‘Cláir Bhána Idirghníomhacha’ (Interactive Whiteboards) – Early findings from an Irish Project

Abstract
This paper discusses the early findings from the first Interactive Whiteboard Project in the Irish school system which commenced in the academic year 2005/2006. The project involves eight schools comprising three primary schools, two mainstream post primary schools, a special post primary school for the deaf and a Gaelscoil which is an all Irish speaking primary school. At the end of the project’s first year of implementation early research data was gathered from six of the eight participating schools using qualitative in-depth interviews with key participants supplemented by limited observation studies in some schools. Findings indicate that the Interactive Whiteboards have been well received and utilized by the participating teachers with notable positive effects on teaching and learning and ICT integration. Even at this early stage in the Irish project’s development there would appear to be parallels with the positive benefits already reported through earlier, more extensive UK studies, suggesting that the benefits of Interactive Whiteboards may have universal teacher appeal that transcend local cultural contexts, curricula, and education systems.

1. Introduction

Interactive Whiteboards have received much attention in the UK and other countries in recent years where they have formed a key strand in the evolving story of the deployment of ICT in Education. Whether they represent a step forwards, a step backwards of perhaps maybe a ‘transitional phase’ in the development of educational ICT is as yet unclear due to the relative newness of the technology itself and the lack of longitudinal studies of their use in classroom settings. However early evidence from their deployment in UK schools (Smith, 2001; Glover and Miller, 2002) seems to suggest that unlike the computer, Interactive Whiteboard systems have greater ‘teacher appeal’ probably due to the fact that this type of technology appears to fit more intuitively into the natural rhythms and contours of the mainstream classroom.

An Interactive Whiteboard is basically a large, touch sensitive panel connected to a data projector and a computer. In appearance it resembles a traditional whiteboard but it is a much more powerful and versatile tool because as Glover and Miller (2002) point out it can enable teachers to use high quality multimedia materials such as software packages, video clips, electronic microscopes and Internet images, as well as facilitating simulation activities incorporating pupil input and reasoned discussion, and immediate recording of the contents of the board at any stage in the development of an argument.

In terms of the deployment of this relatively new technology the Irish educational system is behind the curve and developments overseas in the use of Interactive Whiteboard Technology and its potential as a teaching and learning tool have yet to register at a national level. Nonetheless this technology is slowly but surely beginning to find its way, albeit in a somewhat ad-hoc manner into Irish schools, driven mainly by enthusiastic school based personnel who have heard about or seen the technology in action at educational technology related exhibitions and conferences. Anxious that a more systematic approach to the development of an understanding of this technology be developed in an Irish context, one innovative Schools’ ICT Advisor, based in the North Dublin area successfully sourced support for a ‘pilot’ Interactive Whiteboard project involving eight local schools, which commenced at the beginning of the academic year 2005, initially for 12 months. The project has since been extended for a further 12 months for the academic year 2006/2007. This paper deals with early research findings emerging from the first year of the project.

2. Context

The Interactive Whiteboard project or CBI based on the gaelic word for Interactive Whiteboards (Cláir Bhána Idirghníomhacha) as it is known locally is a partnership between a Dublin based Education Centre, the eight participating schools and the project sponsors, the Computer Society of Ireland (CSI) and the Computer Education Society of Ireland (CESI), who funded the purchase of one Interactive White Board per school and associated software. Towards the end of the project’s first year of operation, a researcher from a local university became involved with the project.

The eight schools comprise three Primary schools, three Post-Primary schools, one GaelScoil (i.e. an all-Irish speaking Primary School) and one school representing Special Education in the Post-Primary sector. Three different IWB's – 'Promethean, 'SmartBoard' and 'Hitachi' are being trialled in the schools. The Promethean boards have been placed in the three mainstream Primary schools while the other two board types have been distributed across the other five schools. As only one board per school has been provided by the project, schools are experimenting with different deployment models varying from permanent fixtures in a specific classroom, to shared or mobile resources to dedicated IWB rooms. Each school has dedicated two teachers to the project who have committed to take part in training, use the board for a substantial amount of their teaching and attend regular project meetings hosted by the Project Manager, i.e. the ICT Advisor who initiated the project and who manages the project's dedicated website and discussion forum (http://www.cbiproject.net/).

