Using Interactive whiteboards (IWBs) to build professional learning communities

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Abstract

This paper reports on the project *Utilising the information and communication technologies to build a professional learning community*. The project aims to enhance the learning outcomes of teachers and students in rural and regional schools in NSW and the ACT. The project comprises two phases. Phase One involved bringing together staff located at St Francis Xavier Primary School, Lake Cargelligo, NSW with teachers from four other participating schools (two rural and three Canberra-based schools). This Phase of the project demonstrated that collaborative partnerships between universities, schools and the wider educational community should be fostered as they have the potential to revitalize teachers’ professional learning, creating opportunities for the construction of new knowledge and development of skills. As the project developed, three more rural schools joined the newly established ‘professional learning community’ and the urban teachers from Phase One assumed a leadership role in mentoring their rural colleagues throughout Phase Two. This new aspect of the project supported the teaching and learning process following the introduction of IWBs into the classrooms of schools located at Cootamundra, Temora and Young, NSW.

This project has been developed to assist in enhancing student achievement for those living in isolated areas. It also provides a research base to support teachers’ professional growth through the development of a dynamic community of practice. The project utilised the information and communication technologies to improve the sense of connectedness and enhance the learning of all participants.

Introduction

*Project Description - Phase One*

Phase One of the SiMERR project (2006-07) created links between St Francis Xavier School, Lake Cargelligo NSW, located 590 km west of Sydney via the Great Western and Mid Western Highways and five primary schools in the Canberra region. Collaboration between the teachers in the local, rural and regional schools was encouraged to support peer-mentoring and facilitate the development of an effective and sustainable ICT professional learning framework. The use of newly acquired IWBs at the classroom level was a feature of this phase of the project. The participating schools already had a number of interactive whiteboards in their classrooms, and some teachers had demonstrated a degree of competency in, and enthusiasm for, the use of the IWBs to strengthen their classroom practice and enhance student learning.
This phase of the SiMERR Project 2006-07 was titled: *Utilising the information and communication technologies to build a professional learning community to enhance the learning outcomes of teachers and students in rural and regional schools in NSW and the ACT.* Outcomes from this project included:

- development of a sense of ownership for the project by the participants;
- establishment of effective professional relationships and sense of community between teachers in the various schools;
- development of ICT skills through full-day forums, professional engagement and sharing of ideas and resources;
- emergence of spontaneous mentoring between early career teachers and established practitioners, especially those with expertise in the use of IWBs;
- high levels of teacher motivation to broaden the scope of the project; and
- the development of strong University-school partnerships.

Members of the Project Team made visits to St Francis Xavier Primary School at Lake Cargelligo, NSW, and arranged for staff from the school to attend forum sharing days in Canberra. This enabled teachers from rural and urban locations to report and assist in the documentation of effective teaching approaches for best practice in the use of interactive whiteboards. It also developed and strengthened a community of adult learners by linking teachers in an isolated setting with others in an urban setting.

Initial data collection as described above was used to provide illuminative assessment of the teachers’ views at this early stage of the project. The Project Team then conducted small focus group discussions regarding the introduction of interactive whiteboards in the classrooms with approximately ten to twelve students, including Indigenous students, from each classroom of the participating schools. These discussions were semi-structured and focused on the students’ understanding and feelings about their learning, the teaching approaches they prefer, and their favourite subjects or lessons.

*Project Description - Phase Two*

Towards the end of Phase One of the project, it became evident that the skills developed by the teachers in the urban schools, who had more pre-project experience in the use of IWBs than their rural colleagues, were now at a level where peer-mentoring was possible. As the project developed throughout 2008, three more rural schools joined the newly established ‘professional learning community’ and the urban teachers from Phase One assumed a leadership role in mentoring their rural colleagues. This new aspect of the project investigated and supported the teaching and learning process following the introduction of IWBs into the classrooms at: Sacred Heart Central School, Cootamundra, NSW; St Anne’s Central School Temora, NSW; and, St Mary’s School Young, NSW. All three schools had recently installed IWBs, but few professional learning opportunities, especially in relation to pedagogical support, had been provided.

Phase Two of the project brought together 30 staff from the three rural schools for two
Twilight Sessions held in the rural town of Cootamundra in May and June 2008. These sessions were used to build knowledge and skills within a supportive professional learning community and importantly were facilitated by teachers who had participated in the original phase of the project. Mentoring by teachers from Phase One of the project was regarded as a highly significant element in the overall success of these sessions. Staff from the Australian Catholic University and the CEO (Canberra/Goulburn) also travelled from Canberra to Cootamundra to work alongside teachers during the sessions. The teachers from the two other rural towns outside Cootamundra travelled in their own time after school and at the weekend to participate in the project. An interactive online professional network of support for the region was set up to further enhance the teachers’ learning and communication with one another. Following on from the Twilight Sessions, a Professional Development Day was held at Cootamundra to consolidate learning and extend the teachers’ understanding of the use of IWBs and, in particular, the way in which the information technologies might be utilised to strengthen intellectual rigour in the classroom. This PD program focused on theoretical discussion and provided exemplary models that the teachers then used to translate sound pedagogy into classroom practice.

