Encouraging communities of learning and ICT integration by modelling good practice.

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Abstract

Few teachers have seen good ICT practice modelled as a part of the own educational experiences. They need to be provided with opportunities to participate in communities of learning with their colleagues, which in turn will encourage effective ICT use in their classrooms. This paper looks at international and national studies about ICT use and highlights some of the innovative programs being run at Strathcona Baptist Girls Grammar School in Melbourne.

COMMUNITIES OF LEARNING

Teachers need help integrating ICT in their teaching. Burns (2002) and Burnes and Polman (2006) suggest that most teachers are bound to be anxious about integrating ICT, as few of them have seen good practice modelled as part of their own educational experiences. They suggest that today's teachers need to be provided with opportunities to participate in communities of learning with their colleagues. This will help them model good practice with each other and encourage effective ICT integration in their classrooms.

Effective ICT professional development (PD) has been a major topic of debate and discussion for a number of years. The Meredyth, D., Russell, N., Blackwood, L., Thomas, W. and Wise, P. 1999 study (*Real Time*: *Computers, Change and Schooling, National sample study of the information technology skills of Australian school students)* found that the computer training offered to teachers was generally not adequate for their needs, nor were the facilities and ongoing technical support. They also found that the majority of schools that they studied relied on one person at the school to provide the training as well as the ongoing upkeep of the technology. One third of the Principals who were surveyed as part of this study agreed that their PD in this area was not adequate, and that there are consistent gaps between what training is being offered and the extent to which teachers are making use of this training in the classroom.

'Those teachers with greater access to training in the school are most likely to undertake it and they are most likely to make use of it… Teachers' use of information technology is directly linked to the level of resourcing and planning in the school, to their access to computers, to the availability of software and to the degree of support provided to in-service education, including time release and opportunity for professional recognition and promotion' (Meredyth *et al*. 1999, p33).

It has been about 10 years since data for the Real Time study was collected and analysed, yet many of the issues raised in this national study are still of concern today. School administrators still appear to think that giving teachers and students access to hardware will automatically result in effective ICT integration in the classroom.

THE TIME FACTOR

Two of the barriers preventing school leaders effectively integrating ICT into their schools are the lack of perceived time for PD and the often negative attitude toward technology and change (Downes *et al.*, 2001; Jones, 2004; Salmon, 2004 and Sandholtz, Ringstaff and Dwyer, 1997). Teachers need time in order to get to a stage that they are comfortable with ICT, and therefore feel sufficiently confident to integrate it into their teaching.

Becker (1999) shows in his research that the type and amount of ICT used in the classroom is determined by the preferred teaching style of the teacher. He found that no matter how much access the teacher had to ICT, a traditional teacher was far less able to integrate it than a constructivist teacher. He argues that one of the major aims of ICT PD is to help the traditional teacher to use constructivist methodologies when appropriate, and therefore enhance potential learning opportunities for students.

If school administrators expect to see a good return on their investments in ICT infrastructure, they must foster and fund a school culture intent on continual change and learning (McKenzie, 1998). The expectations of the effective use of ICT must be accompanied by PD resources such as teacher support, mentors, study groups and time release.

JUST IN TIME SUPPORT

In order to be able to effectively use ICT in the classroom, continual PD for teachers is required to keep up to date with the ever-developing refinements of essential software and hardware (Kallick & Wilson, 2001). The best PD programs provide ongoing *just-in-time* support by trained ICT advocates who are easily available to staff when required (Kallick & Wilson 2001, p.75). Fullan (1993) supports this by arguing that effective ICT PD needs to be ongoing. He says there is no point in running a one off ICT PD program and then expect that change will take place.

A criticism highlighted in the study of ICT skills in Australian schools by Meredyth *et al*. (1999) was that PD and technology support was a much lower priority than the provision of hardware and software. It found that only one third of principals and teachers agreed that ICT PD was adequate.

