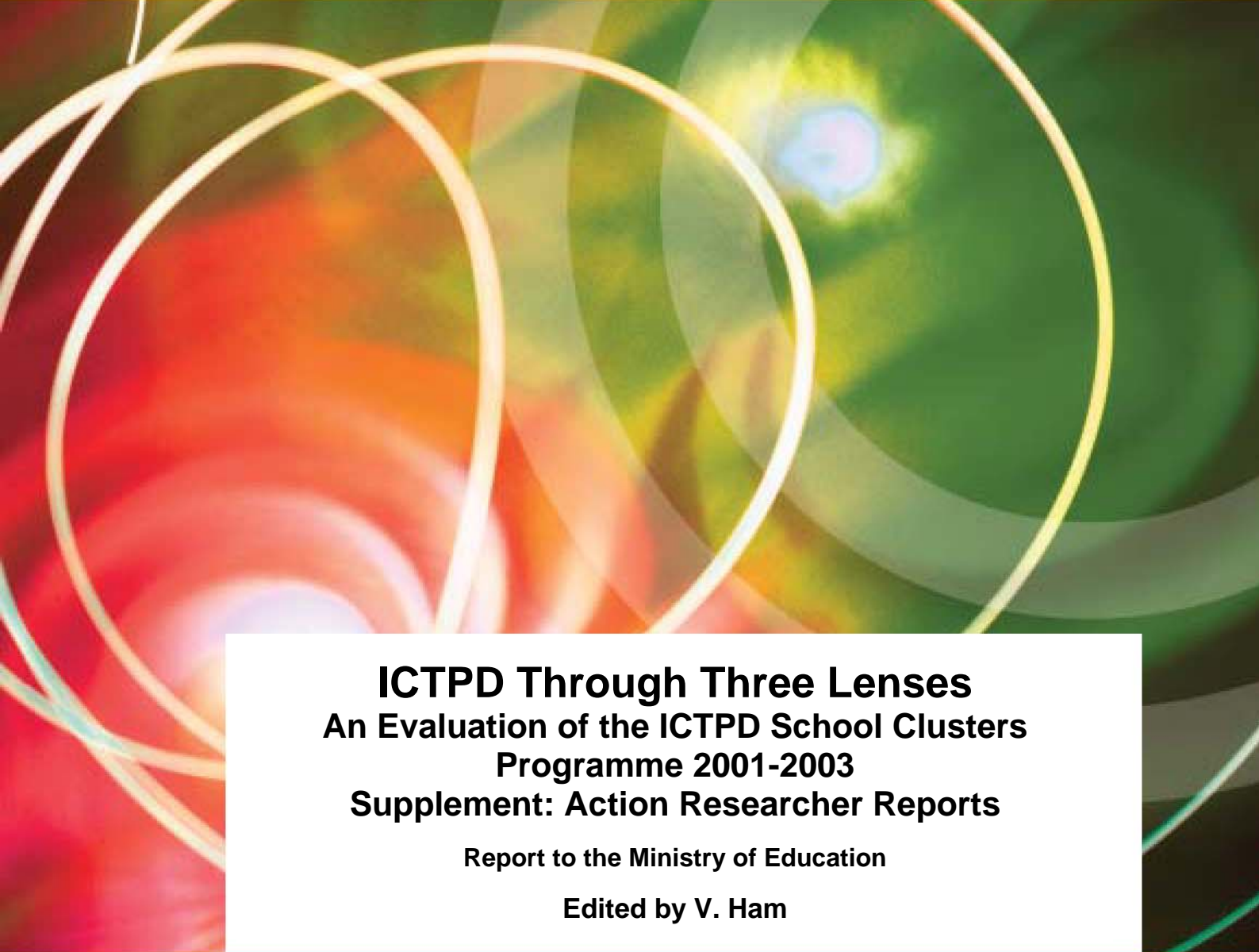





MINISTRY OF EDUCATION

Te Tāhuhu o te Mātauranga

New Zealand



ICTPD Through Three Lenses
An Evaluation of the ICTPD School Clusters
Programme 2001-2003
Supplement: Action Researcher Reports

Report to the Ministry of Education

Edited by V. Ham

RESEARCH DIVISION



Wāhanga Mahi Rangahau

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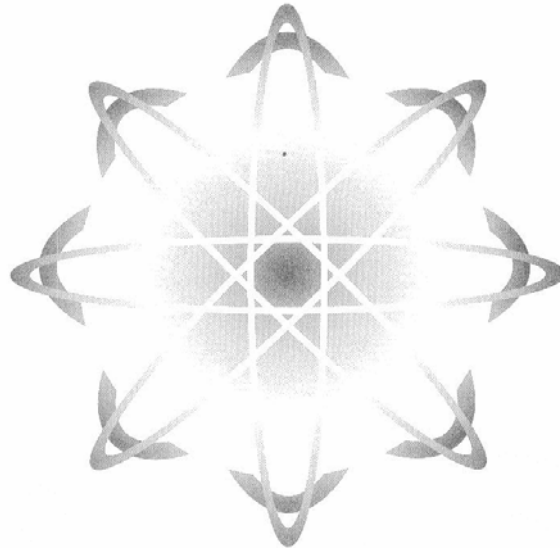
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Evaluation of the 'New Initiatives' in 'Interactive Education: An Information and Communication Technologies (ICT) Strategy for Schools'

ICTPD Through Three Lenses



**An Evaluation of the
ICTPD School Clusters Programme
2001-2003**

**Supplement:
Action Researcher Reports**



**CHRISTCHURCH
COLLEGE of EDUCATION**

Te Whare Whai Matauraka Ki Otautahi

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Teacher & Facilitator Case Studies: Action Research Projects

Introduction

A range of action research or self-study projects was undertaken as part of the evaluation of the 2001-2003 ICTPD (Information and Communication Technologies Professional Development) school clusters programme. During these studies, teachers or cluster facilitators investigated their own ‘best practice’ in relation to some aspect of ICT use in the teaching and learning process, or some aspect of facilitating teacher professional development in that area. This Supplement to the main Report (entitled *ICTPD Through Three Lenses*) contains the *full* reports of 12 of the action researchers.

The action research projects involved the teachers or facilitators gathering and cyclically analysing data on their own professional practices in relation to ICTs or ICTPD over extended periods of time. These periods of time ranged from a few terms to the whole three years of their involvement in the ICTPD clusters programme. With ongoing guidance and support from two research mentors, the teachers and facilitators took a problem-based approach to their action research project, in which they each identified some problematic aspects of their use of ICTs with classes or their role in facilitating ICTPD, and conducted an evidence-based evaluation of the various strategies and practices that they tried, over time, in order to solve those problems.

