A Case Study Investigating the Teaching and Learning Benefits of the Interactive Whiteboard for Both Teacher and Student

Emma Hallinan

Master of Arts in Digital Media Development for Education

University of Limerick

Supervisor: Simon Lewis

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Declaration

“I hereby declare that this is entirely my own work and that it has not been submitted for the award of any degree at any university”.

Signed: ______________________

Emma Hallinan

Date: _________________________
Abstract

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This research project attempts to identify the teaching and learning benefits of the IWB for both student and teacher in a mixed Primary School in Co. Mayo. It is based on the introduction of nine Interactive Whiteboards installed in the school. It looks at how the pupils and teachers have embraced it over the year.

In this case study, data was gathered from qualitative and quantitative methods in the form of drawings, interviews with 54 primary school children from ages 5-12, interviews with the Principal and a Microsoft Office Master Instructor (computer teacher), a questionnaire to nine members of staff and a follow-up focus group interview. Lessons were also conducted with forty four pupils from 3rd and 4th classes with pre and post testing carried out. One group of pupils were taught a lesson using the IWB and the other group were taught the same lesson using laptops.

The research found that lack of resources for the Irish Primary School Curriculum and lack of training were the main drawbacks of having an IWB. If interactive lessons are not developed, it will revert to a “didactic” approach to learning. Pupils love having the IWB in their classroom due to its large visual element, its sound quality and its motivating factor for learning. Some pupils feel that if the teacher takes over they don’t get sufficient chance to use it. The technical hitches annoy the children as much as the teachers. Having an IWB in a classroom allows teachers to integrate ICT.

The report concludes there are not enough interactive resources that support the curriculum. Teachers need to collaborate more on resources that worked well saving valuable time. Teachers need to be aware that they need to keep up-to-date with training and therefore plan lessons which are “interactive” in nature otherwise these expensive boards are not used to their potential but only as a ceiling mounted projector for visual display.
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List of Abbreviations

BECTA  British Educational Communications and Technology Agency

CSEI  Computer Education Society of Ireland

DES  Department of Education and Science

DfES  Department for Education and Skills

EPV  ‘Extra Personal Vacation Days’. Three discretionary days teachers have for completing a summer course. The courses are approved by the Department of Education and Science but do not allow for a substitute teacher.

ICT  Information and Communications Technology

IPPN  Irish Primary Principals’ Network

IT  Information Technology

IWB  Interactive Whiteboard

NCCA  National Council for Curriculum and Assessment

NCTE  National Centre for Technology in Education

PSWE  Primary Schools Whiteboard Expansion project
Chapter 1

INTRODUCTION

1.1 Overview of the IWB

The proverb from the Chinese philosopher and reformer Confucius (Moncur 2007) “I hear, I know. I see, I remember. I do, I understand.” sets the scene for the arrival of the Interactive Whiteboard into Irish classrooms.

IT2000 was an exciting time for schools with funding, planning and implementing Information and Communication Technologies into our schools (Ireland, Department of Education and Science 1997). However in this harsh economic climate future support from the Department of Education looks unclear. There is no commitment from the Irish Government to provide IWBs in classrooms. They will only provide a digital projector and a laptop (National Centre for Technology in Education 2009). Other countries such as Britain have a Government policy to fund IWBs. We must as educators embrace technology into our classrooms even if it means lots of funding with the help of parent’s associations and collecting Tesco tokens.

With the manifestations of technology in today's world, children are engaging with technology more frequently as Internet use and online interaction has simply become a more ‘normal’ feature of children’s social interactions (Webwise 2009). Children use mobile phones, social networking such as bebo, iPods, game consoles such as the Nintendo Wii to name but a few. All of these devices are part of a child’s world and as educators we need to be aware of these. The advent of the IWB has brought a whole new learning world to classrooms. However as with every new emerging technology there are advantages and drawbacks. The arrival of the IWBs in Irish classrooms is still relatively new. A lot of planning and advice needs to be given to schools when deciding to buy a piece of expensive equipment like this.

The Interactive Whiteboard has made teachers excited about the future of technology. However are teachers really interacting with the board or is it simply being used as a whiteboard with digital ink?
Cogill (2006) tells us that in order for an Interactive Whiteboard lesson to be effective the children must be involved otherwise the potential interactively will be lost. It is vital for children to engage in learning which increases their motivation. Cogill (2006) states that using the board allows everyone to share in the learning experience. This sharing of children’s learning experiences is one of the most important functions of the Interactive Whiteboard. Children presenting their ideas to the class is the ultimate learning experience.

1.2 Background to the Study
Upon returning from a career break the researcher was informed that each class would be equipped with an IWB by the end of the 2009 school year. Two IWBs were already installed in May 2008. In October of 2008 the researcher got an IWB but received no training from the sales rep. Other teachers were in the same situation while others got a brief overview of the IWB in their classroom. This got the researcher thinking about the pedagogical implications of the IWB and teachers views on them. In the weeks that followed the teachers began exploring their boards. Some teachers began replacing them for a whiteboard marker, others for showing DVDs, for displaying powerpoints, typing the daily news and lyrics on word documents and for displaying stagnant websites. Some teachers used them for interactive games. The main change was using the IWB for writing. Although this is not one of the best uses of this technology it has been received with great enthusiasm by the teachers and the children seem to respond well to it. But are these boards being used truly as “interactive whiteboards” for a collaborative learning experience? How could teachers maximise its use? Would the purchase of a digital projector serve better?

1.3 Aim of the study
The aim is to look at the introduction of the interactive whiteboard to mixed Primary school equipped with 9 fixed interactive whiteboards through Case Study Research. The study will look at the teaching and learning benefits for both the student and the teacher. It looks at this technology from the point of view of both the student and
teacher after using it for almost a year.

1.4 Research question

The study will focus on 3 main sub-questions to get a true picture of the learning and teaching associated with the IWB. Through this study the researcher wishes to clarify the following:

- Are children really learning with Whiteboard technology or is it simply “Boon or bandwagon?” (Smith et al. 2005)

- Is the interactive whiteboard technology we use as teachers helping us promote collaborative learning or is it going back to a “didactic sage on stage” approach?

- What teaching and learning problems/benefits emerge after having an IWB for almost a year?

1.5 Research Approach

The researcher chose a case study approach for the research using both qualitative and quantitative methodology. The tools for this methodology included interviews with the children, principal and computer teacher. A questionnaire to teachers was followed by a focus group interview. A small scale comparative study was carried out with children in 3rd and 4th class. One group was taught a lesson about Saint Patrick using the IWB and the other group was taught the same lesson using the laptops only. Children completed evaluations of these lessons. Pre and post testing was also carried out at.

1.6 Scope and Limitations

- The researcher wished to conduct research before the end of May 2009 as June is a busy month in schools with tours and assessments and schools are closed in July and August.
The research for the piece of software “Journeying with Saint Patrick in County Mayo”, had to be done in early March, approximately two weeks before the feast day of St. Patrick.

It should be noted the researcher is also a class teacher and that she is the designer of the “Journeying with St. Patrick in County Mayo” software which was previously designed on the Diploma in Digital Media for Education Course 2006.

As some of the teachers had the IWBs less than fours months some of the results may be less than accurate. The sampling for the questionnaires is quite small as there are only 9 class teachers with IWBs.

As the IWB is new for the children they may be extremely enthusiastic about the idea of having an IWB in the classroom and only feel they can express positive comments about it. Findings must be interpreted carefully.

1.7 Overview of Thesis
Chapter two, the literature review looks at relevant IWB research. It also looks at the pros and cons of the IWB in studies in the UK and early Irish studies and the processes of embedding new technology in teacher’s pedagogy. The support from the NCTE and the Irish Government is also noted.

Chapter three, deals with the methodology that will be used in the case study both qualitatively and quantitatively. It also focuses on the setting and participants and the research tools involved as well as limitations, reliability and validity of the research.

Chapter four deals with the research findings after carrying out the methodology, for both teachers and students.

Chapter five is the discussion on the findings with evidence from the research and the literature review in a triangulation approach.

Chapter six draws conclusions and makes recommendations about the use of IWBs in schools.
Chapter 2
LITERATURE REVIEW

2.1 Introduction
This literature review provides an insight into the pedagogical theory associated with the Interactive Whiteboard in education. It also reviews other countries studies on these boards and the advantages and disadvantages of their use. The advent of computer technology has enabled an explosion in the availability of visual ways to presenting material including large libraries of images as well as compelling dynamic images in the form of animation and video (Mayer 2003). The school environment is one of discovery and exploration, making choices and decisions, learning to work with others, promoting creativity and developing tools for thinking differently therefore developing interactive thinking. Both teachers and children are winners in this style of learning (PPDS - Primary Professional Development Service 2009).

Children use mobile phones, social networking, iPods, game consoles and Youtube. All of these devices are part of a child’s world and as educators we need to be aware of this.

Society has a “convergence of pedagogical thought and technological breakthroughs that fit like a hand in a glove” (Thornburg, 1991, p.7). The advent of the IWB has brought a whole new learning world to classrooms. The IWB is seen as a very powerful teaching tool (Kennewell, Beauchamp 2007) and has come a long way since the success of the chalkboard. Ireland is still behind with implementing the use of the IWB compared to other countries. Only 2% of Primary schools in the Republic of Ireland have an IWB according to the Inspectors Report for ICT in Schools 2008 (Ireland, Department of Education and Science 2008). In comparison with the UK and Northern Ireland almost half of all primary schools in Britain have at least one interactive Whiteboard (Boran 2006). In 21st century learning interactive whiteboard learning is taking the classroom by storm. As with every new technology there are advantages and disadvantages which will be examined in detail throughout this literature review.
2.2 The Primary School Curriculum and ICT

In today’s world it is important to support children’s potential as individuals for their holistic development and therefore it is important to use a range of teaching resources to enhance people’s learning (ICT in the Primary School Curriculum 2000, p.1)

ICT is integrated into the teaching and learning process and provides opportunities to use modern technology to enhance their learning in all subjects (Primary School Curriculum Guidelines 1999, p.29).

In no document is ICT to be taught in insolation and therefore technology offers teachers tools to support the aims and objectives for the revised curriculum and has the power to augment and transform classroom learning and teaching into a powerful learning resource. Much a child’s learning about ICT will happen because of integration through various technology teaching methodologies.

There are three main links within teaching and learning with ICT in the curriculum

- **Learning about ICT**: Teachers and children develop the skills to use ICT.
- **Learning with ICT**: Teachers and children use ICT resources to support the curriculum.
- **Learning through ICT**: Teachers and children use ICT to transform the process of teaching and learning by learning in a new way.

This is the main aim of the ICT use in the curriculum by using various approaches and methodologies in education through the use of ICT (ICT in the Primary School Curriculum 2000, p.2).

These factors all can be supported using the IWB as a teaching aid but “it’s not what you use, it’s how you use it” Potter (2001 cited in Virtual Learning 2003) and it is the teacher who is at the forefront of this.
2.3 What is an Interactive Whiteboard?
The first IWB was a SMART IWB, manufactured in 1991. It was the first interactive whiteboard to provide touch control of computer applications and annotation over standard Microsoft Windows applications (Wikipedia 2009b). The boards were originally developed for office settings and are still relatively new to education (Smith et al. 2005). The Interactive Whiteboard is essentially a “large, touch-sensitive board” (NCTE 2008) and when this is used with a digital projector and a computer/laptop it acts as an interactive platform. The control of the IWB is by direct touching of the board or by using a special pen in the same way as you do with a mouse. There are many different types of boards on the market which all essentially do the same thing – allow the user to interact with the board. The use of these boards is endless allowing both student and teacher to interact in a collaborative way thus enhancing learning experiences for children (Cogill 2006, p.6). However like any form of ICT “they will only enhance the learning experience if used imaginatively” (Scoilnet 2009).

Scoil Chríost Rí in Ennis (Power et al. 2007) describe the IWB as a “conglomeration of all previous instructional tools.” For example the chalkboard, plain whiteboard, television, video, overhead projector, CD player and classroom computer. The end result gives teachers a touch screen board with instant access to many of the above.

2.4 What is Interactivity and Multimedia Learning?
The word multimedia often used with the IWB refers to “multimedia technology” which gives rise to multimedia instructional message or presentation – involving words and pictures which are intended to foster learning. Mayer pg. 3 (Mayer 2003)

By using multimedia on a large screen and by being in tune with a learner-centred approach (Norman 1993 p.3 cited in Mayer 2003, p.11) technology can make us smart and therefore work on our cognitive capabilities. Miller (2005 cited in McGann 2006) tell us that the six most common features for interactivity when using multimedia are:
Drag and drop  
Hide and reveal  
Colour, shading and highlighting  
Matching items  
Movement or animation and  
Immediate feedback

Glover et al. (2005 cited in Kennewell and Higgins 2007) tell us indefinite storage and quick retrieval of material also adds to the effectiveness of the software interactivity. The software that comes with most IWBs features some or all of these elements and therefore replicates older non-digital technologies such as flip boards and video players.

Cuthell (2005) explains that there are four key reasons why “interactivity” works in a classroom for learning and teaching. They include ostensiveness, ludic elements, visualization and bricolage.

Ostensiveness is the way young children learn through pointing at people and objects to reinforce their questions. The physical act of using a pen, a styles, a finger, stick or mouse consolidates the topic being learned through images and perceptual organisation. Children are motivated to physically interact with the board (Becta 2003) and enjoy manipulating text and images. However Smith (2001) notes that some pupils find the board difficult to manipulate.

Ludic Elements: This makes the IWB fun. By integrating sound, animation, video and text a combination of interesting elements are ensuring learning. The range of materials and the ability then to manipulate them is reported to be a major benefit for using the IWB (Smith et al. 2005).

Visualisation: The use of colour, movement all provide learning reinforcement for the student. (Miller, Glover 2002) tells us that “large visual images with a more modern or contemporary feel, satisfy the expectations of pupils already immersed in
a world of media images”.

**Bricolage**: This means “Do it yourself”. By combining elements using the IWB such as video, audio, text, web material, images, meaning is constructed for the learners. The learners can construct meaning for themselves and each other. This is in sync with the Primary school curriculum. Therefore the opportunity to use the board to present ones work is essential (Miller and Glover 2002).

According to Becta (2006, p.4) *interactive teaching* is a two way process where the teacher modifies his or her approach to the needs of the learners. For successful learning interaction must occur. *Interactive learning* is also a two way process where the learner may interact with the teacher, peers, resources or all three.

Becta (2006, p.5) stress that it is not always necessary for children to interact physically with the electronic whiteboard. The teacher can be a mediator interaction still takes place. However for interactive learning the children should direct what is happening on the screen.

Kennewell and Higgins (2007) tell us that IWB encourages student participation. However they insist it takes careful management to encourage students to actively participate. For example in “drag and drop” activities when coming to the top of the class so they would not feel “unduly exposed” to critical comments by their peers. When this works well the whole class is engaged. The teacher can create resources that offer support for inter-subjectivity which can challenge students and create student independence. Again it all relates back to one person - the teacher who optimises the potential for learning (Kennewell and Higgins 2007).

### 2.5 General Benefits of the IWB

The interactive whiteboard as a teaching tool is powerful and brings rich content to the classroom. Interacting with multimedia on a large screen can be very useful for whole class demonstrations. Being involved in the lesson according to O’ Duffy
(cited in Boran 2006) helps “develop children’s social and personal skills”. She also states that using software on a classroom PC/laptop (which many schools have) means the student and teacher are not interacting; it is an isolated form of learning. Some of the general uses of the IWB from the NCTE (2008) and Wikipedia (2009a) include:

- Showing video clips in any curricular area (replacing DVD players and TVs)
- Displays internet sites in a safe whole class approach
- Demonstrating how software works
- Helping visually impaired students and other students with special needs.
- Creating a resources bank of lessons, notes, homework, and ideas during class that can be accessed any time for future reference from the software supplied with the Interactive Whiteboard.
- Some IWBs allow teachers to record their lessons as digital files and post the material for student review at a later date. This is extremely useful for students to revisit the material covered or for those who may be absent.
- Becta (2006, p.5) also stress that it has a high visual impact, creating a theatrical effect in the classroom and it supports discussion on a topic helping children to learn from others

2.6 Benefits for Children using the IWB
There are many benefits associated with the IWB. In a study investigating student response to the IWB in a daily maths lesson of six classrooms from 2003 - 2004, three themes emerged to influence pupils

- Motivation and engagement is a valuable tool in the learning experience keeping children interested (Knight et al. 2005). Becta (2003) also concurs this. It is also noted that in Knight’s study children sustain interest over time. Passey et al. (2004 cited in Knight et al. 2005) noted that “positive
motivational outcomes were most frequently found when ICT was used to support engagement.

- The self esteem of children is enhanced by the IWB. Children learn that “all learners make mistakes and mistakes can help us improve” DfES (2004, p.8 cited in Knight et al. 2005).
- Language Development has been aided by IWB as children use technical vocabulary to explain concepts to others. Improvements in pupil’s ICT skills are often accelerated as children watch the teacher model the necessary skills to use the ICT skills. Pupils are

  “observing the manipulation of the operating system, the main applications and the network structure on a routine basis, so that when they come to use computers in class….they are fully aware of what needs to be done”.

  (Goodison 2002)

A primary school in Australia report they no longer explicitly teach some ICT skills as pupils gain enough experience watching the IWB and using it themselves (Lee and Boyle (2003 cited in Smith et al. 2005)

- It is noted that facing the class while teaching ICT is a major advantage of the IWB therefore allowing the teacher spend more time focusing on the pupils (Smith 2001).
- There are greater opportunities for participation and collaboration, developing students social and personal skills (Levy 2002 cited in Becta 2003).
- When IWBs are correctly used and installed the teacher and the class have a much closer relationship. The whole class can see the board and learning becomes a socially constructed experience especially for young children (Gogill 2002 cited in Virtual Learning 2003).
- Visual clarity makes the teachers handwriting easier to read and see. Teachers can use different colours, different fonts and size and handwriting recognition aids greatly here. In an overcrowded classroom it is practical (Levy 2002).
2.7 The IWB and Children’s Learning

The IWB has often been referred to as “kid magnets” in the world of education (McKeown 2008, p.8). Children are like sponges when it comes to learning. Boran (2006) believes that the ethos behind the IWB comes from Confucius - I hear and I forget. I see and I remember. I do and I understand.

Children learn in many different ways and the Interactive Whiteboard can act as a catalyst for this learning. Many theorists have looked at ways children learn and all have a connection to learning from using the IWB.

John Dewey’s idea that children would learn better if learning were truly a part of living experience; or Freire’s idea that they would learn better if they were truly in charge of their learning processes; or Jean Piaget’s idea that intelligence emerges from an evolutionary process in which many factors must have time to find their equilibrium (Papert 1993, p.15)

Aristoteles quote ”For the things we have to learn before we can do them, we learn by doing them (Moncur 2007) sets the scene for the primary school curriculum. The ICT guidelines in the Primary School Curriculum (2000, p.2) collaborates the principals of learning with rewards gained using technology allowing the child become an active agent in his or her own learning. This constructivist theory is the basis for the new curriculum and is a lens for both teaching and learning. Constructivism is essentially a way of thinking about knowing, a reference for building models of teaching, learning and curriculum (Tobin and Toppin, 1993). Children learn from each other as well as from the teacher and by working collaboratively and collegially a better learning environment is established.

In Vygotsky’s zone of proximal development social interaction and social learning leads to cognitive development – basically when working collaboratively under adult guidance or peer collaboration a student can perform a task. By scaffolding the learning especially with an IWB, the potential development level reaches a high competence level and creates a community of learning where learning is reciprocal for teacher and student (Rodrigues 2001, p.51). This constructivist theory is at the
centre of the Primary school curriculum where the process is as important the product.

2.8 The Ultimate Aim of an IWB

The ultimate aim of an IWB is to get children involved by playing an active role in their learning. It is not solely coming to the board to answer questions (Cogill 2006). Thus everyone is taking part in discussing ideas and everyone is sharing in the learning experience. In order for children to learn well there must be a meaningful learning outcome as a result of the learner’s activity during the activity (Mayer 2003, p.17) and therefore systematic connections are built between the picture based and word base representations (Mayer 2003, p.79). The IWB has the potential to cater for all learning styles as teachers can call on a variety of resources to suit particular needs (Bell 2002 cited in Becta 2003). As pupils visualise the techniques or instructions they use the visual and kinaesthetic stimuli to develop and reinforce their understanding (Becta 2004, p.3)/ The results from a research masters from Scoil Chróist Rí in Ennis (Power et al. 2007) show 96% of the teachers agreed that students were more engaged and 94% believed that IWBs make it easier to accommodate all learning styles.

The IWB allows teachers to control the pace and structure of their lessons by using various tools such as reveal on the provided software (Becta 2006, p.21).

The use of the IWB in the classroom opens up a door that challenges the concept that assumes everyone can learn the same materials in the same way and that a uniform, universal measure suffices to test students learning.

2.9 Teachers Using the IWB

“Every class should have an IWB” (Cogill 2006, p.5) as the IWB allows teachers to control the pace and structure of their lessons by using various tools such as reveal on the provided software (Becta 2006).

Betcher (2009b) tells us that there are eight key principles for effective IWB
teaching. They include being proficient, organised, interactive, flexible, constructive, open-minded, willing to share and prepared to plan. Interactive Whiteboards can have a very positive impact on teaching and learning. However as with all new technology the teacher needs to be at the forefront of this otherwise “computer meets classroom - classroom wins” (Tyack and Cuban 1995, p.82). It is the teacher who is instigates everything however teachers are “educators not technicians” (Kennedy 2009a).

A key feature of the IWB is that is emphasises whole class teaching – modelling, demonstrations, probing and promoting questions (Becta 2004, p.2). Cogill (2006, p.39) describes that teachers have a “tendency to dominate” the whiteboard lesson. The IWB an easy and effective way to demonstrate software. An added feature of the IWB is the ability to annotate the screens being displayed (Levy 2002) thus saving time moving to one small classroom PC. The IWB also helps teachers to give more effective explanations in their teaching. Having the electronic pen on hand can annotate screens and allow teachers ease to dip into images and audio easily (Levy 2002).