An effective form of PD in ICT involves being involved with either subject professional organisations or, better still, an education professional organisation based on developing ICT within the teaching community where teachers from a variety of schools and backgrounds can meet and discuss what works and what does not work in relation to ICT integration. Teachers who were involved in professional subject organisations and met regularly with colleagues at conferences to discuss issues and model good practice were found to be six times more likely to successfully integrate ICT into their own classrooms than teachers who were not as professionally engaged (Becker & Ravitz, 2001).

TEACHERS' DEVELOPMENTAL LEVELS OF ICT USE

The Internet revolution is fast approaching the end of its second decade and there are now some well-established models that help bring our teachers through the challenges of the current changes. In 2005 Newhouse, Clarkson and Trinidad investigated some of these models, with an aim to establish a framework for ICT development in schools that could be adopted in Western Australia. Part of their framework involved establishing clearly defined developmental stages of teachers' development in the use of ICT. They decided on five levels of development:

1. Inaction;
2. Investigation;
3. Application;
4. Integration; and
5. Transformation.

Inaction is when the teacher shows a lack of interest in using ICT and rarely, if ever, uses it or encourages students to use it. Teachers within this developmental stage are labelled as reluctant users, but should not be stereotyped as older teachers who come from a generation who grew up without being exposed to computers. Teachers just out of teacher training can also fall into this category, especially when they are so concerned about adopting basic pedagogy that they neglect to use the basic ICT tools that are such a part of their student's lives (Newhouse *et al*., 2005; McKenzie, 1999 and Jukes, 2006).

Investigation is the stage when teachers have developed an interest in some form of ICT, see its relevance to their teaching and start acting on this interest. This is a stage where many frustrations can arise and if support is not at hand it is a stage that some teachers find hard to break through and either stay at this level or in some cases go back to the inaction stage (Newhouse *et al*., 2005; McKenzie, 1999).

Application is a stage that teachers reach when they are regularly using ICT with their students and in their planning and preparation of classes, as well as with their daily communications with students and other teachers. At this stage teachers are competent and confident with certain software and hardware, but have some trouble when systems change and new ways of doing things are forced upon them (Newhouse *et al*., 2005).

Integration (which is often confused with application) is the penultimate stage of ICT development for teachers according to Newhouse *et al*. (2005). This is the stage reached when the use of ICT is critical to the support of the learning environment, and students are provided with a range of ICT related experiences that enable effective learning outcomes.

Newhouse *et al*. (2005) use the term '*Critical Use Border'* to describe the transition between the *application* stage and the *integration* stage. They infer that all teachers should be aiming to reach this boarder and pass through it in order to be making the most use of ICT in the teaching and learning process (Newhouse *et al*. 2005, p.8).

Transformation is the name of the ultimate stage of ICT development for teachers according to Newhouse *et al*. (2005). It is the stage when teachers are so confident with software and hardware that they are able to take on formal and informal leadership roles in the use of ICT within their school and even subject association within their state or region. Not only are they knowledgeable about effective ICT teaching practice they are also reflective on their own work and the work of other teachers (Newhouse *et al*., 2005).

The aims of the Newhouse *et al*., (2005) model of ICT reform was to develop a framework that would '*… support, describe and promote good practice in the use of ICT in learning and teaching in schools'*. They wanted to develop an ICT framework that was multi-faceted and flexible so that it could be adapted for use by individuals, schools or any other educational institution (Newhouse *et al*. 2005, p.1).

Their framework was divided into five main aims:

1. To describe good pedagogy in the use of ICT that effectively supports learning;

2. To help teachers plan the way they can integrate ICT in their classrooms;

3. To describe the progress by teachers as they go through the stages of development that lead to effective ICT integration in quality pedagogy;

4. To help teachers progress through these stages;

5. To provide a basis of discussion for teachers to have conversations about concerns relating to the effective use of ICT with good pedagogy.