As a group, these reports could be read in several ways. Some could be seen as case study evidence illustrative of several of the national trends identified in the main Evaluation Report. Two of the key findings of the surveys, for example, are that integrating ICTs into daily teaching practices takes a long time, and that technical or reliability issues are still seen by teachers as a major barrier to use. Graham’s story of his struggles to get his students learning via the internet stands as an indicator of how these trends were lived out, and what they felt like, from one individual teacher’s perspective. In the same vein, all of the teacher reports in one way or another tell tales about how a growing self-confidence regarding ICTs developed through the PD and translated into increased ICT use and increased variety in the use of ICTs with learners in the ICTPD schools. Similarly, the four ICTPD facilitation studies all show facilitators working out how best to get teachers beyond a preoccupation with technical skill development towards a deeper understanding of the effective integration of ICTs into classroom practice.

A second way of reading the reports could be to see them as detailed practical experiments; descriptions of ‘what worked and what didn’t’ for some individual teachers and facilitators in their classes. In this sense, the reports are full of handy hints and suggestions for other teachers and facilitators, from practitioners who have ‘been there; tried that’. There is a consistent theme of practical experimentation in most of the studies, as befits the nature of action research. They are often stories of trying particular PD or classroom strategies, of practical experiments in how to organise a classroom for ICT use, or how to conduct PD sessions, which other teachers and facilitators might well try or adapt to their own situations.

A third, and perhaps even more important, way of reading the reports, however, is as a window into the authors’ own developing understandings about teaching and learning,

and the role ICTs may play in that enterprise. In this sense the reports are case studies exemplary of the ways in which individual teachers and facilitators in the ICTPD programmes have critically reflected on their own pedagogical practices, on their own deeper understandings of what constitutes value in the use of ICTs for teaching and learning, and indeed, on the nature of high quality teaching and learning in general. It is therefore notable in these reports that ICTs, while they provide the context for the studies, are not the central focus. Pip's and Paula's studies, for example, are really about their own evolving conceptualisations of effective 'integration' of ICTs into their teaching and learning programmes; how they might conceptualise educational 'quality' in their use of ICTs with students, and what practical indicators they might look for in making those judgements. Similarly, Craig and Rochelle's, Lyn's, and Sue and Audrey's studies are all about how they themselves came to grips with the new professional role of facilitator or teacher educator, and the growing realisation that this role might be qualitatively different to that of classroom teacher. In critically investigating in the context of their own practices phenomena such as 'equity', 'integration', 'momentum', 'narrative', 'progression' and so on, the authors themselves move beyond a preoccupation with ICTs per se, to a preoccupation with more fundamental aspects of what it is, for them, that constitutes quality teaching and learning in general.

The studies reported in this supplement are:

Teaching and Learning

- *What Are Some of the Practical Strategies to Consider When Integrating ICTs into a New Entrant Classroom?* By Pip Cleverley.
- *How Can I Optimise Computer Use in My Classroom?* By Paula Poulter
- *The Way IT Was!* By Graham Woodhead.
- *Characteristics of Information Seeking Behaviour: A Comparative Study Around the Use of ICT and Print.* By Jill Stotter.
- *Non-Linear Narratives: Where Might I Click to Start?* By Mike Whiteman
- *Email@classroom.school.nz: How Can I use Email Effectively to Enhance the Information and Communication Skills of my Students?* By Karen Newbrook.
- *Peer Tutoring For The Development of ICT Skills.* By Kieran Browne.
- *How Can I Increase the Equity of my Students' Use of One Computer in a Class of 30?* By Sue Cattell.

Facilitating ICTPD

- *Maintaining the Momentum.* By Craig Price & Rochelle Jensen.
- *Meeting Teachers' Needs ... When I don't know what they are ... and nor do they!* By Lyn Garrett.
- *Developing Confidence in Lead Teachers.* By Sue Ogden & Audrey Harvey.
- *Towards Progression in Textual and Visual Literacy.* By Shelley Cook.

Note On Style and Structure in the Researcher Reports

The reports in this Supplement to the Evaluation of the 2001-2003 ICTPD Clusters programme were written by the researchers themselves, with some editing by the evaluator.

It should be noted that some of the researchers used the opportunity to submit their research towards a formal qualification at a tertiary institution, while others conducted the research more for its own sake and as a mode professional development in itself. With this in mind the researchers were given licence to present their reports in very different styles and formats.

Reflecting the need to write for a more academic audience, the group submitting for qualification have tended to write their reports in a more traditional dissertation style and format, including, for example, significant reference to current literature and an extended discussion of methodology. On the other hand, those for whom the research was done more for its own sake, as a form of evidence-based reflective practice, were briefed to write with their teacher/facilitator peers as the intended audience. They were therefore encouraged to produce briefer reports and to adopt a more colloquial, narrative style and structure.

Teaching and Learning Action Research Studies



**An Action Researcher Report from the 28 ICTPD
School Clusters Programme 2001 – 2003**

**What are Some of the Practical
Strategies to Consider When
Integrating ICTs into a New Entrant
Classroom?**

– Pip Cleverley

What are Some of the Practical Strategies to Consider When Integrating ICTs into a New Entrant Classroom?

Pip Cleverley

Introduction

As a junior class teacher I think some of the hardest things about implementing Information Communication Technologies (ICTs) with my classes over the years have been finding computer programs that are user friendly for five and six year olds, managing the routines, rosters and organisational aspects of teaching sessions, and effectively ‘integrating’ the use of ICTs in junior class programmes.

In 1991, I was involved in one of the ‘Computers in Classrooms’ clusters. Even though there was a lot of emphasis placed on integrating technology into classroom programmes, most of my colleagues and I were building units around the computer programs rather than using the computer as a tool to enhance learning opportunities for our pupils. Most programs I had tried had been too difficult for children of this age to use independently. I had tried using word processing programs with limited success due, in the main, to the fact that they were too complicated for children at this stage of writing. They seemed, at the touch of the wrong key, to get themselves into all sorts of difficulties.

However, I also think that at that stage of my own journey as a teacher with ICTs, I didn’t really understand how to use the computer effectively in my class programmes. I had set up learning stations based on interactive fiction programs but because children of this age have emergent reading skills, they required constant support, in fact a lot more than those on non-computer activities, and so both the children and I soon reached frustration point. I had used a range of skill and drill type programs but was unhappy with these as I don’t generally use skill and drill activities in my other teaching. I felt that they were really only a token gesture towards using the computer effectively.

In 2001, my school became part of an ICTPD cluster in South Canterbury. My initial reaction was probably typical of many junior class teachers ‘But how will it work for juniors?’ My principal at the time kept telling me to be patient and that it would become clearer as we moved into the professional development associated with the cluster. He was right! The more involved I became, the more I realised that there were endless possibilities to involve junior pupils.

Before I began my action research I wanted to find out what other people – both writers and colleagues - meant by ‘Integrating ICTs into Teaching and Learning’ and what this might look like for the classroom teacher.

