

Sabbatical Report

Term 3 2012

Investigating the use of ICT, in particular interactive whiteboards, as a tool to enhance teaching and learning and raise student achievement.

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Acknowledgements

Firstly I would like to acknowledge and thank the Maori Hill School Board of Trustees for supporting and encouraging me in applying for sabbatical leave.

I also acknowledge my senior staff and others who stepped up to carry out additional duties during my absences. In particular thank you to Marg Kilpatrick who took over as principal.

Also thank you to the schools I visited that gave me time to share what they are doing in their schools.

Purpose

The purpose of my sabbatical leave was to provide the opportunity to investigate the effective use of technology in today's classrooms. In particular there has been an increasing use of interactive whiteboards in classrooms across the country. I am interested to investigate:

- (a) how schools are effectively using ICT across the school to benefit students, teachers and school management and
- (b) how schools are effectively using interactive whiteboards to enhance teaching and learning.

Rationale

Over several years significant financial investment has been made at Maori Hill School to upgrade and maintain the access teachers and children have to modern ICT resources. There is constant pressure from children, parents, Ministry of Education and sales companies to have the latest technology equipment to enhance teaching and learning for children. Often sales companies are promoting their products as must haves for children to be successful. It is challenging for schools to keep up and they need to give careful thought about what is purchased and how it is used to benefit both children and teachers.

Our school's previous involvement in an ICT contract assisted teachers to develop, strengthen and make improved use of ICT resources already available and provided them with a taste of new technologies for their consideration. We have found the pace of change and new technology developments challenging. It is difficult to plan too far ahead as new technologies are constantly being introduced and then thought of as must haves. Interactive whiteboards have been on the list of desired technologies, however cost and other priorities have meant our school chose not to purchase IWB's when many schools around us were.

More recently the school decided to invest in interactive data projectors across all classes. This was achievable as the per classroom cost of the interactive data projector was significantly less than the per classroom cost of IWB's. However the outcome for teachers was they have a data projector for classroom use and the ability to learn about and use the interactive functions.

As a school leader the installation of new equipment raises ongoing challenges -

- How can we ensure new equipment is benefiting all children?
- How will the school assist teachers with new learning that is needed to use the equipment effectively?
- Who will ensure the equipment is working for all, if things go wrong?
- How can we be sure new technologies are enhancing teaching and learning?

Background of School Developments

During the past 5-6 years our school has been under constant change and development with the implementation and use of ICT. Teachers have been involved in many activities, programmes and professional development activities to improve their use and knowledge of ICT across the curriculum. It has been a steep learning curve, often with minimal time to embed changes and improvements undertaken, before having to move onto yet another initiative.

During this time our school has been supported with involvement in a Ministry of Education ICT Contract and then later on a Ministry of Education Extending Higher Standards Across Schools Project. Through all the changes and developments being undertaken, one of the most important components has been the teacher laptop scheme. All teachers having their own personal laptop has been crucial to their learning and how quickly new learning and ideas can flow through to classroom practice. Everyone is at different stages and the learning curve for some teachers has been steeper than others. However all teachers having laptops ensured shared learning opportunities across all developments.

Other developments around ICT have largely depended on the school's ability to secure funding for the purchase of hardware, software and professional development. Ministry of Education Contracts have greatly assisted with the professional development component. Key developments our teachers have been involved in, directly or indirectly, have contributed to individual and school wide improvement. We know having items of technology in classrooms is only the first step in turning them into a useful teaching and learning tool for both students and teachers. Key developments our teachers have been involved in recently includes: school network upgrade, development of a school intranet, Ministry of Education professional development contracts eg ICT Clusters and Extending Higher Standards Across Schools (EHSAS).