3. Research and Data Collection

Although research funding for the project was secured only towards the end of the project's first year of operation on the basis of conducting the bulk of the research during the project's second year (2006/2007) a decision was made to conduct some preliminary research at the end of the academic year 2005/2006. The purpose of this research was twofold:

(a) To gather early research data on teacher's perceptions of whiteboards and their usefulness or otherwise at the end of the project's first year;
(b) To assist the researcher in identifying key areas for in-depth research and identifying suitable research questions for the main phase of the research process scheduled to commence in September 2006.

Research was conducted in six of the eight participating schools during May and June 2005 where the main research gathering tool used was the in-depth qualitative interview although some limited observation studies were also conducted. This paper will concentrate on discussing the findings from the research interviews.

Twelve teachers (n=12) were interviewed in three primary schools, and three post-primary schools one of which is a special school, as it is a school for deaf girls. All three of these Post-Primary schools (ages 13-18) and one Primary school are single sex girl schools. The other two Primary schools are mixed gender. Two of the primary schools teach from Junior Infants (age 4) to 6th class (age 12) while one of the Primary Schools is a Senior Primary School only teaching students aged 8-12. In socio-economic most of these schools are located in traditional working class/lower middle class areas.

In the primary schools interviews were conducted with teachers involved with both the junior cycle classes and more senior classes. Teachers interviewed in the post-primary schools teachers were involved in both the science/mathematical areas and the humanities.

In most schools interviews were conducted jointly with the two project participants, although individual single interviews were conducted in two schools. In another two schools interviews were also conducted with two male teachers not formally associated with the project, but who are regular IWB users.

Joint interview sessions lasted for approximately one hour while individual interviews were on average 40 minutes long. A semi-structured interview format was adopted based on a list of questions drawn up by the researcher. These questions were used to frame and guide the interview research process while permitting sufficient flexibility for participants to raise their own issues. As all interviews conducted were recorded interviews were transcribed in full. The transcribed interview data was then thematically analysed in accordance with a number of key research questions. In terms of this paper the most relevant findings to emerge were:

The profile of teachers involved in the project
The effect of the IWB on Teaching and Learning
A pronounced preference for the IWB compared to the Computer Laboratory

4. Teacher Profile

The majority of the teachers involved in the project are young teachers with seven years teaching experience or less. This is particularly pronounced in the primary sector where teachers interviewed had on average 4.4 years teaching experience. Post-primary participants by comparison were more varied in terms of their teaching experience profile with half teaching for less than seven years and half teaching for more than 15, equating to an average 11 years teaching experience. Nine of the twelve interview participants were female while two of the primary school interviewees and one of the secondary school teachers were male. This gender composition is reflective of the low levels of males in the teaching profession particularly at primary level in Ireland and the fact that four of the six schools were single sex female schools.

4.1. ICT Competence

In terms of IT experience all teachers indicated that they were computer literate and quite comfortable using technology generally. At second level the high levels of computer literacy among participating teachers can be attributed to the fact that most teachers were also teaching subjects which have a computing affiliation such as science, maths, and IT, with one teacher in each school also functioning as ICT Co-ordinator. In the primary sector the high IT competency level is probably attributable in part to the relative young age of the participants who have been exposed to computers and technology since their mid to late teens.

Across both sectors it is clear that the culture of the school is also a significant influencing factor with most participants indicating that their schools had a supportive and encouraging attitude to IT generally and were willing to support new developments in this area. This is important as school culture is an important variable in the success or otherwise of all educational innovations (OECD 2001; Sarason 1996; Fullan 1995) including IT (Judge, 2004, Cuban 1993). Apart from a willingness to be at the forefront of any new IT development, some schools, particularly those operating at the lower end of the socio-economic scale, were also attracted to the project by the opportunity to acquire an IWB free of charge. The general motivation to become involved is best encapsulated in the following comments:

> *"We are quite unusual in that we have very strong IT people in the school and we have a lot of IT going on in the school which when I compare it to my friends in other schools make us unusual. Working in a disadvantaged area we try to do things to have an edge."*
>
> *Primary 3, Teacher 1*

> *"We like to get involved in IT as much as possible and as we don't have much money to spend, if there's a way to get some equipment we will generally go for it."*
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> *Post Primary, Teacher 2*

4.1.2. Teaching Style

Apart from being IT literate another feature of note to emerge related to the teachers' teaching style. As evidenced from their own descriptions most of the teachers did not belong to the 'chalk and talk' battalion, but rather to the 'guide on the side' brigade. Invariably when asked to describe their teaching style terms such as 'informal', 'experimental', 'contextual', 'diverse', 'interactive' and 'group-work' oriented predominated. Only three teachers, two post-primary teachers (significantly both with more than fifteen years teaching experience), and one primary teacher described their teaching style in more traditional fashion using terms such as 'whole-class teaching', 'I like to be boss in the classroom', or 'I use the blackboard and notes a lot' indicating a more teacher directed or 'sage on the stage' approach.

