

SABBATICAL REPORT

1. TITLE :

What turns teachers on...to ICT?

2. AUTHOR :

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3. ACKNOWLEDGEMENTS:

I would like to acknowledge the Arrowtown School Board of Trustees for approving and supporting my involvement in this sabbatical.

I would also like to acknowledge the efforts of our deputy principal, Mr Tim Young, for acting up in my absence and other staff members who took on extra responsibilities during the sabbatical period.

4. EXECUTIVE SUMMARY

The purpose of my sabbatical study was to identify the most effective means for encouraging teachers to use ICT in their classroom programmes.

I have a strong belief in the ability of ICT to enhance learning if it were fully embraced by teachers. Despite considerable investment in equipment, infrastructure and professional learning in recent years, the use of ICT remains inconsistent throughout schools and at a basic level in many New Zealand classrooms.

The reasons for the marginal impact of ICTs on classroom learning are identified under the following categories;

- a. technical issues which frustrate teachers in their intended use of ICTs
- b. “conservative” teacher beliefs about using ICTs
- c. inadequate professional development to use ICTs

In order to turn teachers on to using ICTs effectively in classroom practice, the following conditions need to be met;

- a. Schools need access to reliable and sufficient equipment to make the use of ICT a viable proposition.
- b. Teachers need to know that their equipment will work first time, every time or at least if it doesn't, it will be fixed pretty quickly.
- c. Teacher's beliefs about teaching and ICTs need to be challenged and changed.
- d. Teachers need to be deliberately exposed to best practice and new ideas in the use of ICT.
- e. Teachers need repeated exposure to new ideas and time and support to practice and bring new ideas into the classroom.
- f. Effective professional development in ICT needs to be collaborative and ‘in-house’ with schools making the best use of the expertise of staff members.
- g. Professional development should be based on supporting teachers as they plan and prepare deliberately to employ ICT strategies which can be implemented immediately in their classrooms.
- h. Teachers need hands on training and time to practice using ICTs in a non-threatening environment.
- i. Teachers learn best in a constructivist environment that provides opportunities to explore, reflect, collaborate with peers and work on authentic learning tasks.
- j. “Social support” and “informal learning networks” are crucial for innovation in ICT.
- k. Schools should aim for small but progressive steps towards change in the use of ICTs.

Schools who work towards realizing these conditions will have a greater chance of making effective use of ICTs.

5. PURPOSE

Key Inquiry Questions

What barriers are there for teachers in using ICTs ?

What does the research literature say about effective professional development in ICT?

What conditions do we need to create in our schools to support teachers to embrace the use of ICTs?

6. BACKGROUND AND RATIONALE

Increasingly, New Zealand schools are being expected to maximise learning for all students, to personalise learning, to achieve higher levels of student engagement and to introduce 21st century learning practices. The effective employment of information and communication technologies is regarded as instrumental in achieving these expectations.

My masterate research project in 2001 revealed that the uptake of ICT in classrooms was often superficial and that the potential of ICTs to enhance or even transform learning was not being realised in many classrooms. Nearly ten years later, I am not convinced that the situation has improved significantly. Despite considerable investment in equipment, infrastructure and professional learning in recent years, the use of ICT remains inconsistent throughout schools and at a basic level in many classrooms.

I have a strong belief in the ability of ICT to improve learning if it were more fully embraced by teachers. I want to know what are the barriers to teachers embracing technology in their classroom programmes and how to unlock the door to more effective usage of ICT in New Zealand classrooms.

7. METHODOLOGY

During my sabbatical period I have been involved in the following research activities;

- reviewing literature on professional development, adult learning and teachers adoption of ICT to identify the obstacles to the adoption of ICTs in classroom programmes.

- reflecting on elearning practices in the various schools I have been in

- discussion with colleagues on what has worked and hasn't worked in the implementation of ICTs in their schools.