Haldane (2007) looked at the impact of the IWBs on standards and pedagogy in primary schools through the Sweep project. She noted that the IWB is an ideal resource to support whole class teaching as it focuses pupils’ attention and increases engagement. McGuinness, managing director of Prim-Ed company (cited in Boran 2008) clarifies that teachers who have been teaching for years are keen to adapt the new technologies. Educators are bringing new skills such as IWB use to the classroom and share the knowledge with other teacher. He believes that teachers are becoming more comfortable about using technology on a daily basis however there is still along way to go. Becta (2003) also believes that by sharing and re-using materials the work load for the teacher is reduced.

Betcher (2009b) and Smith (1999 cited in Becta 2003) believe that more teachers are using technology than before because of the IWBs thus helping create a more competent teacher and a teacher who wishes to help their professional development. It helps teachers create large displays which can be easily read and seen by children (Cogill 2003). The IWB is reported to be easy to use, particularly compared to using a computer in whole class teacher (Smith 2001 cited in Becta 2003).
Betcher (2009b) looks on IWB’s as a “Trojan horse” helping to get technology into classrooms where before it may have been impossible. In the study by Higgins (2005) 98% of teachers felt more confident in using ICT in general as a result of using an IWB.

Dr. Robert Marzano (Betcher 2009a) in his research project looked at 85 classrooms. He asked teachers to teach a lesson with the IWB and without the IWB. It was same teacher, same lesson, just a different group of students. The technology-enabled lesson tested 17% higher than the non-technology enabled lesson. Then if a teacher were using the board for 20-30 months, there was, on average, a 20 percentile gain. This proves that with time and practice students are benefiting. However if a teacher has two years experience, who has had training on how to use the IWB efficiently (75% of the time) and a high degree in confidence, a “sweet spot” is reached that leads to 29% gains in student achievement (Betcher 2009a). Marzano stresses on the word training. An IWB should not be placed in a classroom until the "weaker teachers require professional development in [both] effective teaching and the use of Interactive Whiteboard Technology”.

2.10 Processes for IWB Use

“Its not what happens on the board. Its about what happens because of what happens on the board” (Betcher 2009b).

At the Sitech Champion Schools Conference in Napier, New Zealand, Betcher (2009b) identified three distinct phases within whiteboard technology for teacher’s pedagogy.

- Doing old things in old ways:
  Examples include: notes and diagrams handwritten on the board as the lesson is taught
  Lesson content is primarily of word documents and diagrams
  Limited use of the IWB toolset
  Lessons are not prepared in advance
  Lessons do not take advantage of interactive features
Lessons are not saved at the end of class and teacher works in isolation, not sharing resources with others

- **Doing old things in new ways**
  Examples include: Greater use of lessons prepared in advance
  Use of effective software that works well with an IWB
  Lessons saved for future use and reused
  Increased levels of student engagement and interest
  Greater use of draggable layer objects that can be moved around the screen and teachers sharing more lessons to reduce workloads.

- **Doing new things in new ways**
  Examples include: Use of video and animations
  Tapping into libraries of interactive learning
  Engage in the virtual worlds and simulated environments
  Increases levels of interactivity and student involvement often raising questions that were unexpected but with answers that offer greater insight into and deeper understanding of a topic
  Allowing students to interact with others outside the classroom.

For teachers to successfully adapt this technology Hopper and Reiber (1995 cited in Becta 2004, p.23) identifies five key stages – familiarization, utilisation, integration, reorientation and evolution through two sub headings the Replacement stage and the Transformation stage.

**2.10.1 Replacement Stage**

*Familiarisation:* At this level the teacher is first exposed to the IWB during a training session and gets a brief insight into the capabilities of this. Teachers while they may have an interest in the technology can not put it into action due to lack of appropriate technology.

*Utilisation:* This stage sees teachers step into technology with more regular frequency and gradually replace classroom resources with a digital projector while
still increasing the efficiency of their teaching. Teachers here need good technical backup.

2.10.2 Transformation Stage

Integration: This is also known as the breakthrough stage where a teacher has made the commitment to use the IWB and considers it an integral part in their daily classroom teaching. This stage creates desire to go further.

Reorientation: At his level teachers are seen as “lead learners” continually learning about this technology with their pupils. Teachers are excited about the potential of this technology and develop new strategies to extend their teaching and learning.

Evolution: At this stage teachers continue to evolve and adapt experiences across the curriculum. The teacher is confident in integrating ideas and electronic resources and can cater for the various needs or different learning styles. They are continually improving the learning experience they share with their pupils.

2.10.3 Length of Time to Integrate the IWB into School

It takes time to fully integrate this teaching tool into everyday classroom practice. Haldane (2007) asserts that it takes roughly two years for the IWB to become embedded into teacher’s pedagogy and therefore the above stages should be seen as a hierarchy of competence in using the whiteboard (Becta 2004, p.25).

The Department for Children, Schools and Families (DCSF) Primary Schools Whiteboard Expansion project (PSWE) provided substantial funding to 21 local authorities in 2003-04 to support the acquisition and use of interactive whiteboards in primary schools. It revealed that it is the length of time that pupils have been taught with an IWB which leads to attainment gains. In Key stage 2 mathematics, averagely attaining pupils of both sexes made greater progress with more exposure to the IWB. In the project the teacher’s pedagogy was more on whole class teaching but it was more interactive while class teaching. In regards to Special Needs Pupils the IWB appears to have little impact on raising their attainment but rather greatly improved their behaviour.
The results from this also revealed that the IWB is used most frequently for teaching numeracy and literacy. However it is being integrated for all subjects helping ICT become integrated into the curriculum.

2.11 Factors for Effective IWB Use

There are many factors that contribute to effective IWB use in schools

2.11.1 Location of the Board

Becta (2006, p.4) tells use that it is important that the appropriate resources are in the right place. The IWB should be integrated into the classroom where it can be used as a tool to facilitate curriculum learning and not as a tool in a computer room where it may be used for ICT lessons.

Becta (2004) also notes that careful planning is needed to locate the board properly in terms of visibility and accessibility and at the right height for pupils. Having a fixed projector reduces that chance for the projection being obstructed. The position of the IWB in the classroom to avoid sunlight is crucial (Smith 2001 cited in Becta 2003). Visual problems often occur with colours and fonts on the screen and with dust lodging in the projector fan (Levy 2002). When the board has been installed at the right height especially in nursery schools, teachers have noted greater collaboration and sharing occurs (Wood 2001 p.5 cited in Smith 2001).

2.11.2 Technical Support

Becta (2004) also adds that before investing in IWBs schools should ensure they can provide adequate technical support. Training is vital and should not just be once off. Becta (2004) recommends whole school training will need to be planned into the schedule for integration with classroom practice. Other teachers may still need training in basic techniques. Teachers need to be reassured that they have access to technical support when necessary.

In a small scale study focusing on the introduction of the IWBs in two Sheffield secondary schools Levy (2002) found problems occur such as technical difficulties with the equipment sometimes prior and during lessons e.g. slow pen, lack of signal and rapid troubleshooting is a priority. From the Schools Whiteboard Expansion
Project 2007 (Somekh 2007) it is noted that the lifetime of laptops used to run the IWB all day every day is reduced. This was noted in the case study schools where the lifetime for these laptops was roughly only two years. Data projectors lasted roughly three years and bulbs about the same time. Funding for the IWB need to be built into Primary schools’ budget (Somekh 2007).

2.11.3 Who uses the IWB?
Use of Whiteboard by students as well as teachers need to be addressed for effective use (Kennewell 2001 cited in Becta 2003). Research from Higgins et al. 2005 also tells us that although pupils see the IWB as motivating, they do not feel that they have sufficient opportunity to use it themselves. This does not relate to the ultimate aim and a collaborative environment. Levy (2002) has noted that not all teachers are involving pupils – i.e. physically interacting with the board.

2.11.4 Training and Time
Levy (2002) in the above study also found that teachers need basic technical training and support. This could be helped by top down approaches, practitioner focused training or networked expertise (Shenton and Pagett 2007). Training needs to be given to teachers for its effective use. This training should take the teacher’s needs into consideration (Levy 2002 cited in Becta 2003). Kennewell and Higgins (2007) in a future focus on the IWB, suggest that technical training will be inadequate. They suggest that the IWB professional development must address fundamental pedagogical approaches perhaps focusing on an interactive/dialogic approach.

It is noted in the Sweep project (Somekh 2007) that when whiteboards were all installed round the same time teachers collaborative more and improve their skills faster. It is informal day to day assistance that drives the process forward not formal training. There has been little or no training for teaching assistants or head teachers and therefore leads to gaps in optimising its potential. In autumn of the School Expansion Project after using them for two years and on a daily basis, local authorities looked for experienced “hands on teachers” to provide training for others, through teaching release time.
Shenton’s study (Shenton and Pagett 2007) on seven teachers in six primary schools in the South west of England revealed that there was little training in the use of the IWB and this was limited to the sales rep of the board therefore leaving teachers with an issue of more time spent preparing materials. However it is noted by Lee and Boyle (2003 cited in Smith et al. 2005) that teachers planning time would eventually be reduced due to the facility of the technology to save, share and re-use lesson material.

Levy (2002) noted that teachers who were already confident ICT users tended to be able to experiment further and create their own IWB lessons following initial training. On the other hand teachers who were less confident and inexperienced needed more individual guidance.

2.11.5 Interest Level

In a report form London’s Institute of Education (Wikipedia 2009a) it was found that many students having used the IWBs in a classroom setting reported, that although it is an exciting novelty initially, eventually it seems to be a boring, time-consuming gimmick, which is often over used by teachers in an attempt to integrate technology. Becta (2003, p.3) also found in their research that motivational gains diminish as the whiteboard become more familiar.

2.12 Ireland’s Story Compared to Other European Countries

Twig (Becta 2004, p.5) stated that “the IWBs are revolutionising teaching and learning in schools and that they have a significant impact on schools”. According to The American Eduction Reform Speech (Teachnet 2009), President Obabma can see the benefit of investing one billion dollars in ICT in schools to help teachers to collaborate best practice and continue to create a new model of teacher thus leading to authentic learning for children.

The IT2000 programme promised to integrate technology to its full potential into Irish Classrooms. However reports from Boran (2009) claim that once the money had gone schools all over Ireland were left with no way to maintain the information and
communication technologies (ICT) they had worked so hard to integrate into their curriculum. After 2002 much ICT equipment in schools fell into disrepair with no means of funding their maintenance or replacement.

Inspectors Report for ICT in Schools 2008 (Ireland, Department of Education and Science 2008) found only 5% of post-primary schools had an interactive whiteboard, while the corresponding figures for special schools and primary schools were 3% and 2%, respectively. Even Boran (2006) when seeking funding from the Department of Education was asked “What is an interactive whiteboard?” Hanafin the former Minister for Education in the Houses of the Oireachtas (2009) when questioned on her views of ICT in education stated she was unconvinced of the learning potential of these boards. She stated that a “good teacher is a good teacher with a blackboard or a whiteboard and a bad teacher is a bad teacher with a whiteboard or a blackboard. She again recommends digital projectors and how they can be integrated into the curriculum. Campbell (2009b) following an interview with Morrissey (Director of the NCTE) revealed that the NCTE plan to have a laptop and projector installed in every classroom in Ireland within two years and this would be the main priority until such time as the teacher has experience in using an range of ICT equipment and resources in the classroom (Power et al. 2007). The items of equipment the NCTE recommends are teaching computer/laptop, fixed digital projector, classroom PCs, visualiser, mouse/keyboard, speakers before using the IWB (NCTE 2009). They also encourage teachers to attend professional development in effective use of the IWB.

Again they emphasise that if the board is to be used successfully it requires a lot of preparation time to guard against superficial interactivity. Is it worth installing an IWB when “a badly-used IWB is little more than an expensive electronic blackboard” (Campbell 2009a)? Morrissey (Campbell 2009a) believes that if teachers have no prior experience in using technology in the classroom they will simply revert back to didactic teaching. He maintains that a very small percentage of the interactive function is used unless the teacher is “savvy”.

Morrissey claims there is still money available despite €252million of funding which was frozen in 2008. Laptops and projectors that have been identified as the “core components” in using technology to develop the learning experience thus bringing multimedia into classrooms.
In the same years as IT2000 in the Republic of Ireland was implemented, wonderful things were happening across the border developing a “school for tomorrow” (Kennedy 2009b) Grosvenor Secondary School, benefactor of the classroom 2000 project has a 2:1 ratio of computers to students, every teacher a laptop and every classroom with it’s own IWB and a network connected building. Here technology has become the norm all supported by HP (Campbell 2009b).

Futureshouse research house (Butcher 2008) claims there are over 37 million classrooms in 66 major countries alone using IW Bs. They predict that one in six classrooms will be using the IWB in 2012 and in the UK and Northern Ireland almost half of all primary schools in Britain have at least one interactive Whiteboard (Boran 2006).

Moriarty (Butcher 2008) from the IPPN and The ICT in Schools Inspector’s Report 2008 claims that teachers need to place an emphasis on their own lesson presentation and on facilitating active enjoyment by pupils rather than relying on textbooks. He claims that we need to acknowledge the difference between schools being the source of information but on schools facilitating knowledge and thus not relying on textbooks. If this happens teachers may be more open minded in their lesson approaches and pedagogies and will essentially create a wider resource bank (Butcher 2008). We need to equip our students with the skills for the 21st century workplace.

(Kennedy 2009a) claims that Ireland is falling behind when compared to the UK where over 250,000 IW Bs have been installed. This is roughly 95% of schools. The Inspectors report on ICT (Ireland, Department of Education and Science 2008) claims that in a survey of fifth class pupils most of them showed they did not have the competence to complete basic tasks on the computer. While most reported that they were able to perform many of the most basic tasks, such as turning a computer on and off and opening or saving a file, more than 30% reported that they were not able to print a document or to go on the internet by themselves. Almost half (47%) reported not being able to create a document by themselves. The majority were unaware of how to create a presentation (72%), use a spreadsheet (86%), or send an attachment with an email message (88%).
A small scale study in a primary school in South West Wales investigated the impact of using ICT on teaching and learning (Kennewell and Beauchamp 2007). The IWB emerged as the aspect of ICT which had the most potential for learning and helped to raise standards. The study was with 7 – 9 year olds and included interviews with the teacher. The teaching followed a “four phase” lesson (Hughes 2001 cited in Kennewell and Beauchamp 2007). Phase one being teacher lead (whole class using the IWB), phase 2 also used the IWB with scaffolding in a way that all students felt involved. Phase three was group work. This did not involve the IWB and was mostly paper based. The final phase was revisiting the key teaching points and reviewing difficulties using the IWB. The study revealed that teachers found the IWB was effective in gaining students attention, keeping their attention for longer, stimulating thinking and maintaining a focus. The large visual display was the main factor for this difference (Kennewell and Beauchamp 2007).

2.13 Research on the Use of the IWB in Ireland

The only major research into the use of IWBs in Irish classrooms is from Saint Patrick’s College in Drumcondra (Kearney 2009) which is in conjunction with the Computer Education Society of Ireland (CESI) with its IWB Pilot scheme over the 2004/2005 school year. The objectives of the project were to investigate the impact of the IWB on whole-class teaching and the impact on learning to see if new teaching/learning strategies are developed. Following the project a database of teaching and learning resources was created and could be accessed by teachers.

Four Primary Schools, three Post-Primary schools and one special education centre took part in this research as a case-study methodology. Judge (2007) stated that classrooms had to move with the times and interactive whiteboards were the way forward. It was noted that teachers found they lead to more varied, creative and engaging classrooms and aided integration of ICT as well as an improvement in student concentration. Students found the lessons fun, more interactive and more interesting. They felt they had more involvement in the learning process which of course is the ultimate aim. It was also noted that there was an improvement in student concentration. As well as this teachers noted that very few computer labs in schools had a data projector and therefore created inefficiencies in
explanation of concepts.
It was a unanimous view that the IWB in the classroom was more useful than in isolation in a computer room and it again increased teacher and students ICT skills.

2.14 21st Century Teaching
Technology is a relationship with students. Children are living in a social Web2 world. Technology is at their fingertips and comes naturally to them. We must open the doors to the massive opportunities that will make children better learners for the future. Irish schools lack Government support with the result that schools have to resort to local voluntary funding contributions from parents. Money from parents and fundraising was particularly common in primary schools with 40% of them reporting parental contributions and 47% came from organised fundraising for ICT (NCTE progress report, 2002).

For improved education for the future, investment in technology must occur. In other countries it is in the Government’s Policy to look at ICT and funding. Moriarty, who works with the IPPN (NCTE progress report, 2002) warns that we need to equip our children with skills to become problem solvers – these are our workforce. He maintains that students of today absorb information through colour and sound but how can we have 21st Century Learning in Ireland with cutbacks in Government support?

2.15 Conclusion/Summary
This literature review has highlighted the ways in which children learn using the IWB. It also looks at the benefits for teachers and how best to integrate the IWB into their pedagogy. It also takes on board the challenges faced by schools and teacher when using this technology. It focuses on ease of use and the benefits of the IWB to students. But the core of this is the idea of students using the IWB. The research reveals that pupils are not involved sufficiently. It takes approximately two years for the IWB to become embedded into teacher’s pedagogy and forces teachers to go through certain stages in its integration. However the IWB has opened up great opportunities for techno-phobic teachers to confidently integrate ICT into the
classroom. It is worth noting that students may eventually get bored with the IWB as time progresses. It also revealed that perhaps investing in a digital projector may be a worthwhile case until the teacher gets familiar with ICT in a whole class environment. Many of the researchers tell us that “it’s not what you use it’s how you use it” (Virtual Learning 2003). The ultimate control is with the relationship between the learner and the technology. It is evident that there are positive and negative elements with the IWB.

The methodology chapter will focus on the methods of data collection in the case of a primary school in the first year of introducing IWBs.
Chapter 3
METHODOLOGY

3.1 Introduction
The review of the literature review examined use of the IWB as a teaching and learning tool. It stresses the need for training by teachers before the IWB is successfully integrated into the classroom and often it takes up to two years to have it running effectively. The literature suggests that there may be problems with the IWB and schools need to be made aware of them. However it also excites teachers as an easy way to integrate ICT into the curriculum. As well as being highly motivational, students may feel they don’t get sufficient opportunity to use it and may get bored in time. It appears to be used mainly as a whole class-teaching tool.

3.2 Research Methodology
Educational research is “critical enquiry aimed at informing educational judgements and decisions in order to improve educational action” (Bassey 1999). The study examines the ways the IWB is used as a teaching and learning aid for both student and teacher.

Both the positivist research paradigm and the interpretive research paradigm will be used in this study (Bassey 1999).

Quantitative research from the positivist research paradigm is also used as a research tool/ thereby advancing knowledge by understanding and therefore giving rise for an explanation of the reality (Bassey 1999, p.4). This type of research gives rise to facts therefore resulting in quantified conclusions (Bell 2005, p.7).
**Qualitative research** is from interpretive research paradigm. Here the researcher is relying on the participant’s view of the IWB thus interpreting the views of others by a reality driven approach. Bassey (1999, p.43) suggests that they are usually richer in a language sense than the positivist data. This type of research looks at insights of the world rather than the statistical perception (Bell 2005, p.7).

**Case Study:** A case study approach was chosen as the best type of approach in this research. Adelman *et al.* (1980 cited in Cohen and Manion 1997, p.241). state that Triangulating data in a case study is best to maintain the intention of the while responding to all the multiplicity of perspectives present in a social situation. A case study needs to represent and represent fairly differing and sometimes conflicting viewpoints. Case studies according to Yin (cited in Bell 2005, p.10) are about decisions, the implementation process and about organizational change. They can be used to investigate key issues which can give rise to further investigation (Bell 2005, p.10).

Bell (2005, p.11) argues that case studies have often been critiqued to be difficult for researchers to cross-check information, selective reporting, therefore leading to misrepresentation however this is an educational research case study which is associated with educational action through enriching “the thinking and discourse of educators through refining prudence through the systemic and reflective documentation or evidence” (Bassey 1999, p.28), thus trying to inform others and interpreting what is happening. Case studies are also

> carried out systematically and critically, if they are aimed at the improvement of education, if they are reliable and if by publication of the findings they extend the boundaries of existing knowledge, then they are valid forms of educational research.


This case study will use both quantitative and qualitative methods.
3.3 Overview of Research
This study aims to look at the introduction of the IWB in a mixed Primary school equipped with nine fixed interactive whiteboards – seven eBeam boards and two TouchIT boards. It seeks to look at the teaching and learning benefits for both student and teacher. It may also be of benefit to those who may be in a position to buy an IWB for their school and want some guidance and information from a school that has been using them for less than a year. The researcher wishes to investigate the teaching and learning benefits for both the student and the teacher using them for less than a year. The researcher also wishes to clarify are they being used to their full potential i.e. as an interactive whiteboard?

Through this study the researcher wishes to clarify the following:

- Are children really learning with Whiteboard technology or is it simply Boon or bandwagon? (Smith et al. 2005)

- Is the interactive whiteboard technology we use as teachers helping us promote collaborative learning or is it going back to a “didactic sage on stage” approach?

- What teaching and learning problems/benefits emerge after having an IWB for almost a year?

3.4 Creating a Subject Directory
Upon retuning from career break the researcher was told she would have an IWB. It was installed within a few hours and no training was given even though the researcher was ICT competent. It was noted from listening to teachers’ reaction soon after installation, some teachers began using them as a board for electronic writing and showing DVDs. Before this there was one digital projector in the school (many teachers didn’t even know the potential of this) which was rarely used. Now there are 9 IWBs within the space of a year. The researcher wishes to get the views of a sample of children from Junior Infants to 6th class and the views of the nine mainstream teachers who have been using the IWB. She also wishes to get the
opinion of the principal who oversees this and the views of a computer teacher (Microsoft Office Master Instructor) who has taught her lessons for the first year with the aid of the IWB.

3.5 The Setting
The setting for this case study is a Primary School in Ballina, Co. Mayo. The researcher has been teaching here for six years. Because of the population boom, the school has grown dramatically over the past 6 years. Most of the children come from middle class families.

There is an Interactive whiteboard in every classroom – seven eBeam and two TouchIT boards. The IWBs have been installed in the classrooms for approximately eight months. The TouchIT boards have been installed for two months. All laptops are connected by a network and have wireless Internet access. There are no IWBs in the Learning Support/Resource rooms.