Some authors regard integration as mostly about extending skills and interweaving the use of the computer into normal classroom behaviours. For example, Pisapia expects that computers will be used in classrooms and will be used to “introduce, reinforce, supplement, and extend skills.” He states that the ideal goal is for the “student use of computers to be woven integrally into the pattern of teaching” (1994, cited in Williams, 2000, p12). Similarly, a study undertaken by six Northland teachers found that teachers who were successful “systematically planned for” and used the computer

“as a part of the everyday classroom programme”, as opposed to using it as an extra for early finishers or as a reward for good behaviour (Falloon, 1999, p.21).

Others focus more on the curriculum goals aspect of integration. Van der Kaay, for example, states that:

The computer should be used to complement the classroom programme and the learning that takes place as opposed to being an extra to plan and organise for. To do this teachers need to continually ask themselves: How can children use this computer to enhance their learning? (1992, p27)

Yet another focus emphasises the unique opportunities that ICTs offer, and that integration means in effect only using ICTs for things which cannot be done by other methods.

In perhaps the most important – and the most difficult – challenge, teachers can help to improve existing conditions or to create important educational opportunities that did not exist without IT. As part of this process, teachers decide what they need to make these changes occur. This process of determining where and how technology fits is known among users of educational technology as integration. (Roblyer et al 1997 cited in Williams, 2000, p12)

Dwyer (1994) argues similarly when he describes ICTs as a set of tools for acquiring information, thinking and expressing themselves which provide more children with more ways to learn successfully.

A fourth focus is on the relationship between the use of the computer and learning theories:

In order to integrate instructional technologies into the curriculum meaningfully, it is important for teachers to know what are the predominant learning theories and how the computer applications can be integrated in relation to these learning theories. (Hsu et al, 2000, p71)

On a more practical level, my involvement in the cluster provided opportunities to visit several schools throughout New Zealand to look at ways ICTs were integrated into their programmes. I was especially interested in how they were managing the process and which of these approaches my colleagues took in relation to integration. I saw a wide range of practices, ranging from multimedia creation to skill and drill type programs. However I felt that the schools that were most successfully integrating ICTs into their programmes were the ones which focussed on three main aspects.

1. Using the computer as a creative tool
2. Fostering higher order thinking
3. Developing a wide range of teaching strategies

From these readings and visits it seems that there are widely differing views of what integration actually is. In this discussion I want to focus on two aspects of improving the level and quality of integration of ICTs in my teaching programme.

1. What were the most effective teaching strategies I could use?

2. What were the most effective management strategies I could use?

For the purpose of the research, I defined ‘teaching strategies’ as the pedagogical approaches that I used to help the children achieve the learning outcomes of the lessons, for example co-operative learning, scaffolding, inquiry learning, peer tutoring, and constructivist learning.

‘Management strategies’ were defined as the specific routines, organisation and systems I used to facilitate the use of the computer with five year olds, such as tracking charts, parent helpers, positioning of equipment, and flowcharts.

Methodology

The research was carried out over a year in a NE classroom in an urban, decile 5, contributing school in Timaru. I based my research on a cyclic model adapted from Kemmis and McTaggart (1981). Action research allows teachers to use the results of their own inquiries to change and improve their practices. Thomson describes action research as a “way of thinking and systematically assessing what is happening in a classroom or school, implementing action to improve or change a situation or behaviour, monitoring and evaluating the effects of the action with a view to continuing improvement.” (Thomson, 1988, cited in Marsh, 1992, p.116). Similarly Kemmis (1986) describes action research as a systematic approach that aims to improve not only teaching practice but also the understanding of it and the way it is carried out. The focus for action research comes from the teacher and is generally problem or change based. As a matter of procedure, action research is organised into four cyclical steps.

1. Plan a course of action
2. Act to put the plan into practice
3. Observe what is happening
4. Reflect on these happenings as a basis for planning for the next cycle.

I chose to use action research to answer my inquiry as it was classroom based and practical in nature. The data could be collected as part of the normal classroom programme rather than from a contrived situation.

I collected data over 10 cycles, each representing a different learning activity using Kidpix. Each activity lasted two weeks. Copies of those lesson plans which included an ICT component were collected, as were copies of all my written instructions and templates used when setting up activities. I recorded at least 15 minutes of video and/or audio randomly during each activity so that I could later study both my own actions and interactions and some of the students’ interactions and conversations while I was not present. I also videoed the classroom generally to show what was happening with the non-computer groups at the same time. Comments made by parent helpers were noted and dated as the cycles progressed.

Samples of the children’s plans and work from each activity were collected and at the end of each cycle I made formal entries and reflections in my reflective journal which included suggestions for the next cycle. A formal recorded interview with a colleague,

in which we discussed issues and progress to date, was recorded midway through the research.

The Activities

I planned activities that covered a wide range of curriculum areas, including English, Health, Social Studies, Science, and Maths, and a wide range of learning outcomes and essential skills.

The activities were:

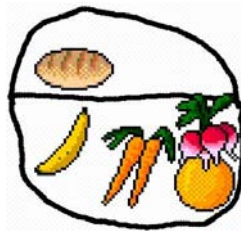
- A group of three children making a simple slideshow to teach other children how to cross the road safely.



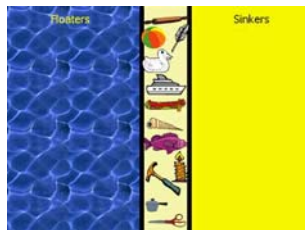
- Children working with a parent helper to draw pictures to support their answers to an inquiry about the types of work that people do.



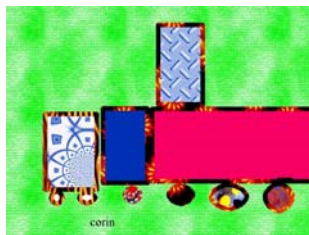
- Children making a booklet about healthy food choices.



- Children using a template I had made to classify objects as floaters or sinkers.



- Children planning a vehicle or animal using geometrical shapes on paper and then reproducing their plan on Kidpix.



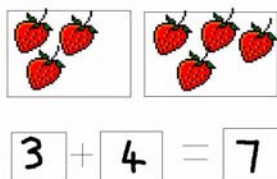
- Children using the textbox on Kidpix as a simple word processor tool at a nearby school's computer suite to retell the story of Paddington Bear.



- Children illustrating stories they had written to answer a simple inquiry about how Teddy Bears got their name.



- Children working in pairs with a parent helper to create simple number stories for their partner using a pre-set template and the stamping tool.



- New children having time to experiment with an older pupil acting as a peer tutor.



- Children designing rockets as part of a science unit on Space.



My Findings

What were the most effective teaching strategies?

I quickly came to realise that the strategies that were the most effective in non-computer teaching activities were also the most effective for teaching and learning activities using the computer.