A review of the literature

According to the National Staff Development Council (2002), teachers prefer professional development that has a clear set of priorities which deal with academic content as well as teaching methods, and creates ample opportunities for teachers to see and attempt new teaching strategies. The linking of a small rural school with regional schools in Phase One of this project provided opportunities for the development of a rich and on-going learning community that allowed the sharing of knowledge regarding new teaching strategies in a collaborative way.

Peery (2002) highlights the effectiveness of peer-led, open-ended and active classroom-based professional development for teachers and the importance of sharing this new learning. It is suggested that Phase Two of this project, which investigates the development of teachers’ knowledge, skills and sense of self-efficacy through the establishment of a professional learning community is reflected in the ongoing effectiveness and enthusiasm of the participants in this project.

Interactive whiteboards combine computer data projection technology with a touch sensitive interactive whiteboard interface. Research in other contexts (British Educational Communications and Technology Agency, 2003) suggests that interactive whiteboards may be powerful devices that facilitate curriculum integration and the development of information and communication technology skills. It is also suggested that their use enhances competency in literacy and numeracy, encourages deep engagement in learning, and strengthens visual learning processes (Balanskat, Blamire & Kefala, 2006, p.2).

Sorenson and Takle (2004) note that technology enables access at a global level to learning resources and this facilitates new webs of communication. They are convinced that information technology has the potential to disseminate knowledge and build a
community of learners among teachers regardless of their location. Hoadley and Pea (2002) provide evidence that this increase in dialogue between professionals can result in substantive changes to classroom teaching practice as teachers are exposed to new ideas and receive peer support and feedback. Using ICT in this project allowed teachers in rural and urban locations to expand their ideas of what is possible when using IWBs and to experience increased collegiality with their peers as they participate in a collaborative learning community.

Early research on the impact of interactive whiteboards focused on the management of change as this new technology was introduced and the need for teachers to first become fluent in its use and then more aware of the classroom management issues that develop. Carr (1999) considers the impact of whole-class use of the IWB and its resultant effect on classroom management of movement, group activities, and the need for a different style of work programming by teachers. This research also highlights that significant change in teaching practice has to occur for the interactive whiteboard to be used to its maximum advantage. If the board is only used as an illustrative feature in traditional, didactic teaching, its effect can be little better than a standard whiteboard or chalkboard.

Glover and Miller (2003) report that much of the early literature on the use of IWBs is concerned with the ‘how to do it’ phase of change. Comment is made regarding the enthusiasm of the ‘missioner’ element in the teaching profession and this is proposed as a key component in the successful introduction and management of any change. The Project Team suggests that the teachers involved in this project adopted the ‘missioner’ status in each of the participating schools and there was evidence in early discussions and demonstrations at group forums that they were using their growing understanding and skill regarding IWB technology to convince other teachers of the pedagogic advantage of using IWBs.

Miller, Averis, Door and Glover (2005) provide evidence of three pedagogic phases that teachers pass through as they learn to use IWBs effectively. In the first phase, the supported didactic phase, teachers use the technology in the same way as a standard whiteboard and not as an integral tool to concept development. There is little interactivity, discussion or student involvement. The second phase, interactive, involves deeper understanding of the technology and results in teachers enhancing their traditional teaching practice by using the IWB to demonstrate concepts, and to challenge students to think by the use of a variety of verbal, visual and aesthetic stimuli. In contrast, the teachers who are seen to use IWBs most effectively are in the enhanced interactive phase. These teachers structure lessons so that there is considerable opportunity for students to respond to the IWB as individuals, pairs, or groups. The IWB is used as a means of promoting discussion, explaining processes and developing hypotheses, which are then tested to exploit the interactive capacity of the technology.

Smith, Higgins, Wall and Miller (2005) provide an extensive review of the literature regarding the introduction of interactive whiteboards in educational settings. The review reports that while teachers and students demonstrate a clear preference for the use of IWBs it is unclear if this enthusiasm is ‘translated into effective and purposeful practice’
They argue that the uniqueness and value of IWB technology 'lies in the possibility for an intersection between technological and pedagogic interactivity' (p.99) and that further research is needed 'if practitioners are to use IWB technology in the future as transformational devices… and ensure this technology is more fully understood and more coherently conceptualised’ (p.99).