Each teacher has a laptop funded by the school for individual planning and preparation. This laptop is also used twice a week to support a computer class. There is no ICT suite in the school. The staff therefore focuses on the collective experience of having the IWB for whole class teaching. Computer lessons focusing on Microsoft skill development are offered from 4th to 6th class over a six-week period. This is the first year the lessons have been offered to 4th class.

3.6 Selection of Participants
As the research was based in one school, the nine classroom teachers who all have an IWB were involved. The Principal was also involved and an external computer teacher (Microsoft Office Master Instructor).

For the IWB lesson versus the same lesson using a laptop, forty four children from 3rd and 4th class were selected. Mixed ability grouping was used. The children were randomly arranged into two groups – Group one for the laptop lesson and group 2 for the IWB lesson. There were twenty two children in each group.

For the interviews and the drawings 6 children were randomly chosen from each class – six boys and six girls from Junior Infants (two classes) and three girls
and three boys from Senior Infants, 1st, 2nd, 3rd, 4th, 5th and 6th. The total sample was 54 children ranging from five to twelve years of age. All classes have had the IWB for less than a year. None of the teachers had more than one year's experience of using them.

3.7 Data Sources
Case study research may involve any number of data collection techniques. For reliability and validity to be established a multi-method approach was considered using the following:

- Pre and post-tests administered - Use of software to test between lessons using the IWB vs. the same lesson using a laptop/computer cluster with no IWB.
- Evaluations by children on the above lessons
- Sample drawings of how the IWB helps the students learn
- Questionnaire to staff
- Interview Children in a group setting
- Interview Principal and Microsoft Office Master Instructor computer teacher
- Focus Group with 5 members of staff
- Observations: Teachers had a student speech bubble sheet. They could log any responses made by pupils informally at break or after a lesson or any observations they noticed over the 4 weeks while using the IWB on a daily basis.
3.7.1 *The Questionnaire*

The survey is the most common type of data collection in research (Cohen and Manion 1997, p.83). They essentially “gather data at particular point in time with the intention of describing the nature of existing conditions”

A good questionnaire should be

“clear, unambiguous and uniformly workable. Its design must minimize potential errors from respondents and since people’s participation in surveys is voluntary, a questionnaire had to help in engaging their interest, encouraging co-operation, and eliciting answers as close as possible to the truth”

(Davidson, 1970 cited in Cohen and Manion 1997, p.93)

Youngman (cited in Bell 2005, p.137) lists seven types of questions that can be used in a questionnaire.

- **Verbal/Open**: These are questions with a word, phrase or extended comment. These can be useful for an introduction to a follow-up interview.
- **List Questions**: A list of questions is offered where the participants choose
- **Category**: The participant can only choose a certain category with one answer only.
- **Ranking**: Place questions in the correct order such as qualities or characteristics
- **Quantity**: The participant chooses a number
- **Grid**: A table or grid is used to record answers. They may ask students to provide answers to two or more questions at the same time.
- **Scale**: Scale questions discover strength of feeling or attitude. An example is the Likert scale which ask respondents to indicate strength of agreement or disagreement within a given statement or series of statements, generally on a five or seven point range Likert (1932 cited in Bell 2005, p.219).
3.7.1.2 Application to Research

Purpose sampling can be used in this methodology thus helping the researcher build the sample specific to their needs (Cohen and Manion 1997, p.89). Nine class teachers were involved and the staff were previously given a letter to explain their part in the case study (see appendix 1) and subsequently received an email link to questionnaire on Monday 20\textsuperscript{th} April. They were given three weeks to complete. The questionnaire asked for qualitative and quantitative feedback. Survey Monkey was used to create the questionnaire (appendix 2) as it offered a good selection of pre-made templates based on open questions, list, category, scale and ranking questions. All questionnaires were completed on time. The open responses from the questionnaire helped the researcher develop a better follow-up focus group interview.

3.7.2 Interviews

An interview can be described as a two-person conversation initiated by the interviewer for the specific purpose of obtaining research-relevant information Cannell and Kahn (1896 cited in Cohen and Manion 1997, p.271). Interviews are often used for their “adaptability” (Bell 2005, p.157) due to their flexibility. Cohen (1976 cited in Bell 2005, p.82) adds that interviewing is like “fishing…requiring careful preparation, much patience and considerable practice if the eventual reward is to be a worthwhile catch”.

Bell (2005, p.161) claims that most interviews are somewhere between the completely structured and unstructured continuum. The guided interview is one where certain questions are asked but the respondents have the freedom to give their views on the question. The advantage of this is that a framework is in place (Bell 2005, p.162).

Focus group interviews are also used as a way for participants to interact with one another, listen to views and give a clear understanding of a topic. There the interviewer becomes less of an interviewer but more a facilitator. Bell (2005, p.162; Cohen et al. 2007, p.98 ) points out that “the research will need to consider the extent in which it is important that the sample in fact represents the whole (group)”.
There is a danger that a balanced view point will not be reflected. Hayes (cited in Bell 2005, p.163) warns that “groups have to carefully balanced in relation to age, sex and ethnic status”. Sometimes strong personalities may take over. Denscombe (1998, p.115 cited in Bell 2005, p.163) warns that it is “men who tend to hog the centre stage in group discussion.” It is important that the researcher keeps the group in line.

3.7.2.1 Application to Research
The main purpose of the focus group interviews for the researcher was for follow up on the questionnaire. This would give the researcher a better insight into the open-ended questions from the questionnaire.

Focus Group Interview
A focus group (appendix 5) was selected from five out of nine teachers as a means of establishing whether the answers from the survey were fairly answered. They were randomly chosen to represent the various class levels. Three women and two men participated to give a balanced view. The interview was recorded also.

Interview with the Principal and Computer Teacher
The Principal was interviewed on 27th April 2009 (appendix 3) and the Computer Teacher was interviewed on 13th May 2009 (appendix 4). These interviews were both held in the principal’s office. They were semi-structured interviews that lasted 20 minutes and were taped. The questions were used as a guide for the researcher while providing flexibility for the participants to raise their own issues.
The Children’s Interview

According to Labov (cited in Cohen et al. 2007, p.154) when interviewing children they can react strongly to contextual matters. For example the language of children varies with the ethnicity of the interviewee, the friendliness of the surroundings, the opportunity for the children to be interviewed as friends, whether the adult was standing or sitting and the scene. When interviewers make children at ease in familiar surroundings the validity and reliability of the research is aided. Group interviews are recommended with children as this takes the focus away from the researcher empowering the interviewee to give responses the researcher wishes to hear. Silverman (1973 cited in Goodison 2002).

From the research of Greig and Taylor (1999 cited in Wall et al. 2005) having a template for children when interviewing means they can interact with it e.g. by drawing faces on characters and filling in the speech bubbles /bubble dialogue. This method is based on work by McMahon and O Neill (1992 cited in Wall et al 2005) using speech bubbles to support discussion. This type of interviewing creates a three-way interaction between the pupil, the researcher and the template thus stimulating talk and reducing interviewer-interviewee tension. The bubble represents what’s going on inside their heads (thought bubble) and the speech bubble is an external factor e.g. others learning, the teacher. An overlap may occur. In beginning the interviewer should start with the general speech bubble type questions. Combining the two bubbles increases reliability across the interviews.

The children were told they were giving their views on using the IWB in their classrooms. The interviews were of a semi-structured variety. A speech bubble technique was used for 5th and 6th classes (appendix 6) and all interviews were recorded. Children were told not to worry about spelling and grammar. The interviews were held in a spare learning support classroom which children were familiar with.

There are over two hundred and fifty children in the school and it would have taken days of interviewing. To get a balance the teachers were asked to randomly select six children from each class – three girls and three boys.
The children were interviewed in groups of six. It was hoped this would lead to more discussion with the younger children and it allowed for more interaction among the interviewees. The interviews were held over two days while the researcher was able to take an EPV day.

3.7.3 Drawings
Picture-drawing was also used a method of qualitative data collection. When drawing children can become more receptive to researcher’s questions (Pagett 2006). Using pictures in case studies gives an analytical account of education events or systems. It is a descriptive account which helps to draw together the results of the exploration and the analysis of the case. This adds to a discursive account of the case. Crossley and Vulliamy (1984 cited in Bassey 1999, p.63) look at this kind of a case study method in education where the potential of such work within the field is considerable. Case-Study Research need not be purely descriptive; it need not be limited to the micro-level; and it need not ignore comparative analysis itself. By focusing on the complexities of educational practice, it can lead to important modifications of both educational policies and comparative theories of educational systems” (Crossley and Vulliamy 1984 cited in Bassey 1999, p.63)

3.7.3.1 Application to Research
The researcher decided to allow all classes to bring their pictures to the interview, as it would act as a focus and hopefully show the researcher ways in which teachers are using the IWBs within the school system.
To decide if childrens’ perception was good they were asked to “Draw a time when they thought the use of the IWB was interesting and helped them learn” (appendices 23, 24, 25). They were also told they draw exactly what comes to mind when they think of the IWB in their classroom. They were told they could add some text if they wished. Fifty four drawings were made (six per class). The children spent 15- 20 minutes working on these. They then spoke about them in the interview situation.
3.7.4 Software/Pre-test/Post-test/Evaluation

The researcher had created a multimedia piece of software which was previously designed with Mayer’s Seven Principals of Multimedia Design (see CD). The researcher believed it would be ideal to use with the IWB. 3rd and 4th class (44 children) did a pre-test (appendix 7) to see how much they knew about Saint Patrick on the 6th of March 2009. This pre-test lasted about half an hour with no help from the teachers. Group 1 (22 children) were taught about Saint Patrick using a laptop/PC cluster (appendix 8) and group 2 (22 children) children were taught about the same but using the IWB (appendix 9). The lessons were carried out over three days (10th – 12th of March), an hour per day (lesson plans appendices 10 and 11).

Photographs were taken of the children at work. On day three the children were asked to complete an evaluation of the lesson (appendices 12 and 13). A post-test was then administered the day after the last lesson (appendix 14). This was identical to the pre-test with twenty questions.

3.7.5 Recording observations

Observations allow the researcher or person the skill to “spot significant events” Nisbet (1977, p.15 cited in Bell 2005, p.184). A structured observation approach is one where the focus has been decided and the participant is asked to record. Observation schedule can take many forms such as a checklist, chat, time or log (Bell 2005, p.188). Observations often reveal characteristics of a group or individuals. The nine classroom teachers were asked to report on any informal talk or conversations they heard children say about the IWB (in their classrooms or on yard duty). A template in the form of speech bubbles was given to each of the staff (appendix 15). Teachers were given a month to complete the task.
3.8 Triangulation

Triangulation, according to Cohen and Manion (1997, p.233) is the use of two or more methods of data collection in the study of some aspect of human behaviour.

Triangulation contributes to validity and reliability through the case. Using this multi-method approach (Cohen and Manion 1997, p.235) it gives a better picture of the reality of the IWB. Triangulation is a useful technique in case studies as it “is at the heart of every case study worker to respond to all the multiplicity of perspectives present in a social situation…..case study needs to represent and represent fairly, these differing and sometimes conflicting viewpoints” (Adelman et al., 1980 cited in Cohen and Manion 1997, p.241).

By triangulating data the same thing is seen “from different perspectives and this to be able to confirm or challenge the findings of one method with those of another” Law (2003 cited in Bell 2005, p.116). Reliance on one method may bias or distort the researcher’s picture of the research and once different methods of data collection are established the researcher can have confidence (Cohen and Manion 1997, p.233).

3.9 Reliability and Validity

Researchers need to be aware of reliability in research. Reliability “is the extent to which a test or procedure produces similar results under constant conditions on all occasions” (Bell 2005, p.117). For this a focus group interview was held shortly after the questionnaire.

Validity in research looks at the design of the research “to provide credible conclusions” Sapsford and Jupp (1996) cited in (Bell 2005) p.117

3.10 Potential weaknesses of the study

As this research is based in a school, time is limited. Because the researcher was using a piece of software to do with Saint Patrick this part of the research had to be carried out in March (see appendix 16 for the research timeline). Bell (2005, p.116)
stresses the need for the triangulation process here. She looks at the constraints of making meaning for short term research and to “use the best available time”.

The researcher was not convinced that the post testing would measure accurately and improve standards in such a short period of time. A longer study would be necessary to measure the effect of being taught using the IWB over time and perhaps measure it against a school with no IWB in a further study.

As the researcher is a classroom teacher it was difficult to get time away from the classroom to conduct the interviews. The interviewer was under pressure. Arrangements had to be made with the Learning Support Teachers who kindly relieved the researcher for certain periods when possible. The research was also lucky to have a sister who was on work experience and was able to help supervise a class. For the laptop lesson many of the children had never used a laptop’s touch pad and found it tricky to use.

3.11 Ethical Issues
Informed consent arises from the subject’s right to freedom and self-determination (Cohen and Manion 1997, p.350). As the researcher was dealing with children within legal context the researcher must adhere to “confidence and consent” (Fraser et al. 2004, p.44). Fine and Sandstrom (1988 cited in Cohen and Manion 1997) suggest that researchers must provide meaningful and credible explanation of their research intentions and children must be given a real and legitimate opportunity to say they do not wish to take part. The following procedures had to be adopted.

- Permission was initially sought from the Board of Management and the School Principal (appendix 17).
- Parental consent had to be obtained from all children involved in the research (appendices 18 and 19) through a letter which was signed and brought back to the researcher.
• The children in the interviews were given pseudonyms e.g. Miss E, Mr C. They laughed at this. Their role in the research was also clearly explained to them inline with the recommendation of Fine and Sandstrom (1988) cited in Cohen and Manion 1997, p.353) where a full explanation should be given to the interviewees even though they may not understand everything.

• A letter was also given to the staff outlining their part in the research (appendix1).

In all cases the participants were warned of the confidential nature of the study and anonymity would be assured.
Chapter 4
FINDINGS

4.1 Introduction
This chapter examines the findings resulting from the research. It is divided into two main sections.

Section 1 looks at the findings of children’s views on the IWB from pre and post testing, interviews and drawings.

Section 2 looks at teachers and educators collaborative interpretation of the IWB. It also examines how the teachers have embraced ICT through using the IWB. The findings for this section come from interviews, a questionnaire and a follow-up focus group interview.

Section 1: Findings from Children’s View of the IWB

4.2 Pre and Post testing
The pre-test was carried out with a group of 44 children from 3rd and 4th class in March 2009. This was to see initially what the children knew about Saint Patrick (appendix 7).

![Results from Pre-Test](image)

Figure 1: Pre-test results

This pie chart revealed that 34% of the 44 children answered the questions correctly while 56% were unable to answer all of the questions given. 10% of the children
attempted the questions but their answers were incorrect (appendix 20a).

The lesson was then taught to two groups of twenty two children for one hour each day over three days. One half was taught using the IWB only and the other half were taught in pairs using the laptops and no IWB. Children also filled in an evaluation of the IWB lesson and a laptop lesson.

Results from the lesson taught using the IWB, revealed that 81% of the children answered the questions correctly after learning in this way. This time only 12% of the children left questions unanswered and 7% attempted questions but the answers were wrong (appendix 20c). The figures reveal there were a 47% increase in correct answers and a 44% decrease in unanswered questions. The children in the IWB lessons enjoyed the dramatic element associated with the characters.

“It was fun that all you had to do was touch the characters and they would speak” (4th class child). Some problems areas emerged for the children such as “not to let the light in your way because it is hard to read with it on” (3rd class child) and some children also wanted “more goes for everyone” (4th class child).

Despite this three children commented that they liked using the IWB as a class “you work with the whole class and not in singles” (3rd class child). One child commented they like listening to the characters and they stated that “it was easier than teacher telling us” (appendix 9).

![Results from IWB Lesson](image)

*Figure 2: Post-test results from IWB lesson*
The figures from the laptop lesson were very similar to the IWB lesson with 78% of children answering correctly, 12% unanswered questions and 10% attempted the questions but got them wrong (appendix 20b). Despite a 44% increase in correct answers and a 44% decrease in unanswered questions comments from the evaluation form, it was revealed that it was the novelty of having a laptop in a classroom setting that made the lesson exciting and was “nice to get a break from the IWB”. Another child remarked that everyone could get a go on the laptop and if it was taught on the IWB “you might not get a turn”. They liked the fact that it was “not just one person doing it”. Children also commented that they preferred using the laptop as “everyone would see” if they got something wrong on the IWB. The children liked working at their own pace (appendix 8).

![Results from Laptop Lesson](image)

**Figure 3: Post-test results from laptop lesson**

### 4.2.1 Student Interviews and Drawings

Fifty four children were interviewed, six children from each class. Each interview lasted roughly twenty minutes (appendix 21 for sample questions, appendix 22 for two full transcripts). Children were asked to draw a picture of how the IWB helps them learn or what they like about the IWB. This was not only used as a tool for discussion among the researcher and to ease the children into an interview setting, but it also revealed that 60% of the drawings showed pictures of maths games and lessons.
Many of the children spoke about the way the IWB has made maths fun for them “it makes maths more fun. It’s not just boring. People talk to you and you don’t hear Mr...voice all the time” (6th class girl).

4.2.2 Excitement and Motivation

When 6 junior Infants were asked if they liked the IWB they sang the “monkey game” song and that teacher “likes to do the numbers” on it. Other children commented they preferred it to looking at a book as “when your looking at your book you get confused a bit, you get distracted, you get lost but when you look at the IWB it looks more fun so your looking at that” (4th class child) (appendix 15 for a summary of children’s reactions informally recorded by teachers in the classroom). 53 children agreed they like having the IWB in their classrooms to the extent they would feel “sad” if there was no IWB next year. “There would be no fun on the whiteboard….no fun games to do” (Junior Infant). However one child told the
researcher “how he liked old fashioned things better than a touch board” (2nd class).

There was great excitement for the board in the infant rooms “I really love the whiteboard; I wish I had it in my room but I don’t have enough money”. (Senior Infant girl).

When children were asked if they felt the IWB helps them learn better it was revealed “I just felt it was boring with the old board” (Senior Infant). The level of enthusiasm in the Infants was great “I just love the way you can drag stuff, I love the way, I just love the way you can write with the IWB without having to use any ink on the pen. I just love it”. (Senior Infant).

2nd and 3rd class children were very impressed with the size of the screen “I feel like I’m in the board, like I’m actually in the movie but nobody’s talking to you. It’s like your not part of the movie but you’re in it” (2nd class girl).

“If your teacher puts it on big view where it’s all over the IWB you picture you are there actually. It looks like you are actually there…it looks real” (3rd class boy).

The pupils who were new to the board could see a big benefit when compared to the portable projector “you don’t have to plug things in like the projector. It saves time and we’re ready quicker”. However when there is no signal “it wastes time in class” (2nd class pupil) and (5th class pupil).

Another child (5th) spoke of how he liked “the way you can save files on the eBeam….if someone was out they next day they can take them down again”.

4.2.3 Learning Benefits

When the interviewer questioned the student about how the IWB helped them one child said “yes it does get your attention more quickly than a normal whiteboard with a marker”.

“It’s like watching TV, it catches your eye and then you just want to have a look instead of colouring on your page or something” (3rd class boy).

“There are more things to do to help you learn” (3rd class).

One child revealed she believes “it’s the right board for the 21st century. It’s easy and
fun to learn on the IWB” (3rd class).

Another child told how “the teachers prefer it too instead of having to read a big long book” (3rd class).

The IWB appeals to the senses as you can do “listening, hearing and watching, all the things that an IWB can do instead of a book” (3rd class).

The children from 5th and 6th class who received computer lessons taught using the IWB thought it “was easier to see the lesson on the big board” and “you could see where she was pointing to” “if you’re watching the whiteboard you won’t make mistakes”.

The visual element was a high plus for learning. “In geography if water is coming in and out of the sea you can actually see what it looks like instead of pictures” (6th class).

They also spoke of the learning benefit to foreign nationals who may not have a good vocabulary as “we can get pictures for her and she can see them” (5th class).

4.2.4 Problems with the IWB

The findings from the interviews revealed that most children were happy with the IWB but many problems arose which annoyed them such as “when dust goes into the fan and the calibration” (4th class child). They felt they would prefer a laptop lesson from time to time as they would have more control over the lesson and were able to control the pace of their learning and perhaps go back on things, however with “the eBeam there is only one of them and you have to move on” (4th class).

Other problems arose such as:

- “it’s very fragile”
- “If your sitting at the back and your looking a the projector there’s a big shine on the board……it’s always there…..I have to move over to get rid of the sunshine” (4th and 5th class)
• Sometime’s it doesn’t touch exactly where you want it to touch. Like when… was doing the story and it wouldn’t exactly drag and drop there”
• “Sometimes the board doesn’t go onto touch. We have to turn it off and then back on again….sometimes it has no signal and it’s really annoying (2\textsuperscript{nd} class)
• “You always have to calibrate something” (4\textsuperscript{th} class)
• I don’t like the beeping sound that teacher has to do (Senior Infant)
• Teacher should be able to use the remote from his desk to turn on the projector. I think its problems with the sensor” (3\textsuperscript{rd} class).
• When technical problems arise the learning “gets boring” (6\textsuperscript{th} class)

4.2.5 Fairness

30% of the drawings showed the teacher controlling the lesson

\textit{Figure 5: 4\textsuperscript{th} class child demonstrates that they feel they don’t get a fair chance
(see appendix 24 for more images)}
Many children from the teacher’s informal log stated they never get a fair go “He got to do it yesterday so he shouldn’t get to do it today” (4th class child).
“It’s not fair; he got two goes to do it” (Junior Infant child).
(see appendix 15 for more quotes from the children’s initial reactions to the IWB)

Where the IWB was only installed for a couple of months it seemed the teacher was reluctant to allow the children use it or perhaps still not confident with it. “The man who got it showed us you could drag words to where they should be but we never get to use it. She’s getting use to it” (1st class girl).