These contracts supported teacher learning and enhanced the use of ICT in classrooms. We have also been involved in the introduction and use of an online student management system (etap). Assisting many of these activities was the introduction of wireless access across the school. This has greatly increased the effective use of some technologies eg laptops for both teachers and students. Once

wireless access was available further increases in use of laptops was enhanced through establishing pods of laptops for flexible use in classrooms. The most recent significant developments have been the installation of interactive data projectors in all classrooms and the introduction of two pods of iPads for classroom use.

Activities Undertaken

During my sabbatical period I was involved in the following activities:

- personal rest and reflection
- reflection and review of my own school past, present, future
- reviewing literature on the use of IWB's in classrooms
- reflecting on e learning practices and the development of ICT in schools visited.
- discussions with colleagues on ICT practices and implementation of programmes for new technology.
- discussions with teachers in my own school about the implementation and use of ICT and IWB's in their classroom practice
- visits to schools/classrooms to talk with teachers and principals about the ways in which IWB's are being used to support and enhance teaching and learning in their school setting.

Observations from School visits

It is always a pleasure visiting New Zealand schools to see and hear about the exciting and innovative ways teachers are meeting the needs of children's learning. Of course what you see and learn is often different to the reason of the visit.

The schools I visited tended to show common ground with the introduction and use of IWB's into their teaching and learning programmes. Most schools had gone through a process to decide the type of IWB's to purchase and then which classrooms would have them installed, if it was not to be all classes in the school. Often, due to costs, schools had to stage the introduction of IWB's and in these circumstances it appeared to be the teachers who showed most interest that had IWB's installed into their classrooms first. The types of IWB's in schools varied and factors influencing decisions included, cost, availability of support, the skill of local sales personnel, what neighbouring schools had, funding streams and the knowledge and thinking of current staff.

Teachers indicated there were positives and negatives involved in the introduction and use of IWB's in their schools and classrooms. Where schools had been able to install IWB's across the school, or a group of classes, there tended to be greater sharing and support for each other with initial use. Early use saw teachers using the

display features to share websites, graphics, pictures, animations, movie clips etc, to support their classroom teaching and learning programmes. Comments from teachers suggested this had a positive effect with students being more engaged and interested in what was being taught. Teachers were able to easily show pre prepared worksheets, timetables, song charts etc. This is very helpful at lesson time but initially meant additional time in preparation. At this stage the teacher tended to be the person at the front of the class and often it was whole class teaching. Teachers comment that over time more use was made of other features such as sound and the interactive functions of IWB's and their software.

The effective use of IWB's appears to be as much about the individual teacher as any other main factor. Teachers need to see benefits in using their IWB's and commit time and effort into developing their skills. Some teachers were using IWB's very superficially and others in a very complex way. It really came down to the individual and how comfortable they were with technology in general. However those making good use of their IWB's were very familiar with the software provided by the supplier. This appeared to be crucial in making the best use of IWB's. Teachers often commented they needed more time to be able to explore and use software. They also valued being able to ask someone else if they came across a problem or question. Most schools seemed to have at least one person who was able to be a resource person for their colleagues and enjoyed exploring new ways to make use of their IWB.

For most teachers professional development is needed along with personal effort from the teacher. The challenge for schools is that support is often needed in different forms eg going on a course is great however many teachers valued 'just in time' learning. Having time to trial ideas and strategies, alongside the many other demands happening in schools is a challenge for many teachers. Schools who have been able to introduce interactive whiteboards across several classes or the whole school appear to be at an advantage as teachers can learn together and support each other. Being able to ask a question and get immediate support is valued by teachers and helps to build staff cohesion and mutual learning opportunities. Many of the schools visited had appointed lead teachers to support the learning and development of other teachers. Lead teachers were often the person who attended professional development and then shared their knowledge with others, as and when, they were ready.