- an educational tour of four high performing schools in the North Island where ICT is being used successfully

- discussions with teachers in my own school to identify factors that have encouraged or discouraged them in the use of ICT

8 FINDINGS

8.1 *Introduction.*

Many teachers have found the meaningful integration of ICTs into classroom programmes difficult. Sandholtz and Reilly (1999) believe that the impact of ICT in the USA has been minimal over the last 20 years and that only 20 % of teachers feel well prepared to integrate technology. Zhao (2002) considers that the integration of technology is a complex and messy business, that teachers are ill prepared to do this and that preservice training does not equip new teachers well in this area. Baskin (2006) comments on the “sad news”, that the question of ICT pedagogy remains largely unaddressed in Australian schools. Baskin notes that teaching staff represent the greatest challenge to ongoing ICT integration and observes that the lack of a perceived incentive to self develop ICT capacity is strong across all schools.

I believe from my experiences in a number of schools and from discussions with principal colleagues that the situation is similar in New Zealand schools. In fact, the half-hearted funding of ICT in our schools may have left us at a disadvantage to other countries.

The reasons for the marginal impact of technology can be summarized into the following categories;

- d. technical issues to do with the use of ICTs
- e. teacher beliefs about using ICTs
- f. professional development to use ICTs

These issues are discussed below firstly from the perspective of what is wrong with the existing practice and then what can be done to put it right.

8.2 Technical issues to do with the use of ICTs

What's wrong?

The technical issues involved in integrating ICTs effectively into classroom settings present a major barrier. Sandholtz and Reilly in their article “Teachers not technicians” claim that the amount of time spent on technical issues is a common frustration for teachers. They report that with limited or no technical support even teachers who are keen to integrate ICTs, quickly abandon them.

The Apple Classrooms of Tomorrow research pinpoints the “entry” or “survival” stage as the critical point in determining teacher’s subsequent use of ICTs. If the issues in using ICTs are too daunting, teachers opt not to use them but to stick with traditional practices. They give up when they encounter technical constraints coupled with inadequate support. If technical issues are not a problem, then teachers move through the stages more quickly.

Zhao identifies the inherent unreliability of technology and the poor quality of educational software as barriers to implementation. Zhao also observes that technological advances have made most of the “winners” obsolete. That is, the target keeps moving as technology changes and teachers struggle to keep up. Teachers in Zhao’s research often distrusted administrators when it came to technology issues as promises were often broken or delayed and there was a lack of communication.

My conversations with principal colleagues revealed that many schools have struggled with technical issues. My experience shows that most teachers are decidedly “undigital natives” and that network or equipment problems put them off very quickly. Teachers in discussions identified technical issues as the greatest deterrent to effective use of ICTs.

What can be done to fix it?

Schools need access to reliable and sufficient equipment to make the use of ICT a viable proposition. Teachers need to know that their equipment will work first time, every time or at least if it doesn’t, it will be fixed pretty quickly. Sandholtz and Reilly believe that we need to take away technical expectations from teachers. This requires effective ICT infrastructure and equipment backed up by a competent human infrastructure.

Zhao discusses the issues of “human infrastructure” and “social awareness” in regards to accessing technical support. Successful integration of ICTs often requires resources beyond the teacher’s control. One crucial factor for success in Zhao’s study was teachers’ ability to negotiate the social aspects of the school culture; for example, the need to be aware of who to go for what sort of support. Schools need a responsive, customer oriented culture where teachers’ ICT needs are constantly monitored and addressed.

On a positive note, it seems that, at this stage, many schools are now in a much better position to engage with ICT. For example, in my own district, the Central Lakes Trust has made a sizeable grant to assist schools to upgrade their ICT infrastructure. The region’s schools are now well placed to provide consistent and reliable access to ICTs.

8.3 *Teacher beliefs about using ICTs*

What's wrong?

Teacher's existing beliefs about teaching influence how ICTs are integrated into classrooms. Sandholtz and Reilly observe that teachers tend to use technology to reinforce existing teaching practices. They believe that many teachers accept the technology on the surface but relegate it to a minor and insignificant role. Baskin uses the term "conservative pedagogy" to describe this phenomenon. Zhao discusses the concept of "distance" in regards to teachers introducing new technology. In his study, when there was "distance" between an ICT innovation and existing teaching practice in the schools, there were significant roadblocks.