One of the most important realisations for me was that it was just as necessary to scaffold children's learning on the computer as it was in all curriculum activities with children of this age, and that it was necessary to spend as much time with the child at the computer as I would with the non-computer child. I noted from my journal entries and on reviewing the videos that the type of help needed was often of a practical, technical nature. In activities that required retrieving or saving files in particular, the children needed a high level of support. I noted often things like: "when there is no parent helper present I still have to do the saving. Can't see any way out of that because of the age of the children other than having a permanent parent helper, which is not possible." (Journal, 28 May 2002) This difficulty was also noted by Ham et al:

Younger children sometimes had problems locating previous drafts of work, especially if the default directory path was not set up with a folder in their name, or was unknowingly changed during the course of the computer session. (2002, p117)

Of course it wasn't just technical support they needed. There was evidence that adult interaction with the students provided support with learning activities and curriculum issues as well. For example, my parent helper noted when the children were working in pairs to create simple number stories for their partner that "I helped them in counting the objects and writing the numerals and kept them on task on their first go but on the second try I sat back and let them work by themselves." (Parent helper, 14 August 2002)

A lot of time is spent modelling new activities in a NE classroom and I found that this was equally important when introducing new skills and activities on the computer. The use of spur-of-the-moment, unplanned, 'just-in-time' skills teaching also proved necessary, as I discovered in the first activity when I had to take a just-in-time session to teach the children how to make the text bigger and change font type when they were typing statements about crossing the road. This also happened in the computer suite when the children were writing their Paddington Bear stories. One pair wanted to know how to make the cursor move to the next line as there wasn't enough room left for their next word and I realised that I hadn't talked about the computer doing it automatically.

When the children were using Kidpix as a word processor in the computer suite, I had several parent helpers with me. We were all able to move around the computers conferencing, just as in a normal writing time. A colleague who was helping me noted that:

Generally the children wrote more on the computer than they do on paper in the same time and that they constantly reread their work far more than they do when working with pencil and paper. They seemed totally focussed on what they were doing. (Teaching Colleague, 2002)

This was a really interesting observation as re-reading while writing on paper is a skill I aim to develop with my pupils but is often a long time coming!

Co-operative teaching and learning strategies play a big part in my classroom. Research suggests that the computer is a fairly natural learning context for co-operative learning. Sheingold et al. found that when using computers in the classroom, “students by themselves tend to cluster together, seeking advice from one another and helping each other out” and “students appear to interact more with each other about learning tasks” (cited in Williams, 2000, p169). Dwyer also noted that:

Children interacted with one another more frequently while working at computers. And the interactions were different—the students spontaneously helped each other. They were curious about what others were doing. They were excited about their own activities, and they were intently engaged. (1994)

However, because 5 year olds are naturally egocentric I found I had to *plan* for the activities to be co-operative. I did this specifically to encourage the children to take turns, communicate and work towards a shared goal. I also found that the level of co-operation varied from activity to activity. During the first activity, for example, which I had designed to be a co-operative activity, I found that in fact the children at the computer worked completely individually and there was very little communication between them that was not initiated by me. On other occasions they worked seamlessly together.

The children were reasonably good at taking turns and helping each other, although some were inclined to go off task when they didn't have control of the mouse and lost interest. I also found that most of the communicating at this age was about skills and practical things rather than the thinking behind what they were doing. Moreover, when the children were working in pairs to write stories at the computer suite, I noticed that there was a lot of discussion about the sounds and spelling of words in their stories as well as the computer skills they were using.

On the other hand, during the activity when the children were working in pairs to illustrate their stories about how teddy bears got their names I encouraged them to talk to their partners and ask questions about what they were doing. There was some dialogue, but it consisted of mainly closed questions that required a yes/no answer. My observations showed that although they were in pairs ...“in reality each child illustrated their own story while the other watched.” (Journal, 1 August 2002). Some activities, then, encouraged the children to discuss the thinking and learning more than others. For example, during the activity when the children were classifying objects as

floaters and sinkers I noted that... “they are getting better at having turns and they are talking to each other a lot more and asking each other’s opinions before doing anything.” (Journal, 17 June 2002.)

Another interesting discovery was that it seemed that as the children became more competent users of Kidpix, they communicated less with each other. After the activity where the newest pupils were given the opportunity to experiment with Kidpix, I reflected that there had been a lot more technical discussion during this session than at any other time during the period of the research. My thoughts were that this was because these children were at a much earlier stage than the others I had been working with.

I tried to put the activities the children were doing on the computer into a real life context whenever I could, as I firmly believe that this is when real learning happens. I came to realise that it is as important to share work done on the computer, as it is to share any work. The children felt more of a sense of purpose when they knew they had an audience.

I had just learned how to export Kidpix pictures and slideshows, so after the children had created their vehicles or animals in the geometry activity I put them up on the school intranet in order to reach a wider audience. The children were very proud having their work on the intranet and were delighted to receive e-mails from other classes and teachers praising their work. After we had been to the computer suite, we printed off the stories that the children had written and illustrated and made them into books for the children to take home and share with their families. We also made these stories into a slideshow and put that on the school intranet.

It was interesting to note that the children learned a lot more in their experimentation with Kidpix than I realised a fact for which I was definitely grateful when at one stage (during the first activity) I accidentally bombed a child’s work when saving it. One of the children told me “Don’t worry, just use the ‘undo guy’ and it will come back!” (Journal, 6 May 2002). In this respect giving the children plenty of time to experiment and try new skills was very important. This became really obvious in the last activity when I expected the newest children to be able to complete an activity without giving them enough practice time first. In fact when I did give them opportunities to experiment there was lots of talking, telling each other what they had done and excited comments.

Some of the activities I planned were compulsory ones that all the children had to complete but there were also activities that the children could choose to do as optional activities. I used a tracking sheet during the number story activity so I could monitor usage. I found that most of the children chose to do the activity more than five times while three needed a lot of prompting from me to do it at all! It was interesting to note that there were children who always chose the computer activity and others who needed some encouragement to have a go, just as there are children who chose, for example, to read as an optional activity and others who needed encouragement.

In a NE classroom there are always new pupils coming into the room and others moving on to new rooms. Therefore, it was necessary to keep reintroducing skills and activities previously taught. This not only helped the new pupils but also acted as a maintenance programme for the others. I realised the importance of this in the last two

activities. It was at this time that I moved my most able pupils to the next room and was left with a much younger group of children whose computer skills were at a much earlier stage. At this stage I realised just how much when one little boy asked me (in response to a statement I made about holding the mouse firmly) “Where is the mouse?” as he looked on the floor for a real live mouse!