This also concurred with the results from the children’s interviews where they felt the same “teacher hogs it a bit” (4th class child).
One child (2nd class) told the researcher she “feels a bit annoyed sometimes because ….it’s mostly the people in learning support” who get a go.
They felt that learning with the IWB is fun only “when everyone gets a go”. When we all do it together it’s fun like if everyone is helping each other” however the same child stated it’s a waste of time if we don’t all get a turn.” (4th class child).
However the children are learning from watching their teachers do work on them “by watching Mr….I have learned to access and save different files” (6th class)

Similar answers were found in 2nd class “I like the IWB because you can learn to play the game from watching someone and listening”.

When children were asked if they ever felt under pressure to come up and choose an answer they said “it’s kind of frightening when you first go up and you don’t know the answer…” (4th class). One child expressed that “if you make a mistake it’s kind of embarrassing” (4th class girl). Children also expressed fear of class mates intimidating them “sometimes when you get it wrong, they start shouting at you saying oh why didn’t you go for the answer I said” (4th class)
Section 2: Teacher’s View of the IWB

4.3 Introduction

The findings from the questionnaire, log, focus group and interviews with school principal, computer teacher and 9 classroom teacher’s are recorded by integrating the two research questions.

1. The Promotion of Collaborative Learning verus Didactic Learning for Teachers and Educators using the IWB
2. What problems/benefits arise after having the IWB for less than a year.

These questions are discussed under the following subheadings:

- Promotion of collaborative learning
- Ease of Use and Pedagogical Change
- Initial Feelings about the IWB and Attitude to the IWB
- Advantages of the IWB for teachers pedagogy
• Disadvantages of the IWB for teachers pedagogy
• Support and Training Issues for the IWB

4.3.1 Promotion of collaborative learning

The results from the questionnaire (see appendix 2 for template) revealed that 88.9% use the IWB for whole class teaching, 44.4% ensure students participation and 44.4% use it didactically and 22.2% use it with individual children.

The focus group (See appendix 5)

Teacher 4 states “they do things as a class together with everyone getting involved and learning from each other”.

One finding that emerged over the focus group and the questionnaire was the need for more “collaboration between staff on resources that have worked well”. Teacher 2 in the focus group maintained that “with the other staff members helping” she learned what to do.

One teacher felt that the children pay more attention but the teacher has to be “willing to involve all children otherwise it could revert back to chalk and talk” and that was a danger. 22.2% strongly agreed they spend more time at the board than before and 44.4% agreed. This was backed up in the focus group where teacher 4 and 5 both were worried they were not creating an interactive learning environment for the children as the interactive resources “are hard to get them” and it “takes a lot of time”. Teacher 4 admitted that they have been using the IWB mostly for writing. However in the questionnaire 16% said it allows for high levels of interaction but 20% rated the lack of resources as a problem. This was the biggest problem.

Teacher 1 from the focus group felt that of the best ways for collaboration with the staff is to create a common pool of resources thus saving time (teacher 3). From the questionnaire 66.7% of the teachers agreed that teachers should share resource and help one another with 33.3% strongly agreeing to this.

Teachers can see the whole class benefit from the IWB. Teacher 1 feels “the children are not intimidated to use the computer” as they see it on a daily basis and from watching the teacher “they learn the language of computers” (teacher 3). They can
help you out as well”.

### 4.3.2 Ease of Use and pedagogical Change

The study found that the IWB is changing teacher’s perspective on integrating ICT into the classroom. When teachers were asked in the questionnaire how many times a week do you use the IWB the result was 22.2% used it very often (for most lesson), 44.4% used it at least once a day and 33.3% used it occasionally. Everyone used it at some level. 75% of the teachers felt the IWB was easy to use as once you are “comfortable with the PC you are comfortable with the IWB” (Teacher 4). Two teachers found it very difficult as they had “no training”.

Teacher 1 found it was now easier to integrate ICT into everyday classroom life. She felt with one computer it was impossible to integrate lessons. Now all children can see the benefit.

Teacher 2 felt it hasn’t changed their teaching it is only to support the content of their teaching.

Teacher 4 felt that it hasn’t changed their teaching style but now they do things as a class together with everyone getting involved and learning from each other.

The principal replied that she felt teachers “have got more enthusiastic about teaching” and it is good to “keep yourself revitalised” in your career.

The computer teacher claims there is a much more “efficient delivery” of the skill development. She told the researcher how she does not need to verbalise the instruction for the children as much. She is can now sit at her desk with IWB showing the children how it is done with one click.

### 4.3.3 Attitude and Initial Feelings about the IWB

Teacher’s initially were excited at the arrival of the IWBs but one teacher did feel apprehensive and another did feel quite nervous. Teacher 6 felt she may be under pressure to use it all the time. In the focus group it was revealed that all 5 teacher liked it but teacher 2 was “a bit afraid of it at first” as it “was all too much at once and was a bit hard to take in”.

Teacher 6 felt also that it was simply an “extra workload for hard-pressed teachers”. Does this reflect poor training and lack of resources?

Teacher 2 hoped that future IWB models would be more user friendly. Problems
were found with connections (due to Windows Vista). Others included problems getting the touch server to connect, slowness of the laptops to pick up the external monitor, the pen not working, the board needing to be calibrated regularly and lack of software and when these happen “the children become restless”. Lessons that are planned for are “gone out the window”. Teacher 3 mentions that you can have a lesson planned and then because of Windows Vista logging onto the server becomes a problem. Therefore the lesson has the functions of the laptop projector but is “not interactive”.

The principal maintains that “the IWB is keeping up with the times, bringing the school into the 21st century.

The teachers were all happy to have the IWB in the classroom. Two teachers agreed with the statement that a regular digital projector on their classroom would have been better value for money.

4.3.4 Advantages for Teachers

18% of the interviewees felt that the main benefit of using the IWB was the increase in student motivation.

“I feel that the children listen more and are more motivated and enthusiastic. They also listen more and learn from each other” (Teacher 8).

Only 2% believed it increased the pace of the lesson. Often when things don’t work the “children become restless”. Another major benefit is integrating ICT into the curriculum. All teachers agreed with the statement that they are using more ICT because of the IWB.
The main advantage for the computer teacher was a health issue (appendix 4).

“If I was teaching a tricky move like auto fill in excel…..I would literally be bending over every single child until they got it right and a lesson is 2 hours……by the end of Thursday night my lower back was killing me….as far as a health and safety issue goes, very detrimental to my lower back health for sure”.

(Microsoft Office Master Instructor)

She stated if she had to go teaching without it, it would “be physical pain”. Therefore she can continue teaching for a lot longer. She feels children pick up the instruction quicker and therefore more can be accomplished in a lesson. She looks on it “as the verbal foundation…..the verbal because that’s what I’m thinking and I’m verbalising it because I am doing it as well. They’re seeing it and matching the two together”.

Her result is more efficient learning acknowledging that was the 4th best benefit for the IWB – accommodating learning styles.
4.3.5 Disadvantages for Teachers

Teachers were asked to rank the problems associate with the IWB in order of difficulty. The results were as follows:

![Problems with the IWB](image)

- Shadows from projector: 20%
- Battery dies in pen: 7%
- Need for regular calibration: 4%
- Problems connecting it to the projector: 9%
- Light from windows make it difficult to see for children: 11%
- Lack of knowledge among teachers to use it effectively: 13%
- Increase in preparation time: 15%
- Lack of help on hand when something goes wrong: 17%
- Lack on in-service/training: 15%
- Lack of resources to use with it: 15%

*Figure 8: The problems with the IWB after less than a year*

The most problematic aspect was the lack of resources to use with the IWB with 20% of the teachers rating this as the most problematic.

4.3.6 Support and Training Issues for the IWB

When teachers were asked how they were trained for IWB use, 62.5% of them were trained by the person who installed it, 12.5% received a course and 37.5% were self taught. 25% found the training very useful, 37.5% average, 25% poor and 12.5% said it was poor. However the follow-up support for the IWB resulted in 14.3% being excellent, 14.3% very useful, 28.6% average and 14.3% said it was very poor.
Teacher 1 in the focus group never had any formal training. He was simply told “if you’re ok on a computer you’d be fine”.

After almost a year of the IWBs in the school 77.8% of the teachers feel adequately prepared to use it. Teacher 3 felt that a bigger focus on training is required and a special link to maintenance is required as part of this training. This was rated as the second most problematic area with the IWB followed by lack of “hands on” help when something goes wrong.

The Principal informed the researcher that “she was amazed …and the staff took to it like a duck to water” (see appendix 3). She stated that the secret to getting the staff interested was getting them familiar with a personal laptop bought for each staff member. She reckoned “that it took them longer to get used to the laptops than the whiteboards”. So the familiarity with their own laptop and the collaboration from the staff resulted in no major difficulties. She also maintained that by purchasing an IWB for each classroom it ensured use instead of a mobile unit which could have been left in the hall and “people would be giving out”.
Chapter 5
DISCUSSION OF FINDINGS

5.1 Introduction

This study looks at the teaching and learning benefits of the IWB for both student and teacher. An analysis of issues in this chapter is drawn from the literature findings and that of the case study research.

Similar themes emerged from the literature review and the research findings. These themes will be discussed in two sections. However some of them may overlap.

Section 1: Pupils views of the IWB for teaching and learning

This will be discussed under the following subheadings:

- Evaluating the quality of learning – How did the IWB help them?
- Students general opinions on the IWB including technical hitches

Section 2: Teachers views of the IWB for teaching and learning

This will be discussed under the following subheadings

- Pedagogical change
- Attitudes to the IWB
- Support and Training for use of the IWB
Section 1: Children’s views of the IWB for Teaching and Learning

5.2 Evaluating the Quality of Learning for Children Using the IWB
In reviewing the work of Cuthell’s (2005) four key reasons for interactivity in the classroom, elements from all four emerged from the children’s views based in the research.

5.2.1 Osetensiveness
The students enjoy physically using the pen and are motivated to physically interact with the board (Becta 2003). However many of them feel they never get a fair chance to use the pen or come to the board. 30% of the drawings showed the teacher taking over and the children passively observing. Findings from Becta (2003) state that it not always necessary for the children to interact physically with the board. However many students felt they didn’t get a fair chance. Higgins (2005) shows that although pupils see the board as motivating, they do not feel they have sufficient opportunity to use it themselves. The research study indicated that the children preferred to use a laptop in pairs because they would get a fair chance and could control the pace of their learning. Some pupils felt that they never get a go at all as their teacher is still only getting use to it. Perhaps this may reflect the notion that the boards are still new and teachers may not have the training or confidence to use them efficiently yet or perhaps the novelty of having a laptop for the lessons was a break from the IWB. All of the children from the Junior part of the school found it hard to reach the board at times. This was apparent in the findings of Smith (2001). Careful consideration should be given to classes in the Junior end of the school to the height of the board.

5.2.2 Lucidic Elements
The researcher found that pupils think the IWB is “fun”. They loved the dramatic element of the IWB and thought of it as exciting, makes lessons more enjoyable and they enjoy hearing characters speak and move but they need to be involved more and the teacher less. This does not lead to a collaborative learning environment according
to Levy (2002).

5.2.3 Visualisation

Visualisation appeals to children. They enjoy the use of colour and movement. The observations from the researcher concur that some children felt like they were in the cinema when the IWB was in the room and they thoroughly enjoyed songs with the amplified sounds. Some children felt they were actually in the board. It was eye-catching. This mirrors the research of Miller and Glover (2002) where children like the large “visual images with a more modern or contemporary feel that satisfy the expectations of pupil already immersed in a world of media images. It also mirrors the findings from Becta (2006) where it creates a theatrical effect therefore helping children learn from others and the findings from Kennewell and Beauchamp (2007) where the large visual display was effective in grasping students attention and maintaining a focus. The children liked the way the teacher was able to show words and this cut down on photocopying etc.

5.2.4 Bricolage

Children often felt they never got a fair chance to use the board and felt that “teacher hogs it” (4th class girl). However meaning is still constructed for the children as observe others.

5.3 Children’s View on learning and teaching with the IWB

In reviewing the work of Goodison (2002) where he claims ICT skills are improved, observations correlated with those of the researcher from interviews and children’s drawings. They revealed that children were confident to speak about the IWB and were able to use technical vocabulary to explain the IWB to the researcher. 4th, 5th and 6th class children felt they had learned a lot of skills from watching their computer teacher and class teacher model skills informally “it shows you more skills on the computer” (4th class child). This was also noted by the Principal of the school where she feels children actually explained here how to work it and get into scrapbook and how to scroll. It was also noted that the pupils could even inform
teachers of the technical issues. The Microsoft Office Master Instructor also noted that the students are making great progress this year due to the overlapping of the learning styles.

Levy (2002) explains that the IWB is a wonderful tool for visual clarity as teachers writing and the use of using different colours, size of font helps. Many children felt they could see the board very clearly but visual problems often occur with colours and fonts on the screen and dust lodging in the projector fan (Levy 2002). It was evident from the case that technical hitches annoy the children for example the need for regular calibration with the “beep, beep, beep” sound (senior Infants), fan fail and the battery failing in the pen and not being able to reach the top. It gets boring when theses things don’t work and Smith (2001 cited in Becta 2003) reports that the position for the IWB in the classroom is crucial. Shadows also proved to also be problematic.

The height of the board also was an issue. This was noted especially with the children in the younger classes where “not everyone is able to reach it” and they noted the fact that it should be lower. “I would like them to move it down a bit” (Senior Infant child). Some children needed to use a chair and they noted the fact that you have to “be big to get up” (Junior Infants). However this also conforms with the evidence from Wood (2001 cited in Smith 2001, p.5) that when the board has been installed at the right height especially in nursery schools, teachers have noted that greater collaboration and sharing of a task.

Children often felt that it was only certain category of student who was asked to take part. This is evident in the findings of Smith (2001) where students often can be left out as a form of sanction. However in this study the children in the junior classes seemed happy. This problem was mainly with the children in the middle and senior classes. The younger children Junior Infants to 2nd just seemed to “love it” (Senior Infant boy) especially the games. This concurs with the findings of Gogill (2002 cited in Virtual Learning 2003) where learning becomes a socially constructed experience whether they are physically interacting with the board or with each other but once the children got into the senior classes they felt that it’s only fun to learn when everyone gets a go. However children are learning from each. This concurs
with the findings of Smith et al. (2006) that there is a link between students physically interacting and opportunities for interactions and discussion.

Kennewell and Higgins (2007) states that the IWB encourages student participation. However they stress that it takes careful management to encourage students to actively participate. For example in “drag and drop” activities when going to interact with the board, they would not feel “unduly exposed to critical comments by their peers”. When this works well the whole class is engaged. This mirrors the findings in the case where some children preferred the use of a laptop where their errors would not be exposed. Being exposed to participate in answering questions means “everyone would see if you got something wrong” on the IWB or the feeling of being under pressure exists “it’s kind of frightening when you first go up” and “if you make a mistake it’s kind of embarrassing” (4th class girl).

“Sometimes when you get it wrong, they start shouting at you saying oh why didn’t you go for the answer I said” (4th class boy).

Again it all relates back to one person - the teacher who optimises the potential for learning and ensures children are supporting one another (Kennewell and Higgins 2007) in the collaborative learning experience.
Section 2: Teachers views of the IWB for Teaching and Learning

5.4.1 Pedagogical change

It was noted that after having the IWB for less than a year, key stages were emerging in teachers pedagogy. This was inline with Betchers (2009) findings. Some teachers are still “doing old things in old ways” using the board for electronic writing, for lessons with mainly word documents and diagrams, essentially lessons not taking advantage of the interactive features. However teachers who are more ICT competent are beginning to do old things in new ways and those who are very IWB competent are beginning to do “new things in new ways”. Haldane (2007) tells us that it takes time to fully integrate the IWB into everyday classroom life and it takes roughly two years for the IWB to become embedded into teachers’ pedagogy. Perhaps at the end of year two most of the teachers will be “doing new things in new ways”. Hopper and Reiber (1995 cited in Becta 2004) also identify five stages for teachers to successfully adopt the technology depending on the competence level. Some teachers will adapt the IWB more quickly than others. In the case study almost 50% of the teachers were using the technology on a daily basis. The IWBs have only been only installed for less than a year but it is evident that the teachers want to use them as they pass from the utilization stage to the integration stage.

From the research the computer teacher believes her student learning has improved as the IWB is catering for different learning styles. A connection is made and therefore this theory is line with the research from Becta (2004) where students use the visual and kinaesthetic learning styles to construct meaning.

The IWB makes the teaching of whole class lessons easier through modelling, demonstrating, probing and promoting questions (Becta 2004). Many teachers felt that they could easily revert back to an old type of didactic teaching if they did not have the proper “interactive resources” or as Cogill (2006) says they “dominate” the whiteboard lesson. Most of the teachers in this case felt the IWB was good value for money. 22.2% of the participants were of the opinion that a digital projector would have been better. All the participants stated they allow the students interact with the board during lessons however in the focus group interview teacher spoke of the
danger of reverting back to “didactic teaching if resources were not found. Many expressed that in reality they were only using it as a writing tool and for displaying information. Many felt lack of resources and training caused this, especially a lack of resources for the Irish Curriculum based on the stands and stand units they were teaching. This sheds light on the notion from Morrissey (Campbell 2009) that “a badly used IWB is little more than an expensive electronic blackboard” and if teachers do not get the training they need “they will simply revert back to didactic teaching”.

5.4.2 Subjects Taught
When the students presented their drawings to the researcher, it was noted that they all drew either an English or a Maths lesson. Some children spoke of using “Google Earth” or “Britannica Student Online Encyclopaedia” but again this was teacher controlled as a whole class lesson. Perhaps these were recent lessons teachers had done with them. The interactive games especially in maths were mentioned a lot. This concurs with the research of the PSWE (Somekh 2007) where she revealed that the IWB is used most frequently for teaching numeracy and literacy. Does this mean there are fewer resources on the market for the other curriculum areas?

5.4.3 Attitudes to the IWB
The IWB in this case was easy to use for 75% of the participants but the other 25% felt the opposite due to the lack of training and the unreliable nature of the IWB. Despite lack of resources and training issues, all of the teachers in the case are now using IWBs (22% for most lessons, 44% once a day and 33% most days) to integrate ICT into their classrooms. This was inconceivable before. In the case study it acted like the “Trojan Horse” getting the technology into classrooms (Betcher 2009), with 100% participants in agreement. The Principal of the school believed the positive attitude towards the IWB came from teachers getting individual laptops Familiarity with the laptops made the IWB experience easier enriching the ICT learning experience compared to having one classroom computer (Smith 2001 cited in Becta 2003). Some teachers felt having an IWB in their classroom without a gradual process of integration was all too much at once. Perhaps the NCTE (Campbell 2009) may be right to invest in digital projectors and laptops for every classroom until the
teacher is familiar enough and has experience with using a range of ICT equipment. However the school had a digital projector before the installation of the boards and was rarely used except by the teachers with ICT competence. The potential of this was not seen until the IWBs were installed and safety issues regarding wires and cables were addressed.

Many of the staff expressed the need for better collaboration with the staff on resources that worked well and for these to be shared. This would reduce the teachers work load and contribute to better planning (Becta 2003).

5.4.4 Support and Training with the IWB

In triangulating the findings from the questionnaire and the focus group the majority of the teachers felt that training was not adequate. Some teachers were self taught with no formal training. This needs to be highlighted (Becta 2004) as adequate technical training is a must, not just the once off installation instruction. Shenton and Pagett (2007) in their study on seven teachers in six primary schools in England explained that the training was limited to the sales rep delivery. This mirrored the training that some of the teachers received which did not give them the confidence to use it effectively.

When technical problems occur such as fan fail, problems connecting the laptops (especially Vista) to the projectors, teachers feel incompetent. Rapid Trouble shooting is a priority in schools and it was noted in the Schools Whiteboard Expansion Project (Somekh 2007) that the life time of the laptops was reduced from constant IWB use. Two laptops from 5th and 6th class had the same problems and therefore class teachers had to resort back to a bulky PC to power the IWB.

As all 9 of IWBs were installed within the same year many of the teachers relied on advise from some of the more experienced teachers. This supports the statement from Somekh (2007) that when IWBs were all installed around the same time teachers assist each other. “With the other staff members helping” (Teacher 2) was able to develop her skills. When a “critical mass” of IWBs are installed in schools they become the norm” (Kennewell and Higgins 2007). Perhaps in two years time they will have become the norm with IWB professional development for teachers at the forefront.
6.1 Conclusion

Having an IWB fixed in the classrooms gives teachers endless teaching resources on hand. Despite what resources are in a school the role of the teacher is vital, especially for planning interactive lessons and for utilizing ICT otherwise the lesson reverts back to the didactic type. The IWB does help integrate ICT into the curriculum.

The IWB certainly appeals to all learning styles by being a first class visual resource. It helps pupils focus on learning through motivation and creativity but only if used correctly. Training is essential for its proper use and better collaboration needs to be established between teachers who are competent IWB users and those who are not.

The main conclusions from the study are as follows:

- Having an IWB in all classrooms ensures teachers will explore it. All teachers said they use it everyday or several times a week. Therefore the notion of using IWB to support learning has a better chance of becoming embedded into teachers pedagogy. A portable IWB probably would not be used as much and may simply be used for isolated lessons or simply forgotten like the projector in the research.

- Many technical hitches arise with the IWB such as shadows, regular calibration, battery failure in remotes and pens, problems with Windows Vista connecting to the projectors and when these things happen, children become restless. The height of the board also needs to be looked at especially for the younger classes or the provision of a safe step should be a priority in the Junior classes.

- The quotation “I hear, I know. I see, I remember. I do, I understand.” (Moncur, QuotationsPage.com 2007) certainly sets the scene for the arrival of the Interactive Whiteboard into Irish classrooms. It therefore caters for the different learning styles in classrooms with large pupil numbers and
classes of mixed ability. The superior quality sound and imagery make the lesson more stimulating.

- Teachers are now more willing to integrate ICT into their everyday teaching. The IWB makes this easier. With one computer in a classroom this was nearly impossible. Now with the IWB connected to the internet the world is at their fingers.

- Teachers feel that lack of resources and lack of training hinders effective use of the IWB. They feel their teaching may revert back to didactic methods without “interactive” software where children are physically interacting with the board. More collaboration between staff on resources that have worked well is recommended. However teachers feel it leads to better behaviour among students.

- The big screen and its high quality sound appeals strongly to pupils and make them feel they are actually in the learning process. They also love games especially maths games and this has made children happier about subjects they hither to disliked.