There are myriad examples of this "conservative pedagogy" in schools. For example, teachers who believe in emphasizing "the basics", adopt "drill" programmes that provide children with practice in the basics. Computer skills occupy a rank well below the hallowed "three Rs" and often teachers do not make the connection that children can and do develop "the basics" while using ICTs.

"Conservative pedagogy" can also be seen in classrooms where the computers are used for a small part of the day and at a very surface level. In these classrooms it often appears that computer usage is more of an afterthought than a planned strategy.

Part of the problem is the "very hard to shake" teacher belief that all children should be doing similar things at the same time and an accompanying reluctance to trust children to do something different. This is entirely understandable as contemporary classroom management is a complex operation. Adding a variable such as scheduled use of ICT just adds complications. Teacher's reticence to fully embrace the use of technology is also sometimes vindicated by the impression that children can spend a lot of time on computers without being particularly productive. Teachers don't always see the value of using ICTs in their classrooms

How do we fix it?

The concept of "conservative" pedagogy and teachers not venturing too far in terms of "distance" from existing practice are huge barriers to effective use of ICTs. Not much changes in the classroom unless teacher's beliefs about teaching are challenged and changed. Teachers often "operate in a vacuum" and they need to see new ideas.

There is a definite need for teachers to be deliberately exposed to different practices. This can be achieved at school by sharing good practice. At the same time, many teachers may need to attend events such as ULearn and Learning at School conferences or to tour leading ICT schools. Until they are exposed to best practice, they can't hope to have a handle on all the exciting possibilities for using ICT. The reality of professional development in this area is that "one shot" is never enough. Schools can't send teachers away to an "event" and expect them to come back as experts. They need repeated exposure to new ideas and time and support to practice and bring new ideas into the classroom.

8.4. Professional Development

What's wrong?

Many schools have a few “leading lights” who excel in the use of ICTs. These people have a great passion for this area and are largely self-taught. However for most teachers, a great deal of professional development is required if they are to engage with the technology fruitfully.

Sandholtz and Reilly (2001) conclude that professional learning opportunities are inadequate and that teachers' capacity to use computers in classrooms effectively has not kept pace with the increasing levels of access to constantly changing equipment. Becker (2000) examined national US data from more than 4000 teachers across 1100 schools and strongly concluded that lack of technical skills was significantly holding back the development of effective classroom practice in ICT. Many teachers are left stranded at the “survival” stage.

My discussions with colleagues and staff members confirm that professional development has not equipped teachers to integrate ICTs into classrooms successfully. It appears that many schools do not realize the investment required to equip teachers to function effectively in this area or are scared off by the potential costs.

Too often the investment made in training in New Zealand schools falls wide of the mark. For example, the government has ploughed millions of dollars into ICT professional development clusters and this has been the primary opportunity for professional development for most teachers in New Zealand. I am sure that some of the clusters have been effective. However, my discussions with colleagues and staff have identified some significant problems with the cluster model. The common failings include the following

- a moderate amount of funding spread over a (sometimes large) number of schools
- directorship, facilitation and travel costs absorbing most of the money.
- lead teacher “capture” leading to “exotic” applications which may be unrelated to classroom programmes
- unrealistic expectations on teachers to contribute to websites, wikis etc. to create a “community of learners”; teachers’ time is limited and they are reluctant to spend time in this way
- lack of transfer from the workshop into the classroom
- inadequate follow up to ensure that what is learned in training sessions is brought into the classroom
- artificial groupings of people who don’t have a community of interest to help sustain learning
- competing priorities for professional development which reduce teacher’s time and drain their enthusiasm to experiment with ICTs.

Any professional development programme in elearning needs to be considerate of these difficulties.

How do we fix it?

Sandholtz and Reilly suggest that professional development be based on “instructional” rather than “technological” issues. This implies that professional development should be designed to help teachers to plan and prepare to use an application in the classroom almost immediately. This is in contrast to much professional development which is about learning something *that is interesting* that teachers *might possibly use* in the future. Schools need “just in time” rather than “just in case” models of professional development.