IMPLICATIONS

For a teacher to claim to be effectively integrating ICT in their teaching they need to be regularly looking for opportunities to use ICT to demonstrate learning outcomes; they expect their teaching style and approach to develop as ICT change; they function confidently and independently and are critical users of the ICT in their teaching and they are able to explain how their facilitation of the technologies can contribute to the achievement of recognised curriculum standards and goals.

In order to reach this stage, teachers need support through carefully planned and pedagogy based PD that takes into consideration the individual needs of the teacher. Skills based training is important, but should not be the essence of the PD program. The most effective PD in the use of ICT is based on learning strategies that make a difference in daily practice and lead to better student performance. Effective ICT PD should encourage traditional teachers to use constructivist methodologies when appropriate and therefore potentially enhance learning opportunities for their students (Becker, 1999 and McKenzie, 2001).

Along with appropriate PD, functional and accessible hardware and software resources need to be supplied and be available for teachers to use and experiment with. Teachers' perceived confidence and competence with ICT appears to be closely related to a lack of access to ICT and effective use of ICT is more likely to occur if teaching staff are provided with sufficient access to appropriate resources.

In terms of appropriate hardware resources, a number of researchers (Dwyer *et al.*, 1991; Sager, 2003; Burnes and Polman, 2006 and Scrimshaw, 2004) suggest that when teachers are provided with one to one access to computers (in particular laptop computers) changes in practice occur, such as a progression of a less teacher focused approach to a more student-centred learning environment.

In terms of software provision, effective Learning Management Systems (LMS) such as Blackboard (US based commercial product) and Moodle (Australian based open source product) are vital to enhancing the use of ICT. They provide a wide variety of ways content can be delivered which can result in a greater depth of learning (Vuorikari's, 2004). The effective use of a LMS in the classroom can provide international resources that are able to enrich education and heighten its relevance in a global society and economy (Kearns, 2002). Outside of the classroom, a well-resourced LMS can provide opportunities for students to learn outside the constraints of the classroom and in the comfort of their home or anywhere they have access to the Internet.

DEVELOPMENTS AT STRATHCONA

In 2001 Strathcona implemented four major ICT initiatives with an aim to enhance ICT use within the classroom. The initiatives were the introduction of the Blackboard LMS, the change over or main operating systems from Windows to Linux, the introduction of a skills

based ICT PD program and the implementation of a desktop computer on each teacher's work desk (Kitchen, 2007).

The result of this study found that the initiative with the most impact on ICT use was the access the desktop with the LMS coming a close second. It found that the skills based ICT PD program and the changeover to Linux had a negative impact on encouraging ICT use.

As a result of this study, and some other independent consultancy, Strathcona has now entered a new phase of ICT development with some recent initiatives that also aim to further enhance the use of ICT in the classroom.

The new initiatives include a change back to Windows as the main operating system, however running three of the six computer laboratories on Intel based iMac computers that dual boot to both Vista and OSX (Leopard); thus providing the best of both worlds in terms of Windows and Macintosh based software. Strathcona also invested in proving each teacher with a Windows based laptop and fitted out a large number of classrooms with data projectors and wireless access to the new network. It also provided its junior school and year 9 campus with trolleys of laptops that could be utilised within the classrooms, thus allowing teachers to not only use one of the six computer laboratories, but instead turn their classroom into a computer laboratory.

The most recent initiative has been to re-structure the management of ICT at the school with four key full time positions; Head of Learning Technologies, Head of Blackboard, Systems Administrator and Technician. The later two positions also have teaching loads and will coordinate a team of key ICT advocates who come from within each teaching faculty. They, along with the above mentioned ICT management team, are encouraged to provide strong examples of good ICT practice in the classroom. They are the schools ICT advocates that help build and maintain communities of learning amongst their colleagues, which in turn should result in encouraging effective ICT practice in each other's classrooms and ultimately enhance the student's learning opportunities.

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