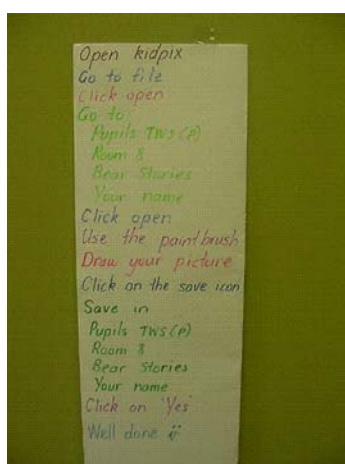
The use of peer tutoring as a teaching strategy with children at this stage of learning worked reasonably well for the basic skills, but was less successful when it came to saving and retrieving work. There were also issues when the helper thought the non-computer activity was more interesting. For example, they helped quite happily during written language, reading, or maths times but were reluctant during art and construction type activities. Allowing children to choose to be peer tutors or helpers would seem to be a way to overcome this and is a strategy I intend to build into my management strategies in the future. It also seemed that some children didn't like being the helper because they would prefer to be doing it themselves, as well as others who didn't like being helped and chose to ignore their helpers. As one student said very firmly to her helper: “Don't tell me what to do!” (Video, 11 September 2002)

What were the most effective management strategies?

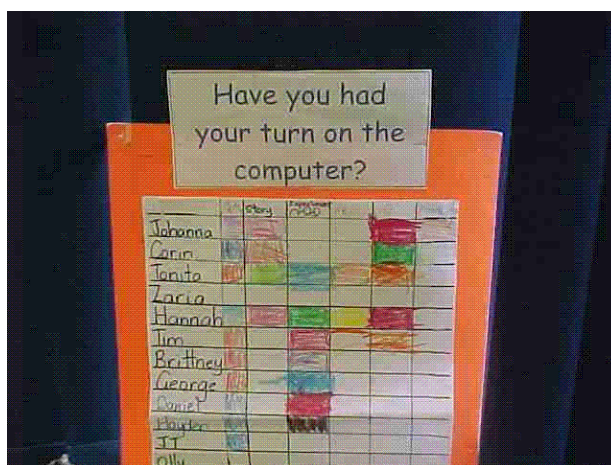
As for all activities in a NE classroom, the management of the use of the computer is all-important. Children of this age have emergent reading skills so a lot of management strategies used with older children such as written instructions and booking systems are not viable options.

One strategy I tried, and found very successful, was to train one or two parent helpers to help on the computer, just as I had parent helpers for other tasks. I felt parent helpers would be especially helpful for saving and retrieving work as the reading skills of five-year-olds made this a difficult task for them. “The use of a parent helper’ I noted, ‘made it so much easier and faster for all the children to have their turn. In fact 16 children were able to do their pictures in two hours!” (Journal, 28 May 2002)

I experimented with a variety of ways to provide written instructions but found simple flowcharts of instructions for each step needed to complete an activity to be the most effective. The use of colour made it easier for the children to find where they were up to. They were also helpful for the parent helpers. As one remarked: “It made it easier for me and I showed the children where they were up to each time they referred to it.” (Parent helper, 1 August 2002)



A tracking chart to keep track of who had had turns or completed a task also worked well. The children coloured it in when they had had their turn and were able to use the chart to find the next person to have a turn. I also could quickly see who hadn't had a turn and keep things moving.



Having the computer where the screen could be seen from most teaching points in the room made it easier for me to see if someone needed help and also to keep an eye on what they were doing when I was working with a different group of children.

I noticed that when the children who were helping sat on the right of the typist/mouse operator they were tempted to take over the mouse or the keyboard. So I decided that when children worked in pairs, the typist always would always sit on the right to help eliminate this.

During teaching sessions I found it helpful to tilt up the keyboard so the children could see it better. Another really useful strategy happened by accident when a child leaned on the computer table tray and broke it at the beginning of a teaching session. So I used the mouse on a low chair and found that it gave all the children a better view of it so continued with this strategy from then on.

When the children started to write captions and stories I found that many had difficulty recognising upper case letters because of their stage of development so I wrote lower case letters on the keys to overcome this problem.

There were issues with using the mouse that soon became apparent. New Entrants have little hands and I found it necessary to spend time teaching them how to hold the mouse firmly so it didn't move off the target before they could click. They also found it difficult to double click quickly so I slowed down the double click speed to eliminate this difficulty. I also found they were clicking the right mouse button in error and getting into all sorts of difficulties so I put a green (for GO!) dot on the left mouse button with a felt pen which proved very successful.

Anyone who has used Kidpix will know that it comes with a 'bomb feature' which effectively deletes all work from the screen! In the early activities, I found that the children were spending a long time on the computer without a lot to show for it so I made a rule that the children were not to use the bomb without checking with an adult first.

One of the most successful strategies was using only one software program in a number of different learning contexts. The children became confident and knew their way around Kidpix, thus removing a problem that had previously been a barrier to success.

Conclusion

I learnt a lot about integrating ICT into my teaching and learning programmes in a NE classroom during the course of the research, beyond the pragmatic considerations of teaching strategies and management techniques which have been the focus of this article. My own beliefs now are that for ICT to be truly integrated it must be a planned part of everyday teaching and learning, and must be embedded in teaching which fosters creativity and higher order thinking. I believe that the keys to successful integration are not just the use of a wide range of teaching strategies, systematic inclusion of ICT in planning, and careful consideration of management and routines, but also the use of ICT as an information source, as a means of communication and presentation and as a context for thinking. I think the most important factor in all of this, is that all the things that made the integration of ICTs effective are in fact also the keys to good practice in any teaching and learning activity.

I began this research with some preconceived ideas about the way to use computers in a NE classroom, some of which proved useful but others less so. I tried a wide variety of activities, teaching strategies and management techniques. I feel I have only just started on my journey to successfully integrate ICTs into my classroom teaching but I have many more ideas and I am looking forward to putting them into practice in the years to come.

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**An Action Researcher Report from the 28 ICTPD
School Clusters Programme 2001 – 2003**

**How Can I Optimise Computer Use In
My Classroom?**

– Paula Poulter

How Can I Optimise Computer Use In My Classroom?

Paula Poulter

Introduction

This report gives an overview of classroom action research and describes my efforts to ‘optimise’ computer use in my classroom. It gives a concrete example of how action research can be used to enhance the day to day work of teaching and student learning.

Teachers want their children to learn by doing, to be actively engaged in meaningful activities and to work towards common goals. The rationale of this research was to monitor and record what I did to increase the frequency, variety and quality of computer use in my classroom. Data were gathered on one day a week on random days for 20 school weeks in all, with children filling in logs of time at the computer and the teacher keeping a record of computer time, reasons for using ICTs and writing reflections in a journal.

My research involved a class of 25 Year 3 and 4 pupils at Timaru West School. There were 13 Year 3 children and 12 Year 4 children. There were 15 boys and 10 girls in the class, whose ages ranged from 7 years to 9 years. About a third of the children had computers at home. During the research year one child left to live in another town.