The potential for developing independent learning and more advanced skills in the use of interactive whiteboards in conjunction with other technology is discussed in a 2006 online report regarding Lickhill Lodge First School in Worcestershire, England. This primary school cites the use by seven-year-olds of recorded podcasts, interviews with scientists and monitoring of weather stations as examples of using ICT together with interactive whiteboards as much more than just a collaborative tool for communication. By paying attention to differing learning styles and engagement in action research this award winning school demonstrates the way of the future for independent learning at its best (ICT Excellence Awards 2006: Learning and teaching (Primary).

Overall, the reviews related to the use of IWBs, and their impact in the classroom, do not provide definitive outcomes. What is clear, Rudd (2007) argues, is the need for further research that is: longitudinal; focused on particular pedagogies and pedagogical practices, interventionist, design focused, learner-centred and focused on alternative impact measures; including for example, ‘the type of educational futures and dynamic learning environments required for learners to develop appropriate skills and competencies required in the 21st century’ (p. 3).

**Methodology**

This research project utilises qualitative and quantitative methodologies in the collection of data through questionnaires, semi-focused in-depth interviews with teachers and students, and lesson observations, including videotaped lessons.

The research addresses the following questions:

What benefits and costs have resulted from the establishment of a professional learning community for teachers and students in the participating schools?

How has the use of the information and communication technologies assisted in building community and enhancing the learning outcomes for all participants?

What implications are there from this study for the development of effective models of professional learning experiences for teachers in rural, regional and urban schools?

Following ethics approval for the research project, three members of Australian Catholic University Project Team and a staff member from the Catholic Education Office (Canberra Goulburn) visited St Francis Xavier School, Lake Cargelligo in November 2006 to meet with staff and students. This visit allowed the Project Team to establish
personal contact with the school community, to identify specific professional learning needs for staff, and to conduct an ‘on-site’ discussion with staff members regarding the directions proposed for the project. During this time the Project Team visited all classrooms and, in some, observed the use of the interactive whiteboards during the presentation of lessons. Informal discussions were also held with students in these classes.

In March and May 2007 two full day forums were held in Canberra to support the professional learning of urban and rural teachers in the project and to facilitate the sharing of ideas and expertise regarding the introduction and use of interactive whiteboards across all stages in the primary school. A feature of the March forum was the consolidation of ideas and future direction for the collection of data by the Project Team, Catholic Education Office (Canberra Goulburn Diocese) staff, and the participating teachers. Essential to this process was the development of a sense of ownership of the project by all participants. As a result of this planning process, it was decided that the teachers would develop and document a series of numeracy and literacy lessons using the interactive whiteboards and then share their experiences at the next forum. Teachers volunteered to videotape a number of these lessons. These were then used by the participants for viewing, discussion and analysis at the forum held on 17 May 2007. Best practice was identified and shared by the teachers using small discussion group techniques.

The qualitative data gathered from these discussion groups suggests that using an interactive whiteboard facilitates curriculum integration and the development of information and communication technology skills. Teachers at the May forum were also of the opinion that the interactive whiteboard enhances competency in literacy and numeracy, encourages deep engagement in learning, and strengthens visual learning processes. There was anecdotal evidence to suggest the introduction of IWBs at St Francis Xavier had an impact on student attendance.

At the outset the desired outcomes for this project were the establishment of effective professional relationships between teachers within and across rural and regional schools. The forums stimulated the development of ICT skills by teachers through professional engagement and sharing of resources. The emergence of mentoring between teachers experienced in the use IWBs and relative novices enhanced the support networks between the school communities.

Analysis and Discussion

Teacher Responses
The following analysis of data obtained during the 18 teacher interviews provides an insight into the views and thoughts of these teachers on their learning journey. The teachers’ comments highlighted their growing perception of the value of the interactive whiteboards in their classrooms. As one teacher commented, she ‘could not imagine being without it’ and the use of the interactive whiteboard had given her ‘a new lease of life trying out other things and manipulating objects’. Another teacher felt she now had
‘a new focus’. Whereas previously this teacher had spent a significant amount of time making and laminating resources, the ready access to resources through the interactive whiteboard had allowed her to use her time more productively.