Teachers and schools need to give careful thought to how and where IWB's can support teaching and learning programmes. The introduction and use of IWB's in classrooms appears to go through stages of development. Observations of IWB's use ranged from handwriting lessons through to integrated learning lessons with a combination of teacher and student use. The best use of interactive whiteboards was observed in classes where the teacher was an ICT enthusiast. For some the

IWB has replaced the whiteboard and is used in a similar way without any real use of interactive features. Many students seen using IWB's were involve in games, usually related to current learning happening in the classroom. For example during maths lessons a group of students were using the IWB as an independent activity to play maths games. Although the students were engaged many would argue that the board was not necessary for this type of activity to be undertaken.

After an IWB had been installed and teachers had experienced its use they indicated they would not want to go back to not having one. Although IWB use varied all teachers were on a journey to develop skills and make better use of the resource to enhance their teaching and learning programmes. In some schools IWB's had completely replaced the classroom whiteboard and therefore teachers had to make effective use of their IWB as there was no alternative. In other classrooms IWB's had been included alongside the original whiteboard. Teachers who no longer had a traditional classroom whiteboard appeared to be making better use of their IWB.

The installation position of IWB's varied across schools. Interestingly this appeared to change who used the IWB. In classrooms where the IWB had been installed at the front of the room, at the traditional height, I tended to see the teacher using the IWB with the whole class. In classrooms where they opted to install the IWB away from the front of the room and at a height that suited the age and stage of the children in the room I tended to see children using the IWB for games and activities. I appreciate that this is a generalisation based on a small number of observations and may not have reflected the total use of IWB's in these classrooms. However this did appeared to influence who made use of IWB's and their purpose in the programme. Junior classes often had boards installed lower or had adjustable height boards.

In classrooms where the IWB had replace the normal whiteboard teachers made good use of the IWB for a variety of purposes. Where teachers still had traditional whiteboard space it was clearly still being extensively used as teachers indicated it was still often quicker and easier.

One of the challenges mentioned by a number of teachers was the time it took to become familiar with the interactive whiteboard software. Professional development and time to explore and learn about all the many functions of the software was seen as crucial to the success of IWB use in the classroom. Opportunities for new learning by teachers varied in schools. It was common for a lead teacher to attend development and then be a resource person for others on the staff. Teachers commented that they often needed a variety of support types:

- a quick response to a question
- to be shown new ideas and skills

- ongoing professional development in some form, either school based or from an outside provider
- support from more knowledgeable teachers
- how to instructions they could refer to at any time

All forms of development appear to be important at different times for the best use of IWB's to be made across classrooms. Some schools were making very good use of the 'enthusiast teacher' who was able to motivate and support others.

Although teachers highlighted many positives about their interactive whiteboards there were also some negatives. Although technology has improved over the years and is generally reliable, one of the biggest complaints from teachers is when things don't work or stop. Teacher's ability to solve technical issues varied considerably and can make or break the quality of what is happening in the classroom. Teachers talked about the frustration of preparing material only to find the technology let them down. One of the other issues of concern was projector bulbs. Often they didn't last or were too dull in a bright sunny classroom. This raised new issues for schools having to budget for ongoing replacement bulbs and curtains, to turn a bright sunny room into a dull space, so material on the IWB could be seen.

Many of the classrooms visited had ceiling mounted projectors, which caused shadowing on the whiteboard while in use. Short throw projectors lessened this problem however it was most annoying when small groups of children were trying to undertake an activity or task and were constantly doing a dance around the board to be able to see what they were doing.

Some classes had adjustable height boards, which appeared to be a good option for junior classes. However when the board was lowered for use the projector also lowered and became a hazard, at eye height, for any adults in the classroom. Classes where the IWB and projector were set higher often had a step or small platform for shorter children to stand on to reach and be able to participate.

The majority of schools had single user IWB's and although I saw some very good sharing by children it is a limiting factor for board use. Some teachers talked enthusiastically about newer boards that could have multi users. However it was unclear when, or if, this newer technology would become available to them.