Undoubtedly this combination of age, teacher IT competency, a predominantly non traditional teaching style among participants and the innovative IT culture of the schools themselves are significant factors in the generally positive outcomes which emerged in relation to IWB's in the Irish context as detailed in the next sections.

5. The effect of the IWB on Teaching and Learning

Teachers were asked a number of different questions to ascertain the effect of the IWB on Teaching and Learning. These ranged from broad questions from 'Do you think IWB's are a good idea and if so why' to more specific questions such as 'Are there any differences in classroom activity and learning when an IWB is available in the classroom'? There was unanimous agreement from participants that IWB's were a definite asset to teaching and learning and as a result some schools had already independently purchased at least one more IWB since the project's commencement. All schools were also hoping to increase the number of IWB's in the school over time, finance permitting, based on positive feedback from the project teachers and the interest level emerging from other teachers who have witnessed their colleagues using them.

5.1 Improved Lesson Planning

One of the most notable effects on teaching and learning to emerge related to Lesson Planning. All teachers commented that using the IWB had led to an increased emphasis on the process of lesson planning. This in turn had led to teachers increasing the amount of time they devoted to lesson planning. There was no evidence that teachers viewed the additional time required for planning as an extra burden as they generally felt that the benefits in terms of more interactive classrooms, more involved and engaged students and an overall improved pedagogical environment justified the extra effort involved.

> *"With the IWB I find that because I'm preparing for my lesson in advance, I'm more prepared in class with what I'm doing and it's much better because sometimes you say 'ok I'm going to do this on the blackboard' but when you are actually typing everything up in advance and you have everything prepared your class goes much more smoothly and you even get more covered…..you seem to get through more".*
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> *Special School, Teacher 2*

> *"I think I'm far more organised. I have to be because you can't wing it on the IWB, you can't make up lessons as you go along because it's a computer and with little glitches that come along you have to know how to get around them and when you've worked on preparing it at home you know how to get around these glitches. You can't do that on your feet in the class because the children are all there and you don't have that time, so your lesson has to be prepared."*
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> *Primary 2, Teacher 1*

Because teachers were able to save and store their lessons for further re-use they also felt that the amount of planning time would reduce over time as their bank of resources increased and their skill levels with the technology improved. This positive effect on the process of lesson planning is a welcome development as earlier work by this researcher on another Schools ICT initiative revealed how increased time required for lesson planning acted as a barrier in the innovation's assimilation into the modus operandi of school life (Judge 2003). Nonetheless, it should be pointed out that teachers expressed some concern that the increased amount of planning time could potentially deter other colleagues from getting involved with IWB's.

5.2 More Varied, Creative and Engaging Classrooms

Teachers reported that use of the IWB had led to greater variation in how subjects were taught and more creativity in how lessons were conducted resulting in more engaged, more involved and more motivated students. Student concentration levels and attention spans were also felt to have increased. Most teachers believed that the highly visual and interactive nature of the IWB was responsible for this along with the increased freedom that the IWB brought to classroom learning particularly when allied to Internet access.

> *"It's the whole freedom we have with it. It's not just about the preparation which is a big part of using it but there is also the incidental learning that if something comes up in class you have*

access to the Internet to explain it better. It also holds their attention because it's very visual and active and the children are always saying 'oh I want a go, I want a go'".

Primary 2, Teacher 2

"It's the immediate high level visual impact. Whatever I'm talking about I can literally go on line and show them a diagram and capture the image. The wonderful thing about it is that it's like having a living textbook on the screen. They can't but take note of what's in front of them."