Timaru West School is a Primary School which was in its second year of an ICT Contract with a cluster of local schools. I had been teaching there for 5 years when I decided to take part in the action research. In the school we were developing our pedagogical statement. Some parts of this developing statement included assertions such as: *powerful learning* is when learning is in a context meaningful to children and different ways of knowing and thinking are recognised and used; and, it is most *powerful to learn* information literacy, higher thinking skills, communication skills and social and co-operative skills. Also, *powerful teaching* occurs when teachers provide quality feedback and feedforward, have high expectations, use a variety of teaching approaches and ways of knowing, and use reflective practice to improve their teaching.

My research question was related to optimising computer use in my classroom in relation to such ideas. I realised that ‘optimising’ had something to do with making ‘best’ use of ICTs, not just more use, so I included both quantitative and qualitative aspects. I decided to look at ‘optimising’ in terms of three parameters: what could I do to increase the *frequency*, *variety* and *quality* of computer use in my classroom.

Coming to grips with the notion of ‘quality’

Digital Horizons (Ministry of Education, 2002) is one strand of the New Zealand Government strategy to foster the effective use of ICT in New Zealand education. It states that learners in ICT enriched learning environments should be developing the knowledge, skills and attitudes needed to use ICT to locate information, to solve problems; and to develop, organise, refine and present work. They should use ICT to collaborate and communicate with people beyond their immediate environment. They should respond to the opportunities ICT offers to manage their own learning, to enhance their ICT skills, to achieve personal learning goals, and to experience high

levels of engagement and motivation. Similarly, *Quality Teaching for Diverse Students in Schooling – Best Evidence Synthesis* (Alton-Lee, 2003) draws upon research from overseas and New Zealand about effective teaching across different curriculum areas with students of different ages. Included in this research is evidence that to be effective, ICT usages must be integrated into the pedagogical practice across the curriculum. These core ideas helped me define some aspects of the ‘quality’ element in the notion of optimising computer use in my classroom.

Integrated teaching has been developed in New Zealand primary schools for many years. “Thematic units”, “integrated units” and “centre of interest teaching” have expanded the idea of integrated teaching which has been advocated by many educational experts. The integration of ICTs into teaching and learning for me involves increasing the ways in which learning can take place. Effective integration strategies include: integration to generate motivation to learn, integration to foster creativity; integration to facilitate problem-solving; integration to foster group co-operation; and integration to develop technical and visual literacy (Robyler and Edwards, 2000).

The Education Review Office (ERO, 2001) has become far more positive about the current state of integration of ICTs into New Zealand classrooms. They claim both teachers and students have gained in skill and confidence in using ICT. They suggest there is increasing emphasis on integrating ICT across the curriculum and many schools (58%) are managing integration into learning and teaching well. But they and others also suggest that there are still many other unanswered questions and the real extent or quality of schools’ use ICT has not been fully researched (Ham et al, 2001).

What does seem clear is that the role of the teacher in effective ICT integration is crucial. Simply having a computer in a classroom does not mean it will necessarily be used effectively. Considerable time is spent by many teachers in planning and preparing integrated activities for the classroom. So as well as planning time, a commitment to effective integration by teachers is required, and schools need to provide teachers with increased knowledge of computer use, to show teachers models that use technology as a tool in the classroom and to provide technical support when required (Bitner & Bitner, 2002).

One recent case study attempted to find out how teachers were using ICT as part of their programmes, how students were using ICT in the classroom, what value teachers placed on its implementation, and how teachers felt ICT impacted on student learning (McFarlane, 2003). The data indicated that the average classroom teacher was still using the computer as a word processor most often. Results showed that teachers did value ICT in the majority of cases, but also that there was concern that ICT innovation may have stopped innovation in other curriculum areas. Teachers in this case study were using ICT when and where appropriate. “The conclusions of this study emphasised the importance of the classroom teacher in creating appropriate and effective learning environments with or without technology” (cited in McFarlane, 2003, p.33).

The development of social and co-operative skills is also an integral part of the effective integration of ICT into the class. Constructivist classrooms encourage students to work in co-operative groups (Robyler & Edwards, 2000) following John Dewey’s injunction on teachers to centre student instruction on relevant, meaningful

activities. Vygotsky's work was also very much in tune with the constructivist concepts of instruction based on each child's personal experiences and learning through collaborative social activities. Similarly, Piaget, Bruner and others have pointed out that much learning occurs without any formal instruction, as a result of the child interacting with the environment, that children need to be active and motivated learners, and that active participation was best achieved by providing discovery learning environments.

Many of these general pedagogic principles can be seen in 'effective' student use of ICTs. For example, in one pioneering study on the computer and children, Sheingold et al (1984, cited in Ryba & Brown, 2000) report that when working with computers in groups, students appear to interact more with each other about learning tasks and they tend to call on each other more for help. They report that

educational computing activities were highly social in nature. The teachers pointed out that the use of computers in their classes generated lots of discussion, talk and social interaction among students. The computer was a centre of attention for co-operation and collaboration... (quoted in Ryba & Brown, 2000, p 8).

Another study of ten teachers who spent time in a high-tech facility in America also mentioned that co-operative learning was enhanced (Tiene & Luft, 2001). Students were motivated and focused, they worked independently and their achievement was noticeably improved. The ten teachers involved felt that their students' learning was clearly enhanced by the opportunity to work in this environment. An Internet article explains part of another teacher's journey using ICT integration, reflecting many of my own beliefs about the benefits of effective integration. The article explains that students learnt the important skill of getting along with others, sharing ideas and websites, inspiring each other, encouraging one another and helping each other with technology skills. The article describes teaching with technology as being exciting and versatile, providing many opportunities to learn (Lowe, 2002).

Such articles were influential in developing my ideas of quality as an aspect of 'optimisation' and encouraged my belief that children learn best when they are motivated, actively participate, are able to work co-operatively, can construct their own knowledge, are involved in meaningful activities and can gain access to information and skills that need to advance in their own work.

Methodology

The aim of my action research was to monitor and increase the frequency, variety and quality of computer use in my classroom. I felt that what was happening before the beginning of my research was really only random use of computers for Internet searching and free time use. I felt that the computer was not well used and often not used at all. My own computer skills were basic, and there was no planned use for the children. I therefore decided to improve my own teacher knowledge, to increase the use of computers with students and to include ICTs in my planning, as my goals for the ICTPD cluster programme.

The research model I used for my 'action research' was based on the research spiral outlined by S. Kemmis and R. Taggart in *The Action Research Planner*(1998). This

model appealed because I wanted to undertake research in my own classroom and to improve my children's practice. I also wanted an internal process where I defined a research problem, and I wanted the outcomes to be directly useful to my actual classroom situation. The action research spiral required me to plan, act, observe and then reflect upon a series of activities in my classroom involving computer use.