Sandholtz and Reilly believe that teachers learn best in a constructivist environment that includes opportunities to explore, reflect, collaborate with peers and work on authentic learning tasks. They advocate a model that has four components – classroom visits, hands on training, group discussions and participant collaboration. Classroom visits are designed to expose teachers to good practice and effective management of resources by seeing how other teachers integrate and manage ICTs in the classroom environment. Hands on training provides teachers time to practice in a non-threatening environment; the ACOT research showed that teachers who are most capable in using technology used it most effectively in the classroom. Group discussions and participant collaboration give teachers the opportunity to reflect on how to use technology, share concerns and accomplishments. Support networks grow as a result of this sharing.

Daly’s research in UK schools found that the dominant model across both primary and secondary schools was school-based and ‘in-house’ continuing professional development (CPD). CPD was based on collaborative, bottom-up, teacher-generated activities involving several contributors, in contrast with centralised, one-size-fits-all, whole-staff CPD usually provided by a single ‘expert’. Effective leaders in the study schools made the best use of the expertise of their staff, not just in terms of their ICT skills, but also in terms of setting up collaborative peer learning which made the most of excellent practitioners and good communicators. Teachers were very positive when time was provided to work with colleagues to plan and review classroom strategies which were immediately practical and could be implemented straight away. Informal learning was also a very important aspect of learning in schools as teachers worked together and discussed ICT in an ongoing manner as part of an effective learning community. Daly’s research showed that collegial exchange about ICT knowledge and experiences had the strongest effect on ICT integration levels in participating schools.

Zhao suggests an evolutionary rather than a revolutionary approach and that schools should take small but progressive steps towards change in a supportive school environment.

These findings about effective professional development in using ICTs all point to an in-school, collegial system using a variety of presenters rather than one expert, to support teachers to use ICTs.

9. IMPLICATIONS

There are three crucial areas to get right if we are to turn teachers on to using ICT – minimizing technical barriers to the use of ICTs, changing teacher beliefs about ICTs and providing effective professional development in the use ICTs.

A. Technical issues

Schools need access to reliable and sufficient equipment to make the use of ICT a viable proposition.

Teachers need to know that their equipment will work first time, every time or at least if it doesn't, it will be fixed pretty quickly.

B. Teaching beliefs about ICTs

Teacher's existing beliefs about teaching and ICTs need to be challenged and changed.

Teachers need to be deliberately exposed to best practice and new ideas in the use of ICT.

Teachers need repeated exposure to new ideas and time and support to practice and bring new ideas into the classroom.

C. Professional Development

Effective professional development in ICT is collaborative and 'in-house' with schools making the best use of the expertise of a variety of staff members.

Professional development should be based on supporting teachers as they plan and prepare deliberately to employ practical ICT strategies which can be implemented immediately in their classrooms.

Teachers need hands on training and time to practice using ICTs in a non-threatening environment.

Teachers learn best in a constructivist environment that provides opportunities to explore, reflect, collaborate with peers and work on authentic learning tasks.

“Social support” and “informal learning networks” are crucial for innovation in ICT.

Schools should aim for small but progressive steps towards change in the use of ICTs.

10. BENEFITS

E-learning has been an area of great interest since I first introduced computers to my school in 1987. I have experienced considerable frustration at how little progress has been made in using modern technologies in New Zealand classrooms. It has been rewarding to have the time to catch up with the literature in this area and consider what can be done to improve in this area. Many of my intuitive beliefs have been validated by the literature and confirmed my intentions in this area.

I believe that my sabbatical findings include a number of very promising strategies which will help lift our school's performance in this area.

11. CONCLUSIONS

The sabbatical research has confirmed a number of important directions in ensuring ICT is used effectively in schools. Three crucial areas to get right if we are to turn teachers on to using ICT are minimizing technical barriers to the use of ICTs, challenging and changing teacher beliefs about ICTs and providing effective professional development in the use ICTs.

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