- Children often feel they do not get enough chance to interact on the IWB. They sometimes feel under pressure to get answers right and may feel intimidated by their peers. But despite this they see it as a tool to keep them motivated and is a welcome change from the “boring old board”. It is important that pupils don’t view it as a sanction.

- Results from this study did not prove that the IWB was superior to a laptop lesson as the results were almost the same. It did prove however that sometimes the children would simply like a laptop lesson from time to time than IWB as they could control the pace of their learning. With the IWB they have to move on.

- Technical hitches annoy both pupils and teachers. Despite this hitches they love his new way of learning as its exciting and modern and “it’s the right board for the 21st century” (3rd class girl) often reminding them of interactive games on the Wii, Nintendo DS and Playstations from home.
• The IWB is a great way for pupils to informally learn computer skills. By observing and listening to the teacher load a web page, open a word document, or powerpoint the children pick up the terms associated with the computer quickly such as “scroll, minimize, close etc”.

6.2 Recommendations for Government and Software Developers/

• It is imperative that the NCT E and the Minister for Education realise the learning potential of these boards. Perhaps they would include it in the budget along with the projector and laptops. Funding is needed for all schools for the upkeep of digital technology otherwise they will have an under skilled workforce.

• Extra interactive resources are needed that are inline with the Irish Primary School Curriculum’s strands and strand units within each class level. These need to be highly visual, interactive and both teacher and student friendly to create a classroom of both interactive thinking and learning.

6.3 Recommendations for Teachers and School Management:

• Schools need to budget for maintenance of the IWB e.g. upkeep of laptops, bulbs in fans, batteries in pens and remote controls. Perhaps schools should install the same model of board in all classrooms so teachers can collaborate more.

• Teachers need to work collaboratively to create resources and perhaps create an electronic version of resources. Training is essential. In-service days would help to keep the teacher up-to-date. Teachers also need to spend more time planning their lessons through cross curricular approach thereby giving more opportunities for pupil interaction with the board. Perhaps the sales rep needs to provide more training after installing the IWB. Teachers need better support services because it can be very off-putting when there are technical
faults. It may be a good idea to install a digital projector at first until the teacher develops competence.

6.4 Suggestions for further studies:

- A number of interesting questions were raised by this research. For example, would the IWB raise standards in the long term? A better study could be done once teachers are more familiar with the IWB to check results especially if teachers were using it for more than two years.

- Another interesting study would be a comparative study between two schools. One school that has been using the IWB continuously with one who doesn’t have an IWB. Again levels of achievement could be measured here perhaps using a quantitative study.

6.5 Final Statement

“By having the electronic whiteboard connected to a network means that the children have a world of resources at their fingertips ready for discussion, to test hypotheses and research. ……It ensures learning becomes a much more collaborative and social process therefore a more powerful way of learning across the curriculum.” (BECTA 2002 cited in Goodison 2002). Teachers need to see technology as the servant of educational practice and not its master (Becta 2006). However it is the teacher who is at the forefront making it an “interactive whiteboard”.
BIBLIOGRAPHY


Becta (2004) *Getting the most from your interactive whiteboard - A guide for primary schools*, British Educational Communications and Technology Agency, Coventry.


National Centre for Technology in Education (2009) NCTE Recommendations for ICT in Primary schools and classrooms, Dublin: NCTE.


Appendix 1 – Information letter to colleagues

Dear Colleagues,

As you are aware I am currently doing my Masters in Digital Media Development for Education.

The aim of this thesis will be two fold:

1. Do Interactive Whiteboards (IWBs) create a collaborative learning environment for children?
2. Are IWBs changing teacher’s perspective on integrating ICT into the curriculum?

I would like to base my thesis on a Case Study of Culleens National School and therefore this cannot be done without your support. Ethical issues will be adhered to at all times during this study. Your names will not be used throughout the thesis and any video material/recorded interviews will be carefully kept in my care until completion of the Masters and promptly erased.

Questionnaire:
I am looking for feedback on ways you use the IWBs in your classroom and your pedagogical views around them. I am asking that you complete a questionnaire (with your permission) on the uses of the IWB/ICT. I will provide you with a link to it on Monday 27th of April or before or if you wish a hard copy can be obtained from me personally on this date. I would be grateful if you could have this questionnaire completed by Monday 11th May.

IWB Log:
I would be grateful if you would keep a log of times you use the IWB in your class over a 4-week period 20th April – 15th May. Whether it’s used as a means of showing DVD’s, as a digital whiteboard, ways children interact with it in your room or simply as a way of showing powerpoint lessons or using word documents all helps. Please can you have the journal complete by Friday 15th of May.

Speech Bubble – Children’s reactions
Sometimes you may hear the children talking to their peers about the IWB or something you did with them. Others may come up with solutions to helping you with your teaching using the IWB. I would be grateful if you could jot some of these reactions down (if children mention them) on the speech bubble page. Again I would be grateful if you could have this complete by Friday 15th May.

Focus group interview:
I would also like to conduct a focus group interview with four/five of you on your further thoughts of the Interactive Whiteboard at later date in May after I get the surveys back.

Please be aware that no matter how much or how little you use the board all helps this process and your feedback will be very much appreciated.

Thank you for your support and time,

Regards,

Emma Hallinan
Appendix 2 – Questionnaire for staff

Teacher's Use of the Interactive Whiteboard

1. General Information

Note:
IW= Interactive Whiteboard
ICT: Information and Communication Technology

1. Are you male or female?
   ○ Female
   ○ Male

2. How many years are you teaching?
   ○ 1-5
   ○ 5-10
   ○ 10-15

3. What class level do you teach?
   Class
   Junior/Senior Infants  1st/2nd class  3rd/4th class  5th/6th class

4. Indicate your level of ICT training/experience to date (tick all that apply)
   Level of ICT
   ICT Summer course  Teach to the Future  EDCL  Grad. Dip. in ICT  Masters in ICT
   Other (please specify)

5. How would you rate your competence with ICT?
   Competence
   Poor  Average  Good  Very good  Excellent

6. How long have you the Interactive Whiteboard in your classroom?
   ○ 1-4 months
   ○ 4-8 months
   ○ 8-12 months
   ○ More than a year

7. What type of IWB are you using?
   ○ Ebeam
   ○ TouchIT
   ○ Other
Teacher's Use of the Interactive Whiteboard

8. How often do you use the IWB?

<table>
<thead>
<tr>
<th>IWB use</th>
<th>Never</th>
<th>Rarely (once or twice a week)</th>
<th>Occasionally (most days)</th>
<th>Often (at least once a day)</th>
<th>Very Often (most lessons)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Never</td>
<td>0</td>
<td>0</td>
<td>0</td>
<td>0</td>
<td>0</td>
</tr>
</tbody>
</table>

9. Do you find the IWB easy to use?

- Yes
- No

Please say why.

10. How did you feel when you realised you were going to get an IWB in your classroom?

11. How were you trained to use your interactive whiteboard?

- By the person who installed it
- By a colleague
- Course on IWB
- I'm self taught

Other (please specify)

12. How would you describe the training and support you receive for the IWB?

<table>
<thead>
<tr>
<th>Training</th>
<th>Excellent</th>
<th>Very useful</th>
<th>Useful</th>
<th>Average</th>
<th>Poor</th>
<th>Very poor</th>
</tr>
</thead>
<tbody>
<tr>
<td>Support</td>
<td>0</td>
<td>0</td>
<td>0</td>
<td>0</td>
<td>0</td>
<td>0</td>
</tr>
</tbody>
</table>

13. Do you feel you are adequately prepared to use the IWB?

- Yes
- No

Please specify why.
Teacher's Use of the Interactive Whiteboard

2. Using the IWB

1. Where do you source most of the materials for teaching with the IWB? (Tick all that apply)

<table>
<thead>
<tr>
<th>Sources</th>
<th>Internet</th>
<th>Interactive CDs</th>
<th>Whiteboard software e.g. Easiteach software, Ebeam...</th>
<th>Teacher-created materials</th>
</tr>
</thead>
<tbody>
<tr>
<td>Other (please specify)</td>
<td>[ ]</td>
<td>[ ]</td>
<td>[ ]</td>
<td>[ ]</td>
</tr>
</tbody>
</table>

2. In what ways do you use the IWB?

- [ ] Small group
- [ ] Whole class
- [ ] Didactically
- [ ] With individual children
- [ ] Student participation

3. Where do students sit when you use the IWB?

- [ ] In front of the board
- [ ] At their desks
- [ ] Both

4. Where is the IWB board located in your classroom?

- [ ] Behind teacher's desk
- [ ] At the side of teacher's desk
- [ ] On another wall
- [ ] Other
- [ ] Other (please specify)

5. What do you use the IWB for?

6. Is there any subject are you use more than others with the IWB?

- [ ] Yes
- [ ] No
- [ ] Yes (please specify)

7. If you could change something about the IWB what would it be?
3. Advantages and Disadvantages of the IWB

1. Please rate the problems with the IWB in order of difficulty (1 is the most problematic, 2 next..... 10 least problematic)

<table>
<thead>
<tr>
<th>Problem</th>
<th>Rating</th>
</tr>
</thead>
<tbody>
<tr>
<td>Need for regular calibration</td>
<td></td>
</tr>
<tr>
<td>Shadows from projector</td>
<td></td>
</tr>
<tr>
<td>Lack of help on hand of something goes wrong</td>
<td></td>
</tr>
<tr>
<td>Lack of inservice/training</td>
<td></td>
</tr>
<tr>
<td>Battery dies in pen</td>
<td></td>
</tr>
<tr>
<td>Problems connecting it to the projector</td>
<td></td>
</tr>
<tr>
<td>Lack of resources to use with it</td>
<td></td>
</tr>
<tr>
<td>Increase on preparation time as a result of IWB</td>
<td></td>
</tr>
<tr>
<td>Lack of knowledge among teachers how to use it effectively</td>
<td></td>
</tr>
<tr>
<td>Light from windows and bulbs makes it difficult to see for children</td>
<td></td>
</tr>
</tbody>
</table>

2. Please rank the benefits of using the IWB in order of importance (1 being the most important, 2 the next ....10 least of importance)

<table>
<thead>
<tr>
<th>Benefit</th>
<th>Rating</th>
</tr>
</thead>
<tbody>
<tr>
<td>Better for accommodating different learning styles</td>
<td></td>
</tr>
<tr>
<td>Increases the pace of the lesson</td>
<td></td>
</tr>
<tr>
<td>Allows easy retrieval of lessons the next day</td>
<td></td>
</tr>
<tr>
<td>Allows teachers to share and re-use materials, thus reducing workloads</td>
<td></td>
</tr>
<tr>
<td>Helps integrate ICT into the curriculum</td>
<td></td>
</tr>
<tr>
<td>Increases students motivation</td>
<td></td>
</tr>
<tr>
<td>Allows for high levels of interaction</td>
<td></td>
</tr>
<tr>
<td>Helps with behaviour in the classroom</td>
<td></td>
</tr>
<tr>
<td>Helps greatly with collaborative learning</td>
<td></td>
</tr>
<tr>
<td>Children are more alert and focused on task</td>
<td></td>
</tr>
</tbody>
</table>
## Teacher's Use of the Interactive Whiteboard

### 4. Your attitude to the IWB in your classroom

#### 1. How would you rate the following statements based on your opinion since getting the IWB (Tick one answer from each row)

<table>
<thead>
<tr>
<th>Statement</th>
<th>Strongly Agree</th>
<th>Agree</th>
<th>Neither</th>
<th>Disagree</th>
<th>Strongly disagree</th>
</tr>
</thead>
<tbody>
<tr>
<td>All classes should have an IWB</td>
<td>○</td>
<td>○</td>
<td>○</td>
<td>○</td>
<td>○</td>
</tr>
<tr>
<td>I would prefer no IWB in my classroom</td>
<td>○</td>
<td>○</td>
<td>○</td>
<td>○</td>
<td>○</td>
</tr>
<tr>
<td>I feel under pressure to use it correctly</td>
<td>○</td>
<td>○</td>
<td>○</td>
<td>○</td>
<td>○</td>
</tr>
<tr>
<td>Teachers should share resources more and help one another</td>
<td>○</td>
<td>○</td>
<td>○</td>
<td>○</td>
<td>○</td>
</tr>
<tr>
<td>The IWB has improved my teaching</td>
<td>○</td>
<td>○</td>
<td>○</td>
<td>○</td>
<td>○</td>
</tr>
<tr>
<td>I am reluctant to let the children use the pen</td>
<td>○</td>
<td>○</td>
<td>○</td>
<td>○</td>
<td>○</td>
</tr>
<tr>
<td>IWBs make my handwriting easier to read for the children</td>
<td>○</td>
<td>○</td>
<td>○</td>
<td>○</td>
<td>○</td>
</tr>
<tr>
<td>I feel confident in using the IWB</td>
<td>○</td>
<td>○</td>
<td>○</td>
<td>○</td>
<td>○</td>
</tr>
<tr>
<td>I spend more time at the board than before</td>
<td>○</td>
<td>○</td>
<td>○</td>
<td>○</td>
<td>○</td>
</tr>
<tr>
<td>I would have felt happier if I was consulted about the location of the IWB in my classroom</td>
<td>○</td>
<td>○</td>
<td>○</td>
<td>○</td>
<td>○</td>
</tr>
<tr>
<td>A regular digital projector in every classroom would have been better value for money</td>
<td>○</td>
<td>○</td>
<td>○</td>
<td>○</td>
<td>○</td>
</tr>
<tr>
<td>There is a need for better training in IWB usage</td>
<td>○</td>
<td>○</td>
<td>○</td>
<td>○</td>
<td>○</td>
</tr>
<tr>
<td>I put better time into planning my lessons</td>
<td>○</td>
<td>○</td>
<td>○</td>
<td>○</td>
<td>○</td>
</tr>
<tr>
<td>Because of the IWB I am using ICT more in my classroom than before</td>
<td>○</td>
<td>○</td>
<td>○</td>
<td>○</td>
<td>○</td>
</tr>
<tr>
<td>Because of the IWB Having an IWB makes you an effective teacher</td>
<td>○</td>
<td>○</td>
<td>○</td>
<td>○</td>
<td>○</td>
</tr>
<tr>
<td>The novelty of having an IWB in every classroom will wear off</td>
<td>○</td>
<td>○</td>
<td>○</td>
<td>○</td>
<td>○</td>
</tr>
<tr>
<td>The IWB caters for all learning styles better than the ordinary whiteboard</td>
<td>○</td>
<td>○</td>
<td>○</td>
<td>○</td>
<td>○</td>
</tr>
<tr>
<td>An IWB creates a more &quot;interactive&quot; classroom</td>
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<td>I allow the children to interact with the board during the IWB lessons</td>
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<td>When something goes wrong with the IWB support is always on hand</td>
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Teacher's Use of the Interactive Whiteboard

2. Elaborate on ways the IWB has or hasn't changed your teaching

3. Effects of the IWB on Children's Learning

4. How has the IWB changed the way your students learn?

5. "It's not the tool that makes that learning experience. It's the teacher". Would you agree with this statement and why?

6. If you could sum up the Interactive Whiteboard in one sentence what would it be?

7. Any further comments you wish to make about the IWB would be very much appreciated
Appendix 3 – Interview Transcript of the Principal

Interviewer: I’m conducting an interview with the principal of Culleens National School. The time is now 3.24pm. Thankyou for agreeing to do this.

Principal: You’re very welcome.

Interviewer: In school there are 9 interactive whiteboards; do you feel you have got good value for money?

Principal: Well when we decided to go down this route of going to install whiteboards I looked into what was on the market and what was affordable. We went for the eBeam initially and then we got 2 TouchITs at good value so we got 7 eBeam and 2 TouchIT boards. We felt that if we were to look at something like the Smartboard or whatever else we wouldn’t be able to afford in a reasonable timescale to put one into every classroom and we decided to look at what was possible so that everybody could have the same technology in their rooms. We talked to John Hughes and he came two or three times and gave advice and information on the eBeam systems and what software was available and what software it would run and we decided on balance we would go with it. Probably as well we looked at the technology end of things because our school building is probably substandard and we wanted to have at least some element, our staff are of an excellent standard, so we wanted to give them the technology to go with that if we couldn’t give them proper classrooms at least we could give them up to date technology.

Interviewer: Do you feel you got good value from the eBeam system?

Principal: Well having priced around everyplace, I think we did because he gave good service. He installed them all, he gave us a sound system with them. He gave us a price for doing the whole school and even though we couldn’t afford to do it altogether he stuck to that price. He didn’t charge us for each individual one which would have more; he divided the price by the number of boards we had ordered. They went in two at a time, 3 went in together and then two at a time. In fairness he’s been very decent to us and has been pretty good with the backup and follow-up. Bit worried at the moment about these laptops not running the whiteboard but I’m sure that’s a glitch that needs to be solved. I know it’s irritating but I’m sure we’ll get to the bottom of it.

Interviewer: Did you go to other schools before you decided to go down the eBeam route?

Principal: I had seen other IWBs in use. I hadn’t seen the eBeam system in use. He came here and showed it in use.

Interviewer: And did you view it as a staff?

Principal: Yes we did. The whole staff was here and then we invited the parents association and the parent body in as well as obviously they were going to have to put their necks out and fundraise for it. So before we went forward we had a meeting with the parents as well and he also demonstrated what the whiteboard technology could do and whatever else and they gave it the thumbs up and decided yes they were going to put their necks on the line and fundraise over a reasonable timescale.

Interviewer: Have many ICT grants or help from the Government helped in getting the IWBs into the classrooms or has most of it been from fundraising?

Principal: Most of it has been from fundraising. You can use some of your repairs grants if you don’t spend all of that on repairs. You can put some of that towards ICT but there has been no particular ICT grant and this year certainly we’ll have no money from that repairs grant because we have to get a big job done on the heating. We did use some of it last year as we didn’t get caught as badly last year. If you were a Deis school you could apply for funding under the dormant accounts but because we’re not but there is no Government funding at all.
Interviewer: Do you feel the staff in the school have enough training to use the boards efficiently?
Principal: I’ve been amazed I suppose, would be the first thing because I thought, gosh this is going to take a long time before we get people up and running and using them and I thought it would take an awful lot longer, and I thought it would take a lot more training but they took to it like a duck to water. I suppose we’ve only one out of the nine class teachers who is a bit afraid and a bit less confident than the rest of them but the rest of them have gone off and have taken it totally on board and they use it all the time.

Interviewer: From going around to the different classrooms as an administrative principal do you feel teachers are making enough use out of these boards.
Principal: Oh I think they are making terrific use out of them. For example the 5th class teacher would have been a bit of a computer whiz anyhow and he took to it very much. Then the 6th class teacher, who wouldn’t have been, took to it totally and completely.
The 3rd class teacher has a background in computers as well and make fantastic use out of it. The 2nd class teacher a background as well and is using it a lot and helping the first class teacher who wouldn’t be as confident, as is the 3rd class teacher and the senior infant teacher, their all giving a hand.
One of the Junior Infant teachers wouldn’t have been that off fey with computers and whatever but is not afraid to ask for help and they’ve all been in helping her and she’s been making fantastic use of them. I couldn’t believe it the night that we had the new parents in she did a demonstration that night you know and if you were to say to her a year ago you’d be going a presentation or parents with the Interactive Whiteboard she’d have told me to get lost and it was her idea to do it a year on. You know it’s unbelievable.

Interviewer: So what training have the staff done so far to make them so confident to integrate this IWB in the classroom?
Principal: I think the secret was them all using laptops and doing their planning on the laptops, which are now part of the whiteboard technology as well. When we bought the laptops and the laptop trolley which was the first part of getting into technology and the whiteboards, an awful lot of the laptops remained in the laptop trolley and I was going around saying there’s a laptop with your name on it in the trolley and that took longer to get them to use than the whiteboards. Once they had the whiteboards in the room there was a bit of enthusiasm and they wanted to use them. So I think being familiar with their own laptop and the bit of training John did with everybody and then help from others in the staff with people who had a bit more know how than others, there was a bit of give and take going on. Nobody seems to be having any major difficulty with them.

Interviewer: What do you think is the best way to manage ICT in a big school like this?
Principal: Well I suppose like all things you have to have people who are interested. It’s something they can make use of in their classroom for their teaching. I think too much cental management doesn’t work. It has to be easy access and I think the fact that you have your whiteboard and your laptop in your classroom that isn’t going yo anybody else or being lent to anybody else, there’s an ease of use. It’s like your pen or your pencil, your copy or your roll book – it’s yours.

Interviewer: It that why you went down the road of making sure every classroom had an IWB?
Principal: Well yes, I felt from word go. I looked at the idea of getting a mobile unit, ‘cause you can get a Smart board mobile unit, but I actually reckon it would have stayed in the hall or in one classroom and then people would be giving out – Oh I didn’t have it and I think it just wouldn’t have worked.
Interviewer: Did you look at the option in the beginning or perhaps buying a digital projector for every class besides spending such an amount of money on a IWB?
Principal: Well I suppose half the cost the way we’ve gone was the digital projector and half the cost was the whiteboard so even though we have a projector in the school I think four teachers ever used it. The rest of them didn’t ever look for it at all.

Interviewer: Do you fee that by purchasing a whiteboard for every class do you feel teacher might have fel under pressure to use it?
Principal: ammm, I don’t know, I think from the word go we said the plan is everyone would get one that there isn’t going to be….is brilliant at it and get one. I felt you have to level the playing field and give people a chance. I think they knew within a very short space of time – like we did it within a year. I think they didn’t possibly believe they were going to have one, even though they were told they would have an IWB by the end of this school year. Now we managed to do it actually in a shorter time fame than we expected and I think they were looking at people using them and were looking forward to when they would get their own as well and I don’t feel anyone was under major pressure. We don’t pressure people to do things they don’t want to do anyway. Like I know in the Infant classrooms they started with putting on a DVD on a wet day and suddenly came out and said gosh it’s like being at a cinema and that was the start of the Junior Infants teacher last year using it and gradually deciding gosh if I can do this I can do that and it went from there. I think actually the teacher in first class who would be the least confident in using technology is beginning to do that with her one as well and I think that’ll move on from that as well. But there is nobody going in saying you have to use it or did you use it today or anything like that.

