In using the tens and ones rods from the
National Library of Virtual Manipulatives site, I could easily see who was just beginning to understand place value and who was ready to move on in their learning. One challenge when I first began the small group sessions was making sure that the other students were involved in their learning task and not distracted by the Smartboard. I discovered that as the newness factor wears off, students are more able to focus on their own task until their group’s turn at the Smartboard.

iii. Taking turns

Many of the classroom management issues that I noted in my reflection log pertain to the fact that only one or two students can be actually manipulating the board at a time and we had to learn ways to take turns in a fair way. As I reported in the Literature Review, in many ways the Smartboard lends itself more to small group instruction like that of the pull-out groups for Learning Assistance because of this limitation. However, I found that when doing whole-class lessons using the Smartboard, I just had to consider how I would give each student a fair opportunity to use the technology. To do this, I used a couple techniques that fit into the fabric of my classroom’s daily routines. The main student helper when using the Smartboard changes daily is the Gopher, otherwise known as the VIP (Very Important Pupil) located on the top tier of the Classroom Helper Job Chart. Each day, students rotate up one space through all the jobs listed on the Jobs Chart, culminating in their turn as Gopher. I also use a random selection method which ensures that each student is given daily opportunity during lessons. I call this my Sticks of Doom. The Gopher selects students to manipulate items or write on the Smartboard by drawing their number from a basket of numbered popsicle sticks. Once all students have had an opportunity, all of the sticks are returned to the basket.
iv. *Smartboard as a Learning Station*

When it is not in use during lessons, I have attempted to use the Smartboard as a Learning Station that children can sign up for as an extension activity. This practice has met with varying degrees of success for a variety of reasons and I am still trying to work out how to make this a more viable Learning Station. So far, students still often require teacher assistance to troubleshoot and manipulate the items on the Smartboard, and during Learning Station time I am devoted to one-on-one or small group conferencing at the back table. The Smartboard can also be a distraction to students still working on assigned seatwork, both because of the audio and visually appealing nature of the activities associated with the IWB. Given more time and consideration, however, I feel confident that by more careful planning of the possible activities and by doing some problem-solving together with my students, we will be able to develop the activities and strategies that will enable them to use the Smartboard as regularly as they use the Listening Centre as an independent Learning Station.

**Conclusions and Future Considerations**

I have enjoyed the learning journey as I explored the different ways to use an IWB in my primary classroom. Twenty-first century literacy skills naturally involve digital media and the information world of the Internet and tools such as an IWB definitely make a teacher more able to teach these types of skills. That said, I do wonder if the changing world of technology will not soon render the technology obsolete. While recently visiting my sister’s house, her nine-year-old daughter was demonstrating the wonders of their family’s new oversized wall-mounted touchscreen computer. There is no projector or mouse problems, the Internet is also readily available
and it is as easy to use as an iPhone. Another example of technology that may one day render
the Smartboard obsolete is the Sixth Sense technology that was shared with our staff at a recent
staff meeting. An MIT student from India named Pranav Mistry has used existing technology
creatively to enable him to project a touch-screen onto any given surface, even his hand, from a
tiny projector on a lanyard around his neck. It seems that the only constant in today’s digitized
world is change and I accept that I will probably always feel somewhat behind the times with
regards to new technology.

Despite these observations, in exploring how an IWB has been integrated into my
primary classroom’s daily literacy routines and activities, I have made some encouraging
discoveries. Other people might find these discoveries helpful if they are considering
implementing this technology in their own situation. First of all, the benefits of using technology
like the Smartboard outweigh the limitations and challenges posed by the necessity of
troubleshooting. Also, given enough time, professional development, and initiative, any teacher
can learn to use the new technologies regardless of how technophobic he or she may be.
Collaboration with other learners is the key to developing an increasing level of confidence and
competency when implementing new technology. I also learned how important careful planning
and thoughtful implementation is if the new technology is to make a difference in the students’
learning experience. I learned a lot of specific Smartboard ideas that are outlined on the
Appendix entitled Tips & Tricks & Resources – a brochure I developed based on what I found
most helpful as a new IWB user. Lastly, I learned that being a co-learner and sharing the journey
with colleagues and students made for a rich educational experience that I found extremely
rewarding.
There are still many opportunities for me to further develop my skills around Smartboard use in my classroom. In reading through the available literature, I did not find a lot of information detailing how teachers were to develop an appropriate level of competency with either the hardware or the software. I think that may be due to the fact that school districts approach this in such different ways, but I wonder how districts where Smartboard use is particularly widespread handle the issue of professional development. I cannot help but think that sharing what works between districts could prove as useful as collaborating with colleagues at the Smartboard Cafes was for me. It would also be extremely helpful to further develop the Smartboard Resource folders we began at both the school and district levels. I intend to more systematically use the files I have already developed and continue to develop a greater competency with the IWB. With the Laptops for Learning computer carts readily available, I would like to explore how I can integrate the use of the Macbooks with the Smartboard.

The IWB has a lot of potential to further transform my pedagogy, but the initial steps to learn how to use this tool has provided me with a confidence in my ability as a technology learner. Although it may no longer be considered cutting edge technology, it has the power to create a dynamic learning environment for students. Using an IWB in a classroom will never replace good teaching, but used in conjunction with best practices, it could be one of the technologies in my arsenal that will help me teach my students twenty-first century literacy skills in an engaging, motivating way.
References


Appendix A: Examples of Notebook 10 pages I used regularly in my class

Days of the Week spinner and Ordinal Month of the Year sorting chart (part of daily Calendar)

Class generated *Said is Dead* web for Creative Writing (Word Choice)
Infinite cloner used with coins – students generate different ways to make different sums.

Hotspot activity – students tap the continent, ocean, or equator as prompted by the Smartboard
Title page for the templates - Click on the appropriate heading to flip to appropriate sorting chart.

Division 11 Daily Newsletter

Riddle of the Day

What do you get when a dinosaur steps on your garden?

Date:

Today's Gopher was

I must remember ...

I love my animal mini-books

Number sentence clue for tomorrow...

Daily newsletter printed off and sent home with students
Appendix B: Tips, Tricks & Suggestions brochure
Enjoy the Journey!

www.kapers.com/inventory.html - fun site
WWW.borders.com/Geography.htm - fun site

Virtual Manipulative
National Library of Virtual Manipulatives

Explore interactive math activities in numerous subject areas developed by the University of Illinois. Very user-friendly with images and instructions. Visit the site to learn more. www.math.niu.edu/K-12Math/www/destinations/mathematics.com - video

Games and Activities
Websites with Useful Interactive

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Getting Started
A brochure for novice Smartboard users

Tips, Tricks & Suggestions

- Make sure your computer is compatible with the resolution on the projector.
- Have students „pick“ text or objects they wish to move on the board with 2 fingers.
- Mouse above pointer/pen tool.
- Nudge about a pixel, drag plastic pointer/tip of pencil to move.
- Have someone bump re-order the board when someone bumps to the right.

Hardware
Challenge, not a frustrating.

- Accept that troubleshooting is just part of lesson ideas and downloadable pages.
- Explore the SMART Exchange website for.Gallery and Activity Toolkit.
- Collaborate with other Smartboard users.
- Take time to play with the Notebook 10.
- Adopt a co-learner attitude.
- Attendance chart: jump in... begin with something simple like