The level of IWB use in classrooms varied considerably with some teachers commenting they used their IWB across curriculum areas for significant parts of the day. Other teachers commented they used their IWB's for only some curriculum areas during some parts of the day. The visual aspect of boards appeared to be the most used aspect with interactive components less used. However like with all technology this was very dependent on the skill and knowledge of the teacher.

There is a great deal of literature available online that discusses many aspects of the use of Interactive whiteboards. Much of this literature is overseas based and deals with the implementation and use of IWB's. Internet searches found less material based on the use of IWB in the New Zealand setting. Literature that is available was often linked to IWB suppliers eg The EuSCRIBE Project, *Guidelines for effective school/classroom use of interactive whiteboards*.

The literature talks extensively about the implementation and use of IWB including the many benefits of IWB's use in classroom settings. However there is also much to raise questions about the reality vs reported benefits of IWB use.

Findings

It is clear from my visits to schools that teachers have mixed feelings, however were generally positive about the use of IWB. I appreciate this was often dependent on how comfortable they were with modern technology. Children enjoyed using interactive whiteboards to enhance the teaching and learning experience in their classrooms. As expected, the use and effectiveness of interactive whiteboards varied across schools and classrooms.

With the introduction of interactive whiteboards schools and teachers need to recognise there are changes required. Firstly the development of new skills for teachers and secondly using these skills in effecting changes to pedagogy. It needs to be recognised that effective changes take time and it will vary for each teacher. Strategies need to be put in place to support teachers with new learning and interactive whiteboard use built into the curriculum planning process. Careful thought needs to be given to how interactive whiteboards will add value and enhance both the teaching and learning process.

To assist teachers in making the best use of technology a model of school based continuing professional development using a collaborative, teacher generated approach in combination with outside support appears to be what most schools had a variation of. When professional development was supported with good leadership teachers and schools were making ongoing progress in the ways IWB were being utilised.

From my observations much of the excellent use of interactive whiteboards is due to the enthusiasm and skill of individual teachers in schools. Those teachers are often then responsible for assisting and guiding others across the school.

Schools appeared to have limited strategies in place to be able to measure the impact of IWB in their teaching and learning programmes. Often teachers only had their personal experience and anecdotal evidence for them to make judgments on the benefits of IWB in their teaching and learning programmes. In reality it is had to

be able to say IWB use has raised achievement as it along with a variety of other factors may have contributed. However many teachers commented that when using IWB's children listened more attentively and were more focused. Children enjoyed participating in activities using IWB's and this improved motivation for some.

I saw some evidence of teachers using IWB's across the curriculum particularly to support mathematics by children participating in practice games and activities. The use of IWB's did appear to be enhancing teaching and learning programmes for some children in some classrooms.

While the use of interactive functions varied considerably in classrooms good use was being made of the ability to project pictures, videos etc onto a large screen for children to experience what otherwise might have been difficult for teachers to share with larger groups. Although it is unlikely the use of IWB's in classrooms will raise achievement they can make the learning experience more interesting and engaging when used well.

Summary

It is difficult to be able to state that the introduction of interactive whiteboards will raise student achievement. Certainly for some teachers there are efficiencies and gains to be made with planning, preparation and programme delivery. For many students there can be greater levels of engagement because of the use of technology. However learning is complex and improvements are seldom attributed to a single factor. Already new technologies are being implemented in schools that may have greater interactive value than IWB's eg iPads. In talking to teachers they all stated they would rather have their interactive whiteboard than not. Like with all teaching and learning the overall aspect that can make a difference is the teacher.

Interactive whiteboards are more likely to benefit student learning when:

- teachers are supported with ongoing development activities
- the software available is user friendly
- the use of IWB's is integrated and planned as part of program and lesson preparation.
- time is give to explore the ways IWB's will enhance teaching and learning in different settings
- teachers have access to a resource person they can ask questions 'just in time learning'
- there is a whole school approach and school wide expectations about IWB use
- the technology is working properly and if there are issues they can be resolved quickly

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