Interviewer: Do you find because you have 9 IWBS is the electricity bill going up?
Principal: Oh yes, big time big time, (laughs). We’d need the wind turbine ot.

Interviewer: Have you noticed in the last year have teacher’s pedagogy changed?
Principal: I think so because there is so much out there either on the internet, whether you’re doing History or Geography or what else; there are so many different programs you can use for maths, English for everything… I think they’ve got a bit more enthusiastic about it. I think all of us at some stage in our careers need something else to keep you going – whether the revised curriculum, it’s you go back and do courses, or whether you get into technology or whether you go do something.

Interviewer: Do you think children have been enthusiastic about the IWBs?
Principal: Oh I think the children seem to absolutely love it. You know you go into different classrooms and because I ‘m not teaching a class, if I relieve the teacher for half an hour if they have a meeting or this that and the other thing it’s the children teaching me how to use it.

Interviewer: Do you feel that their ICT skills have improved dramatically?
Principal: Oh absolutely, unbelievably so you know, They know exactly how you get into notebook, scrapbook not notebook and how you save this and how you get into that and the other thing and I would pretend I know even less and let them tell me. And I tell you there well able certainly down as far as third class.

Interviewer: Do think eventually maybe in two years time the novelty of having the IWB will wear off?
Principal: I’m sure like all novelties it probably will to a certain degree but I’m sure equally there will probably be new programmes to keep people enthused. It’s like everything when you start something there’s always a level of novelty. I was just looking into it in something like every school that could possibly have one, or in every classroom in England which is about 80% of classrooms have them in England. It is the way to go, if you look even in the home it’s another tool. There was a time when we thought when we had a television in the classroom, like you know a DVD, video. It moves on. I’m sure it will move on again.
Interviewer: In future plans for the school, how do you think you are going to develop the use of the IWB?
Principal: I suppose I haven’t thought about it in terms of developing it. I think it’ll take a life of its own. I could see people who are enthusiastic like yourself developing programs for other people. I think it will take its own snowball effect and some people will not be innovative and some people may be very innovative and come up with new uses for it. I think the software or the programs for the IWB for schools will be teacher driven coming from practiced teachers and even coming from some of the teachers here.

Interviewer: Do you think there are enough Irish resources out there on the market that you could use with the IWB?
Principal: I couldn’t say probably because I’m not in a classroom, certainly there are some, whether there are enough I couldn’t say.

Interviewer: In one sentence could you sum up the IWB?
Principal: It’s keeping up with the times, Bringing the school into the 21st century. Our building isn’t of the 21st century but our teachers certainly are and their tools aught to be as good as the teachers are.

Interviewer: That’s great. Thank you and the interview is terminated at 15.43pm.
Appendix 4 – Interview Transcript of Microsoft Office Master Instructor

Interviewer: What impact has the IWB on the delivery of the Microsoft Office Skills?
More efficient delivery. We can get through work a lot quicker. I’m not in a position, where I’m having to, as in the old way to verbalise the instruction for the children to work through for a task to be done. I’m not actually, having to literally physically bend over very low desks, not good for the back to help them through their work or check their work. If in the first instruction I will say “and let me do that again” so it’s clear, so the first is looking at it, the second is they’re taking it on board and I’ll often do a third, and then if anyone has a problem I go an assist them. But I would say that is a rarity now. There would be sot of perhaps 5% of the time where a child hasn’t got it and then I would go and show them. I would physically be there and say this is how we’re doing it.

Interviewer: And physically being there, do you feel it has an implication on your health?
Ammm I would say the bending over, the lower back issue as I mentioned before when I was teaching just the verbal content and then showing the children. If was a tricky move like auto fill in excel or something like where they really have to get the mouse in correct to drag and drop, I would literally be bending over every single child until they got it right and a lesson is 2 hours with a break in between of like half an hour and that was over the Wednesday and Thursday and by the end of Thursday night my lower back was killing me, the desks are so low which they need to be for the children, but as far as a health and safety issue goes, very detrimental to my lower back health for sure.

Interviewer: Thank you. Do you think using the IWB has had benefits for the children in their learning of the skills?
Most definitely. They are looking effectively at my computer screen on the whiteboard so I can be very clear with the instruction; the children are picking it up quicker. Because they are picking it up quicker we can do more in a lesson, we’re advancing through the work at a quicker pace. So it’s very beneficial to the children.

Interviewer: Do you think the actual large board appeals to them more so?
Most definitely. Most definitely. They’re actually seeing me do what needs to be done.

Interviewer: Do you think they’ve picked up terms a little bit quicker than before, than previous years?
Most definitely. Because I’m using the whiteboard and I’m laptop with the whiteboard, I would say well this is where we click away, right click here, or double click there, click on this or we’ll go into file save as to rename and then of course here’s the drop down box to choose which folder or we could create anew folder so as I’m actually working through it, it is obviously an automatic pilot for me but when your learning computers you think oh “format, you search, all these different terms you just saying them louder so they’re picking up on all the terminologies because it’s as I am doing it I’m telling them ok we going to file we go save as.
It’s like the process, it’s like the foundation. It’s the verbal foundation. So even if they can’t remember they might always remember “file save as or file print” you know and then go and choose so that’s part of it as well.
You know in excel it’s perhaps formatting a cell, a row a column but it’s the verbal your actually hearing, it’s like putting a little rhyme into play and you remember. Do you see what I’m saying?

Interviewer: So they can see it from the visual side…?
and the verbal because that’s what I’m thinking and this is my programming and I’m verbalising it because I’m doing it on the key board and they’re seeing it and their matching the two together as well.

Interviewer: Thank you.
Interviewer: So it can appeal to the learning styles?
Exactly. It’s a connection for them.

Interviewer: In using the IWB have you ever come up with any technical difficulty?
I personally have not experienced any technical difficulty at all to my delight I might say. It’s easy to use, it’s clear. I’ve had no problem at all, perhaps I’ve been fortunate but I can say I’m absolutely delighted it’s been smooth sailing for me.

Interviewer: If you were told you would have to teach your lesson in a class without an IWB how would you feel?
I would feel very disappointed. I would have to go back to the old technique. That would cause me, indeed it’s physical pain. I suffer physical pain from it. I mentioned earlier to you as well, that if we can understand that I’m offering this to the school and have committed myself to the school, if my back doesn’t last the next ten years that means I can’t be teaching computers here. With the IWB I can continue teaching for a very long time because I can physically do it. It’s a huge difference; I mean to be able to sit in the teachers chair and swing around to their laptop and have the whiteboard there. It’s an absolute delight and then if a child has any particular problems then leaning over and approaching the problem but it’s really save me and because of that I’m obviously a better teacher and I’m not leaning over in agony and I’m not saying this is just me. I sure any person leaning over for that period of time and also what you’re having to do when leaning over your really having to hold your lower back in a position because you’ve got to have your fingers not wavering all over the place as they have to be precise with you key strokes. So you really are holding your lower back. Do you know what I mean?

Interviewer: It’s pressure?
Yes, lots of pressure on your lower back because you’re really holding your body.

Interviewer: If there was one sentence or one word to sum up the IWB what would that be?
Brilliant, Brilliant, brilliant, brilliant. That was four wasn’t it, three (laughs). No I am just so delighted we’ve got this equipment in the school. It is great for me, it is great for the kids, and the amount of learning that can come of this great tool and the more efficient learning is probable more correct, it’s really a completely, completely different world. It’s made all the difference for me and my back thanks the Whiteboard also (laughs).

Interviewer: That was great. Thank you very much. That was very interesting chatting to you
My pleasure.

Interviewer: And the interview is terminated at 14.33pm.
Appendix 5 - Focus Group Interview Transcript of Five Members of Staff

Part one
Interviewer: This interview is starting at 3.15pm. I’m here with a group of staff from Culleens National School and just we’re going to have a chat about some of the questions and issues from the questionnaire. Thanks everyone for being here today.

Your welcome

Interviewer: Are you all happy to have the IWB in your classroom?
Teacher 1: Delighted. Absolutely delighted. It’s brilliant I had one a couple of years ago in a school in Dublin and I though it was the best thing ever so it’s great to have one here.
Teacher 2: I’m just getting use to it now. I was a bit afraid of it in the beginning.
Teacher 3: I like having it in the room. It’s a great resource. There are a few technical difficulties and stuff like that but overall I do like it.
Teacher 4: I like having it. I’d be lost without it.

Interviewer: In the questionnaire 37.5% said they were self taught to use the IWB and it seemed to be the training aspect that was the second most problematic issue with the IWBs. Does this reflect poor training in using the IWB to begin with?
Teacher 2: It was all too much at once when we got it and was bit hard to take in coming from someone for someone who knew nothing about the whiteboard. So with the other staff members telling me what to do that’s how I learned.

Interviewer: Do you feel that collaborating together as a staff it helps the training process a bit better?
All: Yes, it

Interviewer: So was the initial training any good or did it help?
Teacher 3: Well for me I didn’t even get initial training. It was suppose to happen on the day but whatever the reason was it didn’t really happen, I think it was due to technical faults and trying to sort out the installation of the system on my PC so we ran out of time so initially there was no training. But since then I’ve received training and it has helped but I think at the same time a lot of it is all the information is available for you but have to sit down yourself and actually go through it step by step to find out some of the information. That’s where I think the collaboration would be very good. If you found out how to do something and someone else already knows. Beside you going on to the website (trying to log into a website) if someone tell you in two minutes or could show you then that would eliminate a lot of extra research or if you had a problem.

Interviewer: So the training didn’t live up to your expectations at all?
Teacher 1: Well I never had any formal training. The first time we had it we were told if you’re ok on a computer you’d be fine. It’s just a matter of messing around with the whiteboard software and see what it can do. You can always go and get training course on your own. So by the time I came here I was pretty familiar with them anyway.

Interviewer: Did anyone ever get any initial training?
Teacher 4: I did. It defiantly was a help. The very first whiteboards that came into he school – the eBeam was the name of the software. It was good. He just showed us different things that could be done like the handwriting and the use of interactive stuff. But interactive lessons - I don’t have great access to the real interactive stuff. That’s one aspect I find annoying.
Teacher 5: It’s hard to get them. It takes a lot of time.
Teacher 4: It would be great to get lessons that are already done that I could use (Teacher 5 agrees).

Interviewer: So the interactive lessons where children are interacting are hard to come by?
Teacher 4: Yes they are

Interviewer: 88.9% of the staff said they use it for whole class teaching. Do you feel that because we spend a lot of time at the whiteboard it could be going back to old style teaching where the teacher is controlling most things in the classroom by having these IWB.
Teacher 4: That’s the danger unless you can find the interactive lessons
Teacher 2: A lot of the lessons I have would be like that would be more chalk and talk.

Interviewer: What do you think would be the best thing to help each other source them?
Teacher 1: I suppose a common pool of good resources by subject. So you could say you’ve a geography pool with various atlases and Google Earth sites and various thinks such as that. If people had access to a very good pool of websites such and a comment on each one and maybe a comment level on the interest of the kids on each one, If the kids are interested then the lesson is going to be a good one.

Interviewer: If something goes wrong with the IWB in your classroom are you confident enough to resolve it yourself?
Teacher 2: I’m not. I’m afraid I’d break it.
Teacher 3: I would. I’d try and mess around with it but that wouldn’t mean I could solve it. I’ve had lots of problems with my system but a lot of it stems from using home vista which is on my PC and that’s just causing loads of trouble. Sometimes I can log on and there’s not problem other times I can start and reboot the system I can try logging onto the server and it just won’t become an IWB. I’ll have the functions of the laptop but then it’s not interactive board.

Interviewer: So it’s very temperamental?
Yes

Interviewer: Does any else every have problems when they try to start it up in the class. Any technical issues that continually happen?
Teacher 2: Just that one for me. I can’t log onto the software.
Teacher 3: I have problems with the pen and the projection and it still is a bit temperamental. It takes a while to go back. Once it goes blue it can take a while to come back.

Interviewer: How do you feel when that happens?
Teacher 2: It drives me mad sometimes.
Teacher 5: It’s annoying for the children. They get restless.
Teacher 2: You might have a lesson planned and then it’s gone out the window when it’s not interactive. It’s not the same, you can show it but it’s not interactive especially at the end of a lesson.

Interviewer: The former minister for education Mary Hannifin, stated she didn’t see the learning benefits of having an IWB in a classroom. She suggested installing a digital projector into every room and go from there. If teacher’s felt confident go from there.
Do you think we should have gone down that route of using a digital projector besides the whole school getting an IWB?
Teacher 1: a digital projector being.....

Interviewer: Just the over head projector without the interactive features, without using the pen.
Teacher 1: Oh right, so you just plug your laptop into it anyway. Without the pen. I suppose in that case she’s looking at IWB games as gimmicks. I wouldn’t doubt their educational value at all. I am
certainly happy to have any interactive games that I have. I wouldn’t entirely agree with Minister Hannafin. No.

**Teacher 4:** Nor would I cause the handiness of having a pen instead of markers the whole time. It’s totally easier on the eye as well.

**Interviewer:** Do you feel because of a lack of IWB whiteboard resources perhaps the main function of the IWB at the moment is a writing tool and saves the secretary the job of giving out markers the whole time.

**Teacher 4:** That’s kind of how it is for me to be perfectly honest.

**Interviewer:** What could change that?

**Teacher 4:** Better access to the interactive lessons maybe a good website with good lessons that could tie in with various chapters of my book

**Teacher 1:** I suppose if you put time into surfing the net you’ll find something. I suppose sometimes it’s trial and error as well. You might find something at home and you may be restricted to use it in here as well. In that way it can blow up in your face like if you log on to something that can be restricted. But I think if you have the time you’ll find them easy enough.

**Interviewer:** Time is a huge factor?

**Teacher 4:** Yes it’ time

**Interviewer:** Do you feel that by almost having the IWB in the school almost a year (I know you’ve only got it recently) do you feel that next year you may be more confident in using it?

**Teacher 1:** Absolutely. I plan to take another summer course to further the knowledge and work on it from there.

**Interviewer:** Almost everyone in the survey agreed that they have become more confident users of ICT because of the IWB. Do you feel it has made it easier to integrate it?

**Teacher 1:** If you use it was the tool it is intend to be used for it you have to use the computer to get going. They both go hand in hand. The whiteboard is not much use without a computer

**Interviewer:** Part of the curriculum is learning about ICT and through ICT so do you feel children are benefiting from the IWB?

**Teacher 2:** I have a few games - CD Rom games. I have them in Irish, Maths and English. Some of them are actually interactive so it makes it more enjoyable

**Interviewer:** So when children are interacting they are getting more enjoyment out of the lesson?

**Teacher 1:** They’re not intimidated to use the computer or

**Teacher 3:** They even have the language of computers. They are even able to say scroll up there, so if you are on a bit of a slow side you know they’d be helping you out as well.

**Interviewer:** What do you feel is the main thing that should happen in the school to keep using them efficiently? Is there anything we could do as a staff or a school?

**Teacher 3:** Just having subjects broken out and good websites. Like if we had a central resource and knew that’s where they were maybe in planning.

**Teacher 5:** Maybe grouped for class level

**Teacher 3:** I suppose some websites would be suitable for all levels. That would be good besides people constantly pulling out the same information that takes twice as long than someone who actually knows about that.

**Interviewer:** So it would then speed up your preparation time?

**All:** Yes
Teacher 3: There’s a really good website Lismacken NS. That school actually have a website and all the different subjects broken down and websites that link to that.

Interviewer: So something like that would be helpful? What would be the best way to go about it? Something like Lismaken
Teacher 3: I thought it was really good. It was the other day in the training programme John showed it to us. He clicked into their site, clicked into ICT, and they had the different subjects. He just clicked into them. Actually I think it was at the bottom they had “on-line resources”. When you clicked in they were done by subjects

Interviewer: So all of this was done through their school website?
Teacher 3: Yes, or maybe they were a link into ones that were already done. They mightn’t have created it.
Teacher 1: I suppose the fact it’s on a website if the kid likes it they can go home and get it there. I often have kids asking me for websites. I’d put them up on the board. But if they could be accessed publicly it would be a handy resource for at home as well rather than on a school server, or a shared server.

Interviewer: Does anyone feel they may be afraid to give the children the pen or are you confident that you know what they’re doing?
Teacher 3: I don’t have a pen. Mine is the Itouch so I don’t have any problems there.
Teacher 2: In the beginning I was but then I started giving it to them to use and they really enjoy it.
Teacher 5: They like using the pen but I’m a bit afraid they might hit it too hard. Some of them would.
Teacher 1: There was a tendency in the beginning to try and drive it through the wall but they got the hang of it and now it’s fine.

Interviewer: So really to sum up, feel free to come in with a comment, the biggest thing is to get resources together and training is a huge issue to be looked at, resources that have the interactive feature with them
All: Yes
Teacher 3: I think training is a must especially for someone who is afraid of computers and has that phobia just to increase their knowledge

Interviewer: Do you feel that by having the IWB in the classes every single year from infants to 6th they’ll be sick of it?
Teacher 5: The novelty probably won’t be there. They probably will be so use to it then.
Teacher 3: They’ll probably expect to have one and would be disappointed if they didn’t have one. If they had it every year and then came to 6th class there wasn’t one or something and didn’t I don’t think they’d be too impressed. They would expect to have it. It would just become the norm.
Teacher 1: I guess as they move through school, resources and software would keep updating as and there might still be a novelty value every in it or every so often with the software and resources that are available down the line.

Interviewer: That’s great. Thank you very much for taking the time to do this group discussion this evening.
All: You’re welcome
Appendix 6 – Bubble Dialogue Template

Name: _____________________
Class: _____________________

What I think of the Interactive Whiteboard
Appendix 7 – Pre-test Questions

Fill out as many details as you can about the life of Saint Patrick

Name: ______________________

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<tr>
<th>Question</th>
<th>Answer</th>
</tr>
</thead>
<tbody>
<tr>
<td>Where was Patrick born?</td>
<td></td>
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<tr>
<td>Who brought him to Ireland?</td>
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</tr>
<tr>
<td>Who was the main leader in this gang?</td>
<td></td>
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<tr>
<td>Who bought Patrick?</td>
<td></td>
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<tr>
<td>a) Where did Patrick work?</td>
<td></td>
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<tr>
<td>b) What did he do?</td>
<td></td>
</tr>
<tr>
<td>What date is Saint Patrick’s Day?</td>
<td></td>
</tr>
<tr>
<td>What is the trinity?</td>
<td></td>
</tr>
<tr>
<td>What did Saint Patrick use to teach us about the trinity?</td>
<td></td>
</tr>
<tr>
<td>Can you name any songs or prayers about Saint Patrick?</td>
<td></td>
</tr>
<tr>
<td>Question</td>
<td>Answer</td>
</tr>
<tr>
<td>-------------------------------------------------------------------------</td>
<td>--------</td>
</tr>
<tr>
<td>Can you think of any stories that have to do with Saint Patrick?</td>
<td></td>
</tr>
<tr>
<td>Can you name any historical features around Mayo or Ballina that have a link with Saint Patrick?</td>
<td></td>
</tr>
<tr>
<td>What was the name of the King Saint Patrick spoke to on the Hill of Slane?</td>
<td></td>
</tr>
<tr>
<td>What year did Saint Patrick die?</td>
<td></td>
</tr>
<tr>
<td>Can you name may local features/place that have the name Patrick in them?</td>
<td></td>
</tr>
<tr>
<td>a) Where did Patrick study?</td>
<td></td>
</tr>
<tr>
<td>b) What did he become?</td>
<td></td>
</tr>
<tr>
<td>What is a pagan?</td>
<td></td>
</tr>
<tr>
<td>Where does the month 'May' or in Irish “Bealtaine“ come from?</td>
<td></td>
</tr>
<tr>
<td>Name some Irish instruments?</td>
<td></td>
</tr>
<tr>
<td>What is the nearest country to Ireland?</td>
<td></td>
</tr>
<tr>
<td>What is our national symbol?</td>
<td></td>
</tr>
</tbody>
</table>
Appendix 8 – Pictures of Children Working on Laptops
Appendix 9 – Pictures of Children Working on IWB Lessons

Lesson 1: Children dramatising the story of Saint Patrick
True or False Quiz

1. Patrick was born in Britain.
2. Saint Patrick’s Day is on the 20th of March.
3. St. Patrick explained the message of the trinity using a bible.
4. Crom Dubh was a wicked chieftain and had two sons.
5. Saint Patrick became a slave in County Down.
6. Saint Patrick is our patron Saint.
7. The Pagan people of Ireland believed in God.
8. What we know about St. Patrick is mostly legend.
Lesson 2:

*Children working on Legends of Saint Patrick*
Demonstrating using the highlighter with the wordsearch
Lesson 3:
Children engaging in interactive activities – multiple choice quiz, cloze procedure and matching word and picture

*Multiple Choice*
**Cloze Procedure**

1. Saint Patrick was born in ____________.
2. Cruel and savage men captured Patrick and brought him to ____________.
3. Patrick was sold to a man called ____________.
4. Patrick had to mind ____________ and pigs on Slabh Mor but never once forgot about God.
5. One night Patrick heard a ____________ which told him to go to the ____________.
6. Patrick returned home and became a ____________.
7. He came back to Ireland and banished all the ____________ to show how wise God was.
8. Patrick picked up ____________ to show how wise God was.
Matching word and picture
Lesson 1: Saint Patrick Lesson Plan using Laptop Cluster

Pre-lesson set up: Before this lesson laptops need to be gathered from teachers. All software had to be installed on them. They must be tested for sound. Extra cables will be needed for laptops to keep them charged. All laptop will be turned on ready for the children to click into the icon for the software. As there are not enough laptops in the school children will work in pairs.