Post Primary 1, Teacher 3

5.3. A change in the traditional approach to teaching

Perhaps one of the most surprising findings to emerge related to the impact which the IWB was beginning to have on teachers with a more traditional style of teaching. This was ascertained through four research questions which directly asked teachers to describe their teaching style, any changes which they felt the introduction of an IWB had had on their teaching style, how the use of an IWB had developed their own teaching and learning practices and any differences in classroom activity when an IWB was present. As noted earlier in the Teaching Profile section, only three participants indicated adopting a teaching style which could be classified as 'traditional' compared to the other nine participants who tended to be more 'non-traditional' in their approach. The responses of the two groups are interesting to compare. The majority of the non-traditionalists felt that the IWB had not changed or impacted their teaching style in any fundamental way and tended to view the IWB as just another tool or aid in their teaching armoury, albeit a very valuable one:

"For me it's an essential tool but it's just one of the many tools that I would use in the teaching of [my subject]… but the most important tool in the class is the personality and style of the teacher…. So it's a tool like any other. It can be used in one thing but it might not be used in the next because it mightn't be appropriate."

Post Primary 2, Teacher 1

"It suits the way I teach in that I do like variety. I don't like to stick to one plan and have that plan forever and a day. It certainly enhances what we do in the classroom. But in the end of the day it's like anything once the tool is there the possibilities are enormous but it is very much down to how the teacher uses it."

Post Primary 1, Teacher 1

By comparison the more traditionally oriented teachers were adamant that the IWB had changed their teaching style and approach. They also reported the most dynamic changes in classroom activities and practices since the IWB's were deployed. One teacher who commented that the focus of her lesson had changed from being exam driven when using the traditional blackboard to becoming much more interactive with the IWB, leading to an increase in her students' interest in her subject, also made the following observation:

"I think it has definitely changed my teaching style whereas before I found I was doing an awful lot of blackboard work and putting my notes on the blackboard and teaching from notes, I don't do anything as much as that now. I have a lot more interactivity in the classroom now and one of the reasons is that we also have the internet with the IWB and the new software which came with it also which is much more interactive and the girls love it."

Post Primary, Teacher 1

Other changes were also observed elsewhere:

"In terms of benefits first of all there's the quality it brings because it's very visual and it also slows me down as well because I tend to talk and write very fast but I can't physically write on the

IWB as quickly as on the blackboard. It has also helped me to communicate better with the students and has allowed me to enjoy my teaching that bit more."

Post Primary 1, Teacher 2

By way of a counterpoint it should also be noted that two of the male teachers, whose own descriptions of their teaching style and classroom activities would lead one to classify them at the more extreme end on a 'non-traditional' teaching style continuum, also felt that the IWB had changed their teaching style and approach. In both these cases their responses indicated that the IWB appeared to have a more constraining effect on their teaching style. One teacher, who described his own teaching style as 'quite dramatic' with a large emphasis on storytelling, admitted that since the IWB came in he doesn't use 'his voice as much'.

"Definitely it has changed my teaching style. I suppose I'd be very dramatic in my classroom and in a sense that element has diminished because I've got the IWB doing it for me. Whereas now I would think a lot harder on ways to put stories into the lessons, ways to use the IWB as productively as possible with the children, so I suppose my lessons are becoming more academic in a sense that I focus now a lot on computers and trying to get the lessons as interesting, and it's almost taken away a little from my own style of teaching, but I try as much as I can to balance the two out".

Primary 1, Teacher 2

In a similar vein another teacher, while not claiming that it had changed his teaching style per se, felt that the IWB had altered his 'geographical use of space in the classroom' as he tended to now position himself 'closer to the board' and moved around less when teaching in the classroom where the IWB was installed. Interestingly enough this teacher was also the only teacher to indicate a preference to using a computer laboratory over the IWB when asked to choose between the two.

"If given a choice of having only one or the other, I think I would prefer to have a computer lab. I have issues with control of the IWB and I like the idea that every child has their own keyboard and can almost learn independently rather than the control being fixed in the hands of the one person who has that mouse or keyboard….There is a danger with the IWB that it can give control back into the teacher and you have to be conscious of that in your mind and make sure that that doesn't happen".

Post Primary 1, Teacher 3

These insights, albeit based on early stage preliminary research and a very small number of teachers, would suggest that IWB's potentially have the capabilities of liberating and opening up the teaching style of more traditionally oriented teachers while at the same time 'reigning' in the more individualistic approach of non-traditionalists. One can well imagine constructivist advocates not warming to IWB's on the basis of their potential to reinforce traditional notions of teaching where power and the locus of classroom control is primarily invested in the teacher. However as these findings indicate, this is not necessarily the case. It could well be that the deployment of this technology may yet represent an important stepping stone in the drive to help teachers move away from a didactic teaching style to one which is more flexible and interactive , and in the process, represent a halfway house where traditionalists and non-traditionalists meet.