The data collection took place for 20 school weeks in total, from May to November. For the data gathering at the Reconnaissance Phase I initially recorded and graphed who used the computer and for how long over a two week period. In order to monitor the frequency aspect of my action research, I then recorded details of computer use one day a week on random days for those 20 school weeks. I gathered similar data as in the first two weeks, recording who used the computer, for how long and for what reason. I wrote in a reflective journal after each day of data gathering and included notes, relevant planning and anything which led me to choose any of the activities for my class.

When I looked at the variety of computer use, I identified the curriculum subjects covered, the type of groupings that had been used, and the varied software that had been used over the 20 school weeks of my action research. I then graphed the results of this gathered data using Microsoft Excel. I also looked at whether the activities had been teacher defined or free time activities.

The quality of computer use was indicated partly by the achievement of curriculum objectives through observation and student work. The kinds of objectives I was looking for during this time included listening and responding to language, meaning and ideas in different texts, presenting information using multimedia and becoming familiar with and using appropriate technologies. The sorts of things I was looking for involved each group retelling, changing or creating a new fairytale. Another indication of the increase of quality I sought was the achievement of Technology learning outcomes such as using the Intranet, sending and receiving an e-mail and preparing a group PowerPoint slideshow. Many Essential Skills were also observed and achieved through student work. I looked for evidence of Communication Skills, such as children communicating competently and confidently and using information and communication technologies, along with evidence of Social and Co-operative Skills with children developing good relationships with others and working in co-operative ways to achieve common goals. Co-operative learning skills were noted as the children became confident to work in group situations and to help each other as necessary. During the action research I looked for signs of high motivation and feedback from them showing a positive attitude and interest in their activities. I graphed on-task time, which I have included in this report as evidence of the children's motivation and willingness to learn.

The Story Of My Three Activities

Using The TWS Intranet

The children knew previously how to use Internet Explorer to search on Yahoo!igans for information for Theme topics, so when the TWS Intranet finally got up and running, I decided to take advantage of the opportunity and introduce the whole class to it and show them how to use it. I set up a "How to use the Intranet" card with very specific instructions for the children to use when it was their turn at the computer.

During my initial lesson in Week 5 of my study, I modelled how to use the Intranet with those specific instructions on the card beside the computer. I then set up a paired roster on the whiteboard and placed my timer beside the computer to ensure that within 2 days all children would have had at least 5 minutes each using the mouse and having an introductory look. Each pair of children actually had 10 minutes at the computer and the timer was used to make sure each child was using the mouse for 5 minutes.

During this week I logged the computer use on the day I introduced the Intranet to the children and 18 children were able to have their 5 minutes each (Chart 1). It took the whole afternoon (90 minutes in total) and more children than usual were able to make use of computer time while the rest of the class had Space related activities to complete. There was not much variety in this work but the children had a chance to look at many options within the TWS Intranet: Mr Poulter's page, classroom pages, the newsletter, Use the Web, and photos. This process was teacher directed and very controlled. The activity was timed and therefore limited to ensure each child was allocated a turn. My hope was that the children would use the Intranet themselves regularly and so I decided the next step was to introduce the children to e-mail and increase the variety of planned computer use.

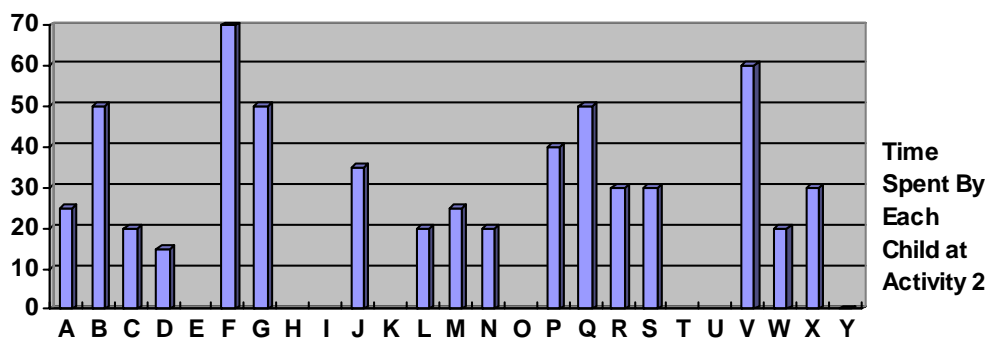
Using E-mail

This started with an activity called Tricky Translation which required each student to answer an alien's questions about themselves. A colleague then set up a hot mail address and the children had to write an e-mail to an alien telling two things about themselves and ask two questions for the alien to use in his reply. The Learning Outcomes for this activity were that the children would learn to write and send an e-mail and know how to check for an answer to which they could reply.

The whole unit of work was related to our Space theme which also included a musical production called "Flight of the Spaceship Silver Grey", and the sending and receiving of e-mails for Alien Eddie provided much entertainment for the children. I gathered data for one random day over 4 weeks and found during those 4 days the computer was used for 590 minutes in total by 17 of the children in my class (Chart 1).

I needed to ensure each individual child had a chance so I set up a booking system for sending e-mails to Alien Eddie. Also each morning I checked for replies and listed those children with replies on the whiteboard and encouraged them to check for new messages sometime during the day.

Figure 1. Time Spent by Students at Activity 2 (E-mail)



The variety was increased by introducing the sending and receiving of e-mails as part of the TWS Intranet which the children were already using. The setting up of the hot mail address allowed this work to relate to the Visual language processing of information where students view and use visual texts to gain information, and the Essential Skills where students are able to communicate using information and communication technologies.

Aspects of quality use were seen partly in the teacher modelling and setting up of “How to send e-mail” and “How to reply to an e-mail”. The whole process seemed very powerful motivation and some children were really excited about checking e-mails daily and sending a reply. The children were bursting to find out who Alien Eddie was in reality! Some of the children’s comments included:

“Who is Alien Eddie?”

“It must be you Mrs Poulter!”

“No, it must be Mr Welsh!”

“Maybe it is Mr Poulter. No, it can’t be. He’s too busy.”

They were sure it was a teacher at the school, but in actual fact it was a retired Principal based at the local Campus, who was also a grandfather of one of the students! I also listed the details about Alien Eddie as they came in, with the idea that children would illustrate him towards the end of the unit of work. Alien Eddie eventually e-mailed his last reply saying he was about to depart in his spaceship Galaxy 7 for far flung planets and could not send or receive any more e-mails, so we introduced the children to the e-mail addresses for each class within the Syndicate and allocated each child an e-mail buddy hoping that they could continue to use their new skills.