Date: 10\textsuperscript{th} March
Class: 3\textsuperscript{rd} and 4\textsuperscript{th}
Time: (3 X 1 hour lessons)

<table>
<thead>
<tr>
<th>Social, Environmental and Scientific Education (S.E.S.E) - History</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Strand:</strong></td>
</tr>
<tr>
<td><strong>Strand Unit:</strong></td>
</tr>
<tr>
<td><strong>Objectives:</strong></td>
</tr>
<tr>
<td>• Listen to, discuss, retell and record a range of myths and legends from Ireland.</td>
</tr>
<tr>
<td>• Discuss chronology of events in stories</td>
</tr>
<tr>
<td>• Discuss actions and feelings of characters</td>
</tr>
<tr>
<td>• Distinguish between fictional accounts in stories, myths and legends and real people and events in the past</td>
</tr>
<tr>
<td>• Express or record stories through oral and written forms, art work, drama, mime, movement and information and communication technologies</td>
</tr>
<tr>
<td><strong>Skills:</strong></td>
</tr>
</tbody>
</table>

**Topics/Content:** Saint Patrick’s Biography and Being Irish

**Methodology**

*Introduction:* Insert CD and wait to begin. Explain to the children that they are going to learn about the life of Saint Patrick over the next 3 days. Instruct children to click on the music section. Allow children to listen to the “Saint Patrick Song”.

It is important to tell the children not to go on until the teacher instructs them to.

*Development:* The children read through the section of Patrick’s Life story. Explain to the children that they can click on the characters and hear them and also hear the story. Explain to them that if they get stuck at any time they can click on the help button.

When the teacher thinks sufficient time has been spent by the children instruct them to go to the home page and then click on the shamrock called activities. Here they need to click into the true or false icon. The children do the quiz based on the life of Saint Patrick. Circle around the room monitoring children at work.

*Being Irish:* When children have this done, click on the home shamrock and then into Being Irish section. Children read what it means to be Irish – games, flag etc. Tell children they can mouse over instruments being played.

*Conclusion:* Allow children to colour in the picture of Patrick as a boy and some Irish characters – Leprechaun and pot of gold. As there is no link for some computers to the printer the easiest thing would be to pre-print the colouring page.

Ask children to exit CD by pressing the X button. Ask them to shut down the laptops also.

**Resources:** Laptops x 14, Power leads, CD of “Journeying with Saint Patrick in Country Mayo”, memory stick for putting software on laptops, colouring sheet and colours

**Assessment:** Teacher Observation
Lesson 2: Saint Patrick Lesson Plan using Laptop Cluster

Pre-lesson set up: Follow the same as lesson 1

Date: 11th March

Class: 3rd and 4th

Time: (3 X 1 hour lessons)

<table>
<thead>
<tr>
<th>Social, Environmental and Scientific Education (S.E.S.E) - History</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Strand:</strong></td>
</tr>
<tr>
<td>Story</td>
</tr>
<tr>
<td></td>
</tr>
<tr>
<td><strong>Objectives:</strong></td>
</tr>
<tr>
<td>Listen to, discuss, retell and record a range of myths and legends from Ireland.</td>
</tr>
<tr>
<td>Discuss chronology of events in stories</td>
</tr>
<tr>
<td>Discuss actions and feelings of characters</td>
</tr>
<tr>
<td>Distinguish between fictional accounts in stories, myths and legends and real people and events in the past</td>
</tr>
<tr>
<td>Express or record stories through oral and written forms, art work, drama, mime, movement and information and communication technologies</td>
</tr>
</tbody>
</table>

**Topics/Content:**
Legends of Saint Patrick and The Parade

**Methodology**

**Introduction:**
Ask children about what they remember about the day before. Children sit in the same places and with the same people as the previous day. Ask the children to click into the icon for the software, enter their names and click on the shamrock for the prayers and songs. Begin with saying the Prayer to Jesus as a class.

**Development:**
Elicit from the children if they know any legends about Saint Patrick. Explain to the children to click on home and then have a look at the legends. Ask the children in their pairs to mouse over them and see can they name them. Once they have take legend by legend allowing children to explore as they read through the sections. Remind them of the forward button and the help button.

- Saint Patrick and the Piece of Gold, Oisin and Saint Patrick, Saint Patrick and The Druid
- The fight between Crom Dubh and Patrick, Saint Patrick crosses the River Moy
- Saint Patrick and banishes the snakes, The Legends of the Local Wells

**The parade:**
Ask the children if any of them are in the parade this year. Elicit from the children why we have a parade? Ask if they know how Saint Patrick’s Day is celebrated in other parts of the world. Click on the shamrock for the “parade”. Children read about the Parades in Ireland. Click on the shamrock again to show the children the Saint Patrick’s Day Parade in Ballina. Observe the children to see will they recognise themselves.

**Internet Link:** This is not possible with all laptops and computers so this can be left out.

**Conclusion:**
Allow children complete the wordsearch. As there is no link for some computers to the printer the easiest thing would be to pre-print this.
Ask children to exit CD by pressing the X button. Ask them to shut down the laptops also.

**Resources:** Laptops x 14, Power leads, CD of “Journeying with Saint Patrick in Country Mayo”, wordsearch and highlighter.

**Assessment:** Teacher Observation & Post-test
Lesson 3: Saint Patrick Lesson Plan using Laptop Cluster

Pre-lesson set up: Follow the same as lesson 1

**Date:** 12\textsuperscript{th} March

**Class:** 3\textsuperscript{rd} and 4\textsuperscript{th}

**Time:** (3 X 1 hour lessons)

| **Social, Environmental and Scientific Education (S.E.S.E) - History** |
|---|---|
| **Strand:** | **Local Studies** |
| **Strand Unit:** | **Story** |
| **Objectives:** | **Buildings, sites or ruins in my locality** |
| • Listen to, discuss, retell and record a range of myths and legends from Ireland. | |
| • Discuss chronology of events in stories | |
| • Discuss actions and feelings of characters | |
| • Distinguish between fictional accounts in stories, myths and legends and real people and events in the past | |
| • Express or record stories through oral and written forms, art work, drama, mime, movement and information and communication technologies | |
| **Skills:** | **Working as a historian, Time and chronology, Change and continuity, Empathy, Using Evidence, Synthesis and Communication, Cause and Effect** |

**Topics/Content:** Saint Patrick featuring in Local History

**Methodology**

**Introduction:**
Ask children about what they remember about the day before. Children sit in the same places and with the same people as the previous day.

Ask the children to click into the icon for the software, enter their names and click on the shamrock for the prayers and songs. Click on the icon for the prayers and songs. Being with the class listening to “Hail Glorious Saint Patrick”.

**Development:**
Elicit from the children if they know any Historical Features or names of places with Saint Patrick in them. Ask the children to go to the home page and click the shamrock that says Local History. Ask a child to name the local features.

- Foghill Well, Ogham Stone, Holy Wells, Croagh Patrick, Leigue Cemetery
- St. Patrick’s Church and places named after the Saint, Downpatrick Head
- Ballintubber Abbey, Killanley Graveyard

Begin with Downpatrick Head. Ask the children to recall the Legend of Crom Dubh and Patrick. Explain we are going to see the area a little clearer today. Children can enjoy the videos of Downpatrick Head and Foghill Well.

**Interactive Activity:**
Explain to the children we are going to do some activities based on what we have learned. Ask them to go to the home page and then to the activities button. Ask them to complete the following:

- Drag the correct word to the correct Historical place/picture
- Cloze procedure - drag the correct word to the correct space
- Multiple Choice – choose the correct answer from three given ones

**Conclusion:**
Ask the children did they like learning about Saint Patrick in this way using the CD and the laptops. Ask the children to fill out their thoughts about the lesson over the 3 days.

When they have completed this they then fill out the post-test sheet to test their knowledge of Saint Patrick now.

**Resources:** Laptops x 14, Power leads, CD of “Journeying with Saint Patrick in Country Mayo”, pencil, evaluation sheets and post test sheets.

**Assessment:** Post-Test and Teacher Observation
Appendix 11 – Lesson Plans for IWB Lessons

Lesson 1: Saint Patrick Lesson Plan using the Interactive Whiteboard

Date: 10th March

Class: 3rd and 4th

Time: (3 X 1 hour lessons)

<table>
<thead>
<tr>
<th>Social, Environmental and Scientific Education (S.E.S.E) - History</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Strand:</strong></td>
</tr>
<tr>
<td><strong>Strand Unit:</strong></td>
</tr>
</tbody>
</table>

**Objectives:**
- Listen to, discuss, retell and record a range of myths and legends from Ireland.
- Discuss chronology of events in stories
- Discuss actions and feelings of characters
- Distinguish between fictional accounts in stories, myths and legends and real people and events in the past
- Express or record stories through oral and written forms, art work, drama, mime, movement and information and communication technologies

**Skills:**
- Working as a historian, Time and chronology, Change and continuity, Empathy, Using Evidence, Synthesis and Communication, Cause and Effect

**Topics/Content:**
Saint Patrick’s Biography and Being Irish

**Methodology**

Introduction:
Insert CD and wait to begin. Explain to the children that they are going to learn about the life of Saint Patrick over the next 3 days. Begin the lesson by clicking on the music section. Allow children to listen to the “Saint Patrick Song”.

Development:
Pick some children to dramatise the life of Saint Patrick. These children come forward. They use the pen to dramatise the characters using the pen
- Saint Patrick as a young boy
- Niall of the Nine Hostages
- Animal voices and sound effects
- The Angel
- Patrick’s Family
- Patrick as a man
- King Laoire
- Crowd of people Patrick talks to

Children, as a class read the piece of information about the life of Patrick. Sometimes a child can click on the icon for the text to be read aloud. The children do an interactive quiz based on the life of Saint Patrick. Click on the True or False section on the Activities shamrock. Invite different children to take turns.

Being Irish:
Click on this shamrock. Children read what it means to be Irish – games, flag etc. Invite children to come forward to mouse over different Irish Instruments and hear them play.

Conclusion:
Allow children to colour in the picture of Patrick as a boy and some Irish characters – Leprechaun and pot of gold. This can be printed from the CD and sent to the school printer.

**Resources:** Interactive Whiteboard, stylus pen, 1 laptop, sound system, Printer, colouring sheet and colours

**Assessment:** Teacher Observation
**Lesson 2: Saint Patrick Lesson Plan using the Interactive Whiteboard**

**Date:** 11th March

**Class:** 3rd and 4th

**Time:** (3 X 1 hour lessons)

<table>
<thead>
<tr>
<th><strong>Social, Environmental and Scientific Education (S.E.S.E) - History</strong></th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Strand:</strong></td>
</tr>
<tr>
<td><strong>Strand Unit:</strong></td>
</tr>
</tbody>
</table>

**Objectives:**
- Listen to, discuss, retell and record a range of myths and legends from Ireland.
- Discuss chronology of events in stories
- Discuss actions and feelings of characters
- Distinguish between fictional accounts in stories, myths and legends and real people and events in the past
- Express or record stories through oral and written forms, art work, drama, mime, movement and information and communication technologies

**Skills:**
- Working as a historian, Time and chronology, Change and continuity, Empathy, Using Evidence, Synthesis and Communication, Cause and Effect

**Topics/Content: Legends of Saint Patrick and The Parade**

**Methodology**

**Introduction:**
Insert CD and wait to begin. Ask children about what they remember about the day before. Click on the icon for the prayers and songs. Begin with saying the Prayer to Jesus as a class.

**Development:**
Elicit from the children if they know any legends about Saint Patrick. Invite someone to come forward and mouse over the names of the legends.

- Saint Patrick and the Piece of Gold
- Oisín and Saint Patrick
- Saint Patrick and The Druid
- The fight between Crom Dubh and Patrick
- Saint Patrick crosses the River Moy
- Saint Patrick and banishes the snakes
- The Legends of the Local Wells

The children are again invited to dramatise the characters in the legends section. As a class the can read the text and mouse over the characters to hear them speak or reacts.

**The parade:** Ask the children if any of them are in the parade this year. Elicit from the children why we have a parade. Ask if they know how Saint Patrick’s Day is celebrated in other parts of the world. Click on the shamrock for the “parade”. Children read about the Parades in Ireland. Click on the shamrock again to show the children the Saint Patrick’s Day Parade in Ballina. Observe the children to see will they recognise themselves.

**Internet Link:** Click on the icon to see information on the Dublin Parade.

**Conclusion:**
Children complete a wordsearch, which again once the print button is pressed can be sent to the school Printer. The Answers can be highlighted by a child using the highlight button on the Ebeam interact software.

**Resources:** Interactive Whiteboard, stylus pen 1 laptop, sound system, printer, wordearch

**Assessment:** Teacher Observation
**Lesson 3: Saint Patrick Lesson Plan using the Interactive Whiteboard**

**Date:** 12th March  
**Class:** 3rd and 4th  
**Time:** (3 X 1 hour lessons)

### Social, Environmental and Scientific Education (S.E.S.E) - History

<table>
<thead>
<tr>
<th>Strand</th>
<th>Story</th>
<th>Local Studies</th>
</tr>
</thead>
<tbody>
<tr>
<td>Strand Unit:</td>
<td>Myths and Legends</td>
<td>Buildings, sites or ruins in my locality</td>
</tr>
</tbody>
</table>

**Objectives:**
- Listen to, discuss, retell and record a range of myths and legends from Ireland.  
- Discuss chronology of events in stories  
- Discuss actions and feelings of characters  
- Distinguish between fictional accounts in stories, myths and legends and real people and events in the past  
- Express or record stories through oral and written forms, art work, drama, mime, movement and information and communication technologies

**Skills:**
- Working as a historian, Time and chronology, Change and continuity, Empathy, Using Evidence, Synthesis and Communication, Cause and Effect

**Topics/Content:** Saint Patrick featuring in Local History

**Methodology**

**Introduction:**
Insert CD and wait to begin. Ask children about what they remember about the day before. Click on the icon for the prayers and songs. Being with the class listening to “Hail Glorious Saint Patrick”.

**Development:**
Elicit from the children if they know any Historical Features or names of places with Saint Patrick in them. Invite someone to come forward and mouse over the names of the Historical places:
- Foghill Well, Ogham Stone  
- Holy Wells, Croagh Patrick, Leigue Cemetery  
- St. Patrick’s Church and places named after the Saint, Downpatrick Head  
- Ballintubber abbey, Killanley Graveyard

Begin with Downpatrick Head. Ask the children to recall the Legend of Crom Dubh and Patrick. Explain we are going to see the area a little clearer today. Where mouse over is allowed for voices pick children to come forward.

Children can enjoy the videos of Downpatrick Head and Foghill Well.

**Interactive Activity:**
Pick different children to come forward and using the pen do the following:
- Drag the correct word to the correct Historical place/picture  
- Cloze procedure - drag the correct word to the correct space  
- Multiple Choice – choose the correct answer from three given ones.

**Conclusion:**
Ask the children did they like learning about Saint Patrick in this way using the CD and the Interactive Whiteboard. Ask the children to fill out their thoughts about the lesson over the 3 days. When they have completed this they then fill out the post-test sheet to test their knowledge of Saint Patrick now.

**Resources:**
Interactive Whiteboard, stylus pen, 1 laptop, sound system, post-test and evaluation sheets

**Assessment:**
Post-Test and Teacher Observation
Appendix 12 – Evaluation of Laptop Lesson

Name: ____________

Evaluation of Laptop Lesson

Did you enjoy this lesson?

Yes [ ] No [ ]

Why?

________________________________________________________________________
________________________________________________________________________

Would you have preferred to learn about it on the Interactive Whiteboard?

Yes [ ] No [ ]

Why?

________________________________________________________________________
________________________________________________________________________

________________________________________________________________________

What would you give it out of ten?

________________________________________________________________________

What was your favourite part on the CD?

________________________________________________________________________
________________________________________________________________________

Is this lesson more exciting than learning out of a book?

Yes [ ] No [ ]

Why?

________________________________________________________________________
________________________________________________________________________

________________________________________________________________________

If you could change one thing about the lesson what would it be?

________________________________________________________________________
________________________________________________________________________

________________________________________________________________________
Appendix 13 – Evaluation of IWB Lesson

Name: ____________

Evaluation of IWB Lesson

Did you enjoy this lesson?

Yes [ ] No [ ]

Why?

_________________________________________________________________
_________________________________________________________________
_________________________________________________________________

What would you give it out of ten?

_________________________________________________________________

What was your favourite part on the CD?

_________________________________________________________________
_________________________________________________________________
_________________________________________________________________

Is this lesson more exciting than learning out of a book?

Yes [ ] No [ ]

Why?

_________________________________________________________________
_________________________________________________________________
_________________________________________________________________

If you could change one thing about the lesson what would it be?

_________________________________________________________________
_________________________________________________________________
**Appendix 14 – Post-Test Questions**

**Fill out as many details as you can about the life of Saint Patrick**

**Name:** ______________________________

<table>
<thead>
<tr>
<th>Question</th>
<th>Answer</th>
</tr>
</thead>
<tbody>
<tr>
<td>Where was Patrick born?</td>
<td></td>
</tr>
<tr>
<td>Who brought him to Ireland?</td>
<td></td>
</tr>
<tr>
<td>Who was the main leader in this gang?</td>
<td></td>
</tr>
<tr>
<td>Who bought Patrick?</td>
<td></td>
</tr>
<tr>
<td>a) Where did Patrick work?</td>
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<td></td>
</tr>
<tr>
<td>What date is Saint Patrick’s Day?</td>
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</tr>
<tr>
<td>What is the trinity?</td>
<td></td>
</tr>
<tr>
<td>What did Saint Patrick use to teach us about the trinity?</td>
<td></td>
</tr>
<tr>
<td>Can you name any songs or prayers about Saint Patrick?</td>
<td></td>
</tr>
</tbody>
</table>
Can you think of any stories that have to do with Saint Patrick?

Can you name any historical features around Mayo or Ballina that have a link with Saint Patrick?

What was the name of the King Saint Patrick spoke to on the Hill of Slane?

What year did Saint Patrick die?

Can you name any local features/place that have the name Patrick in them?

a) Where did Patrick study?
b) What did he become?

What is a pagan?

Where does the month ‘May’ or in Irish “Bealtaine” come from?

Name some Irish instruments?

What is the nearest country to Ireland?

What is our national symbol?
Appendix 15: Summary of children’s reactions to the IWB from teacher’s log

I love this game (Senior Infant)

Wow, that’s so cool (Senior Infant)

O great, the monkey game (Junior Infants A)
O great, we’re doing the computer (Junior Infants A)

Me, me, me (Junior Infants A)

Can we do that again teacher (Junior Infants A)

It’s not fair, he got two goes to do it (Junior Infants A)

I didn’t get a turn (Junior Infants B)

I like drawing on it (1st class)

There are lots of fun games on it (1st class)

He got to do it yesterday, so he shouldn’t get to do it today (4th class)

I never had a go (4th class)

again…. (Junior Infants B)
Appendix 16 - Research timeline

<table>
<thead>
<tr>
<th>Date</th>
<th>What happened</th>
</tr>
</thead>
<tbody>
<tr>
<td>Fr 6(^{th}) March</td>
<td>Pre-test on Saint Patrick - 3(^{rd}) and 4(^{th}) class</td>
</tr>
<tr>
<td>Tues 10(^{th}) March</td>
<td>Lesson 1 using laptops 1 hour</td>
</tr>
<tr>
<td></td>
<td>Lesson 1 using IWBs 1 hour</td>
</tr>
<tr>
<td>Wed 11(^{th}) March</td>
<td>Lesson 2 using laptops 1 hour</td>
</tr>
<tr>
<td></td>
<td>Lesson 2 using IWBs 1 hour</td>
</tr>
<tr>
<td>Thurs 12(^{th}) March</td>
<td>Lesson 3 using laptops 1 hour</td>
</tr>
<tr>
<td></td>
<td>Lesson 3 using IWBs 1 hour</td>
</tr>
<tr>
<td></td>
<td>Evaluation of lessons</td>
</tr>
<tr>
<td></td>
<td>Evaluations of Lessons</td>
</tr>
<tr>
<td>Fri 13(^{th}) March</td>
<td>Post test to 3(^{rd}) and 4(^{th}) class</td>
</tr>
<tr>
<td>Monday 20(^{th}) April</td>
<td>Explained staff roll in research – Each participant was given pack with info, speech bubble sheet and the 4 week log Emailed link for survey monkey to the staff</td>
</tr>
<tr>
<td>Tuesday 21(^{st}) April</td>
<td>Junior Infants X 2, Senior Infants, 1(^{st}), 4(^{th}), 5(^{th}), 6(^{th}) drew pictures of how the IWB helps them learn</td>
</tr>
<tr>
<td></td>
<td>Interviews with above classes</td>
</tr>
<tr>
<td>Wednesday 27(^{th}) April</td>
<td>Interview with school Principal</td>
</tr>
<tr>
<td>Friday 24(^{th}) April</td>
<td>2(^{nd}) &amp; 3(^{rd}) class drew pictures of how the IWB helps them learn</td>
</tr>
<tr>
<td></td>
<td>Interview with above groups</td>
</tr>
<tr>
<td>11(^{th}) May</td>
<td>Deadline for submission of IWB questionnaire</td>
</tr>
<tr>
<td>13(^{th}) May</td>
<td>Interview with Microsoft Office Master Instructor (computer teacher)</td>
</tr>
<tr>
<td>15(^{th}) May</td>
<td>Teachers complete information speech bubble sheet.</td>
</tr>
<tr>
<td>20(^{th}) May</td>
<td>Focus Group with 5 staff members who use the IWB.</td>
</tr>
</tbody>
</table>
Appendix 17 – Letter of Permission to Board of Management and Principal

Dear chairperson and Principal,

This year I am embarking on my Masters in Digital Media for Education. As we are fortunate to have the interactive whiteboards I am going to base my thesis around them.

I am requesting permission to conduct small scale research on the use of the Interactive whiteboard in the school.

Areas that I will refer to with permission are.

- Interview the Principal on the benefits of the whiteboard in the school
- Interview Robyn Joyce on the benefits of having the whiteboard to teach computer lessons to the senior classes.
- Ask teachers to create a log of interactive whiteboard use over a three week period
- Interview teachers who use/do not use the whiteboard – advantages and disadvantages of this in classroom pedagogy.
- Conduct research with the children in 3rd/4th class on their interpretations of the whiteboard through drawings. Set up a computer cluster and teach an interactive lesson on the Story of Saint Patrick and teach the same lesson using the interactive whiteboard.
- Interview children on if they like the whiteboard – group interview. This will be recorded on video.
- Interview children from Junior Infants to 6th on their impressions of the IWB and analyse their drawings.

I will also request permission from the parents of the classes involved. Teacher’s names and student names will not be used and collection of data will be handled with care. Any material videoed will be stored safely by me and erased on completion of this Masters.