6. The Interactive WhiteBoard compared to the Computer Laboratory

When asked to compare the benefits of using a computer laboratory compared with the benefits of using an IWB eleven out of the twelve teachers in this study believed that the presence of the IWB in the classroom led to better and more meaningful ICT integration in their teaching. This appeared to be occurring at two levels in terms first of all the teacher's own use of technology for lesson planning and incorporation into everyday teaching and learning, and secondly, in terms of the development of pupils' own IT expertise particularly at primary levels.

"It's definitely been beneficial in terms of their computer literacy and familiarity with computers. Trying to explain to a class in a computer lab how to open a file or set up a new folder can be difficult and then going around individually to check if it's done correctly takes a lot of time. Whereas you can show it on the IWB and call a child up to do it in front of the class. So I find there's been a huge jump in their ideas of where you save things."

Primary 1, Teacher 1

While all schools had at least one computer laboratory installed for a number of years which, with the exception of one school, were reported to be in good working order and well maintained, nonetheless teachers felt that access to computer laboratories were restricted either through timetabling or resource constraints. This limited the amount of ICT that could be realistically deployed in everyday subject and class teaching. Furthermore the disruptive nature of having to physically move an entire class to an ICT laboratory was seen to reduce the amount of time available for teaching and learning. As not all computer laboratories were equipped with data projectors teachers felt that this too created additional inefficiencies in terms of time utilisation and the explanation of processes and concepts. Teachers were unanimous in their view that the permanent presence of an IWB in the classroom was a far more useful device for increasing ICT integration in their teaching repertoire when compared to a computer lab and that both their IT skills as well as those of their students were enhanced as a result. As one secondary teacher succinctly phrased it "I love the interactive whiteboard, the computer lab is a difficult teaching environment and it's very hard when you don't have a data projector to help the kids along". Similarly other teachers commented:

"There is no contest between the lab and the IWB. We only have access to the lab for an hour every two weeks and by the time you get everything set up and everyone settled you really have only about 30-40 minutes of quality time in the lab. Here what they are learning with the IWB is based on the curriculum and they are coming up to the board so you can see how they are doing. I'm using the IWB for teaching all the subjects so I think there is no comparison between them. The IWB wins hands down."

Primary 2, Teacher 1

"The IWB is much better for integrating technology in your teaching. I used to use the computer lab once a week or maybe once a fortnight for teaching, but I don't think much more often than that unless we were doing a particular project which I wanted to get finished. But I use the IWB in all of my science classes now."

Special School, Teacher 1

6. Conclusion

Even at this early stage in the Irish IWB project, it is very clear that the teachers involved love using their interactive whiteboards. In analysing the transcribed research data one did not have to dig too deep for terms such as 'brilliant', 'great', 'fantastic', 'addictive', to jump out from the 'thick descriptive ' (Denzin, 1989) text. Some teachers were dreading the thoughts of moving on to new classrooms in forthcoming years where an IWB may not be permanently available to them and fundraising efforts are already underway in some schools to furnish more classrooms with IWB's. While there are many factors contributing to this rate of adoption, probably the two most important ones to emerge from this research relate to their ease of use in classroom settings and the manner in which they enhance and enrich teaching and learning as a result of their visual, flexible and interactive capabilities.

Undoubtedly, the types of schools involved in this project and the teachers associated with the project are skewing the picture somewhat in that they clearly have a high commitment to IT and the teachers are regular IT users. There is also the novelty factor. This research was based on findings emerging from the first year of the project's operation. However these factors still do not fully explain why the IWB's appear to have captured the imagination of these teachers to such an extent, leading one to conclude that there are some intrinsic characteristics associated with the IWB itself which have contributed to this phenomenon. Even at this early stage in the Irish project's development, there would appear to be parallels with the positive benefits already reported through earlier, more extensive UK

studies (Smith, 2001; Bell, 2002; Levy 2002) suggesting that the benefits of IWB's may have universal appeal that transcend local cultural contexts, curricula and education systems. The next phase of this research will involve extensive observation studies in a number of schools, more widespread questionnaires and surveys and interviews with pupils as well as teachers based on their experience of IWB's after two years in operation. By this stage the novelty factor will have worn off , which when coupled with more 'prolonged engagement' (Lincoln & Guba, 1985; Elanderson et al., 1993) in the field should shed more measured light on the IWB phenomenon in the Irish context.

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