The impact on teaching style was evident from comments such as:

*My teaching style has changed because I can use a lesson now where I can plan for more student involvement. Before, when I used a blackboard and a whiteboard there was minimal involvement. Now I can plan so much more involvement. With the IWB my creativity, efficiency and time management have increased also.* (Yr 5 teacher)

Versatility in teaching and proficiency in technology resulted in teachers claiming:

*‘I think I was a very good teacher before. It has made me a ‘deeper’ teacher because I’ve been able to access all technologies e.g., the net, film, video and print within a lesson rather than separate from the lesson.’* (Kindergarten teacher)

Teachers interviewed during the project stated that their students were more on task and more motivated. They also believed that the students covered curriculum content at a faster pace with much more capacity to extend and explore a subject in depth. Special emphasis was placed on the ease of scaffolding lessons and return to prior learning at the touch of a screen. They stated that they were able to cater more effectively to a variety of multiple intelligences and that there was generally higher engagement of students with special needs.

Increased satisfaction with their work was mentioned in most of the interviews. While a number stated that their prior ICT skills were almost non-existent and that the learning curve in the first few months was considerable, all teachers were adamant that they would not want to return to using a static whiteboard. *‘I’ve been teaching for a considerable amount of time and using an IWB is probably the most revolutionary thing I’ve done.’* (Yr 4 teacher)

Most negative comments surrounded issues with technical reliability of the boards and the associated equipment. Some initial complaints also concerned the amount of time required to develop flip charts and to access other resources. However, these complaints always gave way to a more positive response after teachers had longer term use with the IWBs.

Teachers commented that they are now more creative in the ways they use the technology. They tended to use a clear visual representation of concepts and ideas to consolidate learning, and often engaged every child in the class on a systematic basis in student use of the board. Teachers either obtained a wide range of ready made resources to make maths, science and literacy activities interesting or developed these IWB resources themselves as their expertise increased.
The online learning community was seen by a significant percentage of respondents to provide ongoing professional support and development of best practice for isolated teachers. The fact that much of the project was facilitated in the rural location was particularly appreciated. Focus group analysis also identified greater teacher self-efficacy and further student learning enhancement. This was true for both rural and regional teachers. Given the wide range of time that the teachers in this study had been working with IWBs, from three weeks to two years, the interviews revealed evidence of all three pedagogic phases: supported didactic, interactive and enhanced interactive (Miller, Averis, Door & Glover, 2005) among the teachers in this project.

Students’ Interview Responses

Pupils’ understandings of their own learning have not been sufficiently examined in educational research and, as concern with metacognition becomes more prominent, it becomes increasingly important to understand the pupils’ perspective (Wall, Higgins and Smith, 2005). Focus groups of approximately 12 students from each of the classes (Kindergarten - Yr 7) taught by the 18 teachers interviewed were also asked to comment on their learning experiences since the introduction of an IWB in their classrooms.

Wall, Higgins and Smith (2005) study found that students recognised that IWBs assisted their understanding and in this project students stated that they believed they had improved their learning achievement, ‘I really want to learn now compared to last year when I was pretty dumb. I’m getting much better marks in my tests now’. (Year 7 boy). In this study it was without exception that every student stated that they ‘would never want to ever be in a classroom without an IWB’.

A number of students commented on their increased motivation, being on task more and the cooperative classroom climate that had developed with an IWB in the room: “It makes you want to work because you get to have fun and you don’t want to stop.”(Yr 4 boy).

Students with special needs spoke about the IWB making their learning experiences more relevant and easier to understand. Enlargement of font size, the ability to return to earlier lessons and the ease of finding information on the internet were mentioned.

Conclusion

This project has been developed to assist in enhancing student achievement for those living in isolated areas. It also provided a research base to support teachers’ professional growth through the development of an inclusive, dynamic community of practice. The project utilised the information and communication technologies to improve the sense of connectedness and enhance the learning outcomes of both teachers and students in the participating schools.

It has led to the development of an effective professional community of practice and an emerging on-line support network that provides access to current resources and
professional learning opportunities. The network developed and assisted teachers to use and integrate information and communication technologies in their classrooms, with a particular focus on enhancing pedagogical knowledge in the use of interactive whiteboards.

The project increased collaboration between the Australian Catholic University, the CEO (Canberra/Goulburn), participating schools and teachers, and worked effectively to build a sustainable professional learning community. It focused on the development of quality pedagogy and innovatory practices in schools and promoted effective and equitable learning for students living in urban, regional and rural locations.

The Project Team is confident this project has made a very worthwhile contribution to realising the aims of SiMERR through its focus on supporting the professional learning of teachers in rural schools and thereby improving the learning outcomes of their students. The evidence to date suggests that classroom use of software and the internet not only improves the thirst for factual knowledge among students but also leads to more interactivity and co-construction of knowledge between teachers and students as, together, they explore the world in which they live. The Project Team believes this project could be regarded as a ‘lighthouse’ model for future projects that link together urban, regional and rural school communities to create more authentic, complex and sustainable learning opportunities for all.

References


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