Ethical issues will be adhered to at all times. Should you require any further information please feel free to contact me.

Thanking you,

Yours sincerely,

Emma Hallinan
Appendix 18 – Information Letter to Parents and Permission Slip

Dear parents/Guardians

This year I am embarking on my Masters in Digital Media Development for Education through the University of Limerick.

The aim of my thesis will be two fold:

1. Do Interactive Whiteboards create a collaborative learning environment for children?

   and

2. Are Interactive Whiteboards changing teacher’s perspectives on integrating ICT into the curriculum?

In order to conduct this research I am requesting your help. I would like to get children’s opinions on the Interactive Whiteboards. I am hoping to do this research with 6 children from each class - 3 boys and 3 girls. I have chosen names at random. The research will be done by analysing children’s drawings and then interviews will be carried out with the children in groups about their opinions of the boards.

In this research no children’s first names will be used and all research will be handled with care and sensitivity. Any video recorded material/audio material will be safely stored by me and will be destroyed upon completion of this project. If you have any questions or concerns please feel free to contact me. Please fill out the consent form and return to me by Thursday 30th March. I intend to carry out the group interview on Monday 20th of April.

Thank you for your support,

Yours sincerely,

Emma Hallinan

Name of child: ________________________________

Class: ________________________________

Please tick if you agree to let your child:

- Be interviewed in a group setting with their peers on their opinions of the whiteboard (this will be recorded for research purposes only)

  Yes ☐ No ☐

- Draw their impressions of the interactive whiteboard

  Yes ☐ No ☐

Parental Signature: ________________________________
Appendix 19 – Information letter and permission slip for parents of 3rd & 4th class children

Dear parents/Guardians

This year I am embarking on my Masters in Digital Media Development for Education through the University of Limerick.

The aim of my thesis will be two fold:

1. Do IWBs create a collaborative learning environment for children?

and

2. Are IWBs changing teacher’s perspectives on integrating ICT into the curriculum?

In order to conduct this research I am requesting your help. I would like to get children’s opinions on the Interactive Whiteboards. This will be done by analysing children’s drawings and then interviews will be carried out with the children in groups about their opinions of the boards.

Back in 2006 the current 6th class children were involved in helping me design an interactive piece of software called Journeying with Saint Patrick in County Mayo. The children were tested on the learning benefits of this piece of software and they also evaluated which method of learning they preferred – listening to the teacher traditionally teaching about Saint Patrick or using the laptops/PCs in the classroom in pairs. Where advantages and disadvantages were found with both methods, 65% of the class preferred learning from the CD.

For the purposes of this research I intend to teach half of 3rd class about Saint Patrick in a laptop cluster with half of 4th. The other half of 3rd and 4th will be taught the same lesson except they will not use the laptops. They will be taught using the Interactive Whiteboard only. Pre and post tests will be administered and observations will be made.

The children may also be asked to complete a small survey on their experience with computers/digital technology.

I intend to carry out part of this research on Tuesday 10th of March. In this research no children’s names will be used and all research will be handled with care and sensitivity. Any video recorded material will be safely stored by me and will be destroyed upon completion of this project. If you have any questions or concerns please feel free to contact me. Please fill out the consent form and return to me by Thursday 5th March 2009.
Thank you for your support once again,

Yours sincerely,

Miss Emma Hallinan

Name of child: ______________________________________

Please tick if you agree to let your child:

- Be interviewed in a group setting with their peers on their opinions of the Interactive Whiteboard (this will be recorded for research purposes only)
  
  Yes [ ]  No [ ]

- Draw their impressions of the interactive whiteboard
  
  Yes [ ]  No [ ]

- Be involved in the research of the Interactive Whiteboard lesson versus a laptop cluster lesson using the CD Journeying with Saint Patrick in County Mayo (this will be recorded for research purposes only)
  
  Yes [ ]  No [ ]

Parental Signature: ________________________________
Appendix 20(a) – Breakdown of Answers from Pre-test

Total number of children for the pre-test: 44
Classes involved: 3rd & 4th class
21 from 3rd
23 from 4th

Total: 44 children

Total Amount of Questions: 22

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### Appendix 20(b) – Breakdown of Answers from Post-test (Laptop Lesson)

**22 in post test with laptops**

There were 10 laptops and one PC which catered for all children. Children worked in pairs.

**Total Amount of Questions: 22**

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### Appendix 20(c) – Breakdown of Answers from Post-test (IWB Lesson)

#### 22 in post test with IWB

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Appendix 21 - Sample Questions for children for the IWB interview

Thought Bubble:

- What did you learn when using the IWB?
- What new skills did you achieve when using the IWB?
- What did you learn about how you learn?
- Did the IWB change the way you think about a subject?
- How will IWBs change how you do things in the future?

Speech Bubble:

- Why would you tell another school/teacher child to use an IWB?
- What is good about using the IWB?
- What is not so good about using the IWB?
- Who do you think would benefit most from learning using the IWB?
- What do other children/teachers/parents learn with the IWB?

General Questions:

- What advantages has the IWB over a regular whiteboard?
- Describe what you like the most when the IWB is used in the classroom?
- Do you believe you learn better when the IWB is used in the classroom?
- Does it help you pay attention more?
- Is there anything you don’t like about it? Have you noticed any problems with it?
- Do you think it is easy to use an IWB?
- Do you feel like you have enough opportunity to interact with the IWB? Do you all get a chance to go up and use the board?
- Do you like the Interactive Whiteboard?
• Do you think the Interactive Whiteboard is fun?

• Do you feel your teacher uses the pen more than you?

• Can you remember back to the time when you had no interactive whiteboard? What was that like?

• What would you give it out of 10 and why?

• What was the best thing you have done on the interactive whiteboard so far?

• If you could change one thing about the interactive whiteboard in your classroom what would it be?

• Do you feel that you learn better when the interactive whiteboard is in use in your classroom?

• Do you think using technology in school is fun?

• Do you think the interactive whiteboard reminds you of home in any way?

• How would you feel if you moved into a class next year and found they had no interactive whiteboard? Why?

• Do you feel you learn better from the whiteboard or your teacher talking?
Appendix 22 – Sample Transcript from Interviews with 4th class and Senior Infant Children

(The other interviews are on CD)

4th class Interview

Interviewer: Welcome everybody
Do you like using the IWB in you classroom?
All: Yes
Miss C: It’s nice to see what’s in front of you instead of out of your book all the time. Your teacher is showing it how it’s done. It’s good but not everybody gets a go.
Miss I: It’s easier on the IWB but sometimes the teacher hogs it a bit
Miss A: You don’t have to draw the shapes, just drag them up
Miss E: It’s a fun way of learning
Mr. O: You learn lots of computer skills

Interviewer: Is learning with the IWB fun?
All: Yes
Mr. O: You can play games without having to use all the buttons; you can just click with the pen.
Miss I: Everyone can see the same, when everyone gets a go its fun like when we did our joint writing. When we all do it together its fun like if everyone is helping each other. It’s a waste of time if we don’t all get a turn.
Mr. R: It’s good for learning songs cause sometimes we have to photocopy loads of pages and that’s a waste of paper.

Interviewer: Do you like when everyone can see your work?
Miss C: No. Sometimes if you make a mistake it’s kind of embarrassing (two more agree)

Interviewer: If teacher calls you to go up to the IWB do you feel under pressure to get an answer right?
All: No
Mr E: A little bit. I’m used to it

Interviewer: Do you think you’ve learned any computer skills this year?
Mr. O: Ya cause we learned how to put borders on things (others agreeing)
Miss E: it’s a lot easier than using markers and going down to the office and getting more

Interviewer: So do you feel we are only using the IWB as a fancy way of having digital ink?
All: No
Miss I: I think it’s more of a help
Miss C: it shows you more skills on the computer
Miss I: And people can’t rub it out with their hands by accident it stays on the board (others agreeing)
Miss A: like when we were doing bingo we only had to write the words once and can bring it up again
Miss I: And for the homework as well
Miss E: And everyone can see it as well

Interviewer: What’s the best thing you have done this year with the IWB?
Miss C: Well I liked doing the geography and the different counties. I didn’t really know much about geography before hand and it helped me more looking at all the counties on the eBeam.
Would you have preferred to have learned from the eBeam or a map on the wall?
Miss C: The eBeam
Miss I: When your looking at you book you get confused a bit, you get distracted, you get lost but when you look that the IWB it looks more fun so your looking at that.
Mr R: I liked the fraction monkeys where you have to do the half. I didn’t know much about fractions. When teacher tells us we might forget but with the IWB you can go back on it any time.
Mr O: I like the quiz for the credit union people and everyone got a go to use the pen

Interviewer: Has your concentration improved from looking at the eBeam?
All: Yes
Miss I: You can change the colours. You’d watch it more than a normal whiteboard
Miss E: It’s easier than putting speech marks in you copy because you mightn’t know where to put them and you can just type it out on the eBeam and everyone can see them.

Interviewer: What would eBeam out of 10
Miss A: 9. It’s better now with the Easiteach
Miss C: 9. You have to calibration it. Not everything is perfect on it. It’s very sensitive. I like having a laptop at my place. If we need to go back on something we can do that ourselves but with the ebeam there is only one of them and you have to move on.
Miss I: 8. you have to find batteries for it. I though it would be a bit better.
I like the Easiteach more than the old software as it has more shapes, and maths signs and money symbols
Mr R: I didn’t like when dust goes into the fan and fan fail all the calibration,
Mr O: The IWB would surprise you. Like with the Easiteach we didn’t know what was in it. If we clicked on something a whole new thing would come up. We’d be like “oh cool” and then a new thing after that …..

Interviewer: If you went into a classroom and found they had no IWB how would you feel?
Miss C: I’d be lost. I’d learn more if we had it. It would be harder for teachers to teach
Miss A: I really like the eBeam. It’s a lot easier wit the pen, it’s more exciting, it’s different
Mr O: You’d be like “eh can we get an eBeam in here please?” It takes a while to get use to it.
The first time I used the pen it was going all over the place.
Miss I: It was very wobble
Miss A: With a normal board you have to draw out the lines, the lines for joined writing. You can just put the background on now

Interviewer: Do you think the eBeam has helped you learn joint writing a bit better maybe?
All: Yes
Miss I: I think the money signs like the two euro and everything are really handy
Interviewer: Would it be better if teacher put eBeam aside for a week and said I’m going to show you the coins from a distance or would it be better to teach you a lesson on money
Miss C: I think the eBeam as the coins are harder to see from the back. Coins are harder to see from the back. Everyone could see if they are on the eBeam. You can make the coins bigger which is really better.
Miss I: You’d have to pass the round
Mr O: You might be doing this thing for art and we’re not dong it on the eBeam let’s just say and they get a stop wrong and they do it an everything will be ruined.
Miss C: Everyone can see on the eBeam and then get it right
Miss I: I found it harder for the long multiplication in my copy. I was easier on the eBeam.

Interviewer: What do you think we use the eBeam more for? Is it maths or geography …..
All: Maths
Miss C: I find maths easier on the eBeam
Interviewer: What makes it easier?
Miss C: I don’t know, I think the lines like the horizontal and vertical
Miss E: Like with the ebeam you can just drag the lines up and you know which one
Miss I: I think it’s great because it has all the symbols like the perpendicular symbol. That helped me a lot.
Miss E: I prefer easiteach software with octagon, perpendicular lines and you can draw lines.
Interviewer: Do you every feel sometimes you don’t get a fair chance to use the eBeam or the pen?
All: Yes
Miss C: Because there’s so many of us in the classroom how are we all going to have a fair chance? Sometimes I keep my hand down then if I think I’ve a fair chance I put it up

Interviewer: Even in you class if you didn’t get a chance are you still learning by watching them?
Miss I: Ya I do but it’s mostly only certain people

Interviewer: So how could we combat that in a classroom?
Miss A: Well the first thing that should happen is turn on the light so teacher can see us. I don’t think the light should be off
Mr. O: Maybe start from the front of the class and start making you way around
Miss C: Maybe one from each table
Miss E: It’s like sometime one person gets chosen and does the whole thing

Interviewer: Are there any disadvantages of having an eBeam or an IWB in a classroom?
Miss I: if you were sick and had to stay inside you wouldn’t be able to stay inside the classroom incase anything broke like the projector
Miss C: It’s basically very fragile
Miss I: If someone touched the pen when it was on stand by and you didn’t mean to do it and something came up you feel like you would get in trouble.
Miss E: it’s annoy the way the pen has two buttons on it because when you’re just about to write with it you could press a button and then you don’t know how to get back.
Miss A: You know the way say you were on documents or something, I thought you were only able to use the pen on the eBeam software but you can use it with everything
Miss C: That’s handier
Mr R: I’ve a complaint about it. If people you’re sitting at the back and your looking at the projector. there’s a big shine on it. That’s annoying. It’s like the sun. It’s from the projector. It’s always there. If you write at the top it’s annoying. I have to move over to get rid of the shine. I have to kneel on my chair to get rid of it.
Miss I: Sometimes it doesn’t exactly touch where you want it to touch. Like when……… was doing the story and it wouldn’t exactly drag and drop there.
Mr R: When we had the last projector it stopped. When we were doing maths it just stopped. A purple light came on
Mr O: Like my X Box 360. It’s called the red ring of death. Three red lights come on. There’s 4 of them and their all meant to be green and we had to pay like €60 or something to get it fixed but then they couldn’t actually fix it so we got an new X box for free.

Interviewer: What is the advantage of having an eBeam in the classroom?
Miss I: Well it’s good the way we have the projector on the roof instead of always getting it on a table or something. I like the background, the quizzes and search the internet.
Miss A: Like last year we didn’t have it and we had to get tables and things to straighten it out and everything and it was in the way so you couldn’t really see it.
Miss E: When we tried to watch it everyone kept getting up out of their seats and you couldn’t see it
Miss A: I think we were doing history and Miss……. had it on a table and it was a bit wonky
Miss I: It was kind of half on and half off the board.
Miss E: If you left it on a table someone could spill a drink all over the projector
Mr O: With all the markers you are wasting, you saving money if you all had eBeams you’d have more money
Mr R: I think the eBeam is a waste of money but the projector is good value. We could use the mouse on the laptop. It would be better if we all got a go.

Interviewer: Do you think it might waste alot of electricity?
Miss E: If it’s on for the whole day and you’re not even using it, it would waste a lot
Miss C: You should use it for a good reason

Interviewer: If there was one sentence or word that could sum up the IWB in our school what would it be?
Miss I: It has disadvantages and advantages
Miss E: You have to calibrate it the minute you get it or else the writing goes lopsided.
Mr O: Excellent
Miss A: Easier
Mr R: Easiteach is good but you have to calibrate it. You always calibrate something. That’s annoying
Miss I: It’s easier to concentrate instead of writing it down in your copy and it’s kind of hard to always listen to everything the teacher says
Miss E: Would say it’s kind of annoying when you’re doing a quiz. Everyone starts shouting at you for the right answer. They are going for two different answers and you don’t know which one to go with
Mr O: And sometimes if you get this answer right you’d have the most answers in the class, you’d beat the record. Like you might have 5 right and this might be your 6th and you might beat their record and then somebody might shout out the wrong answers and you say “oh, I’d say it’s that one and then you click on it and you get it wrong

Interviewer: And so you ever feel under pressure if you do come up to try and get an answer right
All: Yes
Mr O: Sometimes they are saying to me “aaa, bbb, ccc” and feel like saying shut up!
Miss E: It’s like you feel if they be quiet it’s a lot easier and sometimes when you get it wrong they start shouting at yo saying oh why didn’t you got for the answer I said.
Miss C: I’d say to someone about the eBeam it’s handier to use instead of markers all the time, everyone can see you, everyone can have a turn. It is kind of frightening when you first go up and you don’t know what your answer is and stuff. Then when you get it right you’re ok.
Miss I: It’s kind of hard to understand it at first you’re like “oh how do I use it” even though you’ve explained it a million time, you just think oh I don’t know

Interviewer: So have we one word to describe the whiteboard
Miss E: It’s easier to use
Miss A: Exciting
Miss C: Different
**Senior Infants Transcript**

**Interviewer:** Welcome everybody; you’ve all drawn some lovely pictures about using the IWB in your classroom. Would you like to tell me about them?

**Welcome.**

**Mr. K:** I drew our news and a little maths book. I also wrote at the bottom why I like the whiteboard.

**Miss R:** I drew a picture of a game that I like to play so well. So you have this little cork. It’s a wrong word it goes into the trash can. If it’s a real word it goes into the treasure chest and if you get it right it goes into the red.

**Miss S:** I drew the news and something in this book in our class. It’s called Action Maths

**Miss J:** I drew the IWB and our news and the two speakers and action maths that reminds me of the whiteboard. We do things in action maths on like we do the whiteboard.

**Mr A:** I drew my DS because the whiteboard reminds me of my DS, you know the pen on the whiteboard, you can use a pen on the DS.

**Mr L:** I drew Microsoft office word. It’s really fun to go on

**Interviewer:** Is everyone enjoying having the IWB in your classroom?

**All:** Yes (very enthusiastic)

**Can you remember the time when you didn’t have the IWB?**

**Miss R:** We didn’t get to play any games on it or didn’t get to have a pen and we only had to use a marker. One time teacher used a permanent marker by accident. And then she had to get a bucket of water all we had to do was sit here and be really, really board.

**Miss S:** I kinda like the other board but I like the projector more

**Mr K:** It didn’t feel as well as it does now. I didn’t like the other whiteboard before we got the IWB board. What I didn’t like was there wasn’t enough space for everything to fit it. With the IWB there is enough space to fit stuff in

**Mr. A:** About the Whiteboard I was about to say the same thing as Mr. K.

**Do you feel you are learning a little bit better because of having the IWB?**

**Miss J:** Yes, it’s easier and it talks it out to you

**Mr J:** I was about to say the same thing. Sometimes the IWB doesn’t talk and you just write it down

**Mr. L:** I just felt it was boring with the old board

**Interviewer:** Is your classroom more exciting now that you have the IWB?

**All:** OOOOO (very excited)

**Interviewer:** What is the most exciting thing you have done with the IWB?

**Mr. K:** The most exciting thing I’ve done is playing games, I love dragging stuff to the correct answer, I just love the whiteboard.

**Miss R:** Well what I do like about it is I love playing the games but the one thing I don’t like about playing the games is that it comes down and it goes back up again which is really, really annoying. And sometimes people don’t know what the words are and you have to sit here. I really love the whiteboard. I wish I had it in my room but I don’t have enough money

**Miss S:** The most exciting thing is the games on it. It’s kind of funny when Miss………makes mistakes on the news. I find it funny.

**Miss J:** I like the pirate thing that Miss R……drew that’s my favourite thing. It’s because I like dragging things. But I have to stand on a chair to reach the coin.

**Interviewer:** Would it be better if you had a step or something like that to stand on?

**All:** Yes
Interviewer: Is there anything you would change about the IWB? Does it ever annoy you at any time?
Mr K: No I just love it. Oh I do.
Miss J: I would like them to move it down a little bit so we can all reach the coins instead of standing on a chair because you’ll dirty the chairs and nobody will be able to sit on them
Miss R: Well the one thing I would change is that when we play a game it goes “beep, beep, beep” and everyone in the room has to go “beep, beep, beep” at the end and sometimes I need to block my ears.

Interviewer: Why do you think teacher has to do that beeping thing?
Mr L: To get the pen going

Interviewer: In your class where the whiteboard is, is it a good place to see?
All: Yes
Mr. K: It’s defiantly a good place because I can see where the whiteboard is, so can the people at my table, it’s actually easy for them to see. The table like the turtles table, it’s really good for them to see as well and the people at the end only have to turn their head that way and for the ladybirds they can just look straight as well like the little ducks.

Interviewer: Do you sometimes feel in your classroom the light is stopping your seeing very well?
Mr. A: Yes. Without the light is better.

Interviewer: If you went into a classroom next year and found they had no IWB, how would you feel?
Miss S: I would feel not happy. I really like the IWB. It’s easier than the other.
Miss J: I wouldn’t like it if I went into a classroom and they had no projector. It wouldn’t be easy to learn. It’s easier to learn with the IWB.

Interviewer: Why do you think it is easier to learn?
Miss J: It tells you what to do sometimes and it’s just easier to learn
Mr. K: If I went into a class without an IWB I wouldn’t feel as happy as I would with if there was an IWB. I’d feel even happier you see.
I just love the way you can drag stuff, I love the way, I just love the way you can write with the IWB without having to use any ink on the pen. I just love it.
Miss R: When we’re doing stuff on it, and the light is shining straight down on it the pen will just melt. When you write it will all sink down onto the floor and then we won’t be able to stand like if we were in this classroom. Now that we have the IWB it feels much better because not everyone is always able to reach it. When everyone else is doing it I love it so badly.

Interviewer: Do you sometimes feel in your classroom the light is stopping your seeing very well?
Interviewer: If you had to give the IWB a score of thumbs up or thumbs down what would it be?
All up and two on the side. Why have we two on the side?
Miss J: Because I think it’s a little too hard to reach
Mr L: Sometimes I like it and sometimes I don’t

Interviewer: Do you all feel you get a fair chance to use the IWB?
All: Yes
Miss J: Teacher goes around by tables

Interviewer: Do you use the pen much?
Mr. L: Well we use it for dragging things when we’re on it but teacher uses the mouse on the computer when she’s using in and we’re doing work
Appendix 23 – Pictures of the children showing the IWB for Maths Lessons

Figure 1: 3rd class child shows a maths game

Figure 2: 6th class child shows a maths lesson
Figure 3: 2nd child shows a maths lesson
Figure 4: Junior Infant child shows a maths lesson

![Image of a child drawing a math lesson]

Figure 5: 6th child shows a maths lesson

![Image of a child writing math problems on a board]
Appendix 24 – Pictures from Children Representing “Not Getting a Fair Chance”

Figure 1: 4th class child shows they feel they don’t get a fair chance
Figure 2: 4th class child

Figure 3: 4th class child
Appendix 25 – Pictures from Children showing “Teacher taking over” the lesson

Figure 1: 6th class child shows the teacher working on maths

Figure 2: 1st class child shows the teacher’s typing of the News on the IWB
Figure 3: 5th class child shows the teacher working on maths

Figure 4: 5th class child shows the teacher searching for images