Using PowerPoint

Following a Techie session for staff members on using PowerPoint and a requirement of an IT paper to write an assignment about integrating a new technology into my classroom, I decided to introduce my class to the skills of using PowerPoint. The intended Learning Outcomes were that the children would listen to, and read, a number of fairytales; be able to retell/change or create a fairytale; develop their ICT

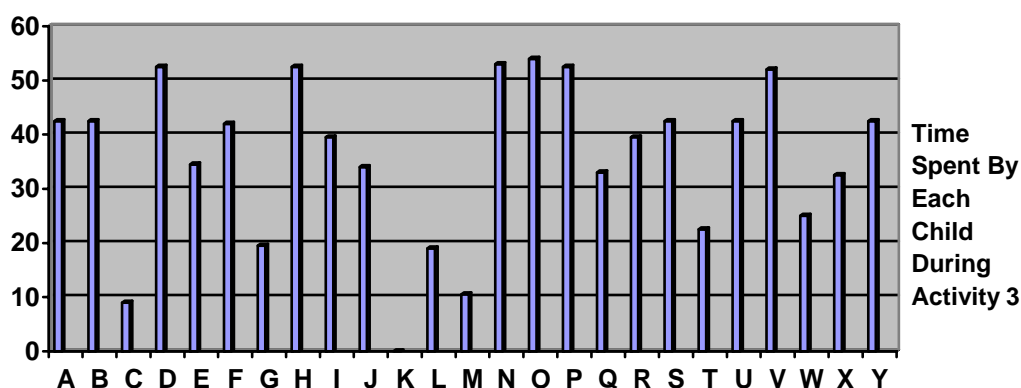
skills through learning to use PowerPoint, and present a fairytale using a group PowerPoint slideshow.

I worked with two other teachers and we used Fairytales as our motivational base. We took 75 children to a neighbouring school at which was located the Computer Suite owned by our ICT cluster. We continued our work back in the classroom.

We walked to the suite 3 times (staying for most of a school day) and I gathered data again for 4 random days over 4 weeks.

The children worked in pairs for this PowerPoint activity and for the 4 days I collected times the computer was used for 1071 minutes in total (Chart 2). All 24 children in my class were included in the data for this period of time.

Figure 2. *Time Spent by Students at Activity 3 (PowerPoint)*



* Note that Child K has left the school to live in another town and is no longer included in my data.

Management for this activity meant another booking list on the whiteboard, so that as one group finished and saved a slide, another pair of children was ready to insert their disk and work on their next slide (from a draft planning sheet which a teacher had viewed and signed first).

For variety within the unit of work on Fairytales, we initially taught the children to do a title page and save their work onto disk so they could continue in their own classrooms. Based on a fairytale character, the children made a 3 slide presentation "Who Am I?", after learning to insert a new slide and add background and transitions. For the second part of this unit of work the children were required to draft a fairytale retelling, create a new fairytale or change an ending to an existing fairytale (on a prepared planning sheet) and then to present their work using PowerPoint.

The quality aspect of this work was once again evidenced by student motivation. The children were highly motivated by a large number of computers at the computer suite and by the very visual form of presentation which PowerPoint allows. The children's behaviour was noticeably improved and they said they had fun. One even said they'd done no school work all day! All children were able to achieve in this programme and the interest and motivation carried over into the classroom. The children became confident to help each other and they certainly learnt new skills. All children in their paired grouping completed a PowerPoint slideshow, which was presented to the whole

class using the big screen television, and the children have been encouraging their parents to view their work at the next available opportunity.

Discussion

In reflecting on the various activities the students had undertaken, and analysing the data gathered, I focussed on the three key indicators of successfully ‘optimising’ computer use in my classroom. These indicators related to how I could increase the *frequency*, *variety* and *quality* of computer use in my classroom.

Frequency

Increasing the frequency required me to record who, when, for how long and for what purpose each child used the computer. Over 20 school weeks I monitored computer use on random days once a week and noted a range of times from 90 minutes in the 5th week and 360 minutes in the 12th week. The time for individual children spent using the computer ranged from Child K (who left the school during this data gathering) at 35 minutes, through Child M whose total time was 44.5 minutes, to Child E with a total computer use time of 206 minutes.

Much of the computer time was rostered to monitor individual use; however total time was quite varied from student to student. Charts 1 and 2 in the previous section of this report show that I certainly increased the frequency of usage of computers over time. The first activity for this research focus taught children to use the TWS Intranet. Only 18 children were included in the data for this activity for only 5 minutes each – being a total of 90 minutes. The second activity focused on sending and receiving e-mail and the data collected was over a longer period of time, (that was 4 random days over 4 weeks). The resulting evidence recorded 17 children using the computer for e-mail activities and the total computer times ranged from Child D who used 15 minutes to Child G who used 70 minutes total time. The third activity was also over a similar period of time to Activity 2 but the focus this time was on creating a PowerPoint slideshow. All 24 children in the class had times recorded during this period of time and the recorded time ranged from Child C with only 9 minutes total of computer time, to Child O with 54 minutes of total computer time. None of this takes into account how fast or slow the children are at their task! None of this computer activity was for free time use or for early finishers either. Rather the activities were integrated into the classroom programme, attempting to enrich the classroom programme and optimise the use of computer time.

It was interesting to note that Child M had the least amount of total time using the computer, yet did not appear as the lowest in the range for any of the other activities. Child E had the most amount of total time using the computer during this research, and was not the child who spent the most time on any of my discussed activities. It is important to remember that data were gathered on random days, one day a week only, but the information especially in Activity 2 and 3 must reflect high motivation by the children. They were under pressure of time to complete their computer task and while others used the computer they had to plan the next part of their work, and get themselves back on the booking list for their next computer turn. It would be interesting to determine whether the children’s ICT skills made any difference to how much time they took to complete their task and whether their ICT skills showed any sign of improvement through this concentrated effort. Also of interest to me would be

whether a slow writer was able to work any faster with the motivation of ICT based learning or whether other higher thinking activities in the classroom made any difference.

Variety

Increasing the variety involved time to plan computer activities which were integrated into my classroom programme. I also needed to ensure my planning included a range of curriculum areas and although Language was the major area, other areas related to Social Studies, Science and Inquiry. A variety of groupings were used as I believe that co-operative learning can enhance student learning. I also used a variety of software appropriate to the class level including Word, Internet Explorer, TWS Intranet, e-mail and PowerPoint.

Quality

Assuring the quality of computer use was partly evidenced by the high motivation and interest of the children and partly by the range of curriculum objectives that were addressed in the various activities. In particular I noted that many Language Curriculum objectives were being achieved. These included listening to, reading and viewing a large number of texts and identifying the conventions of writing fairytales. The Visual Language aspects included using multimedia to present information after becoming familiar with new technologies. Several of the Essential Skills were also developed throughout the research period. The children communicated competently and confidently and used information and communication technologies in a classroom setting. Social and Co-operative Skills were also present as many activities required the pairs of children to develop good relationships with others and work in co-operative ways to achieve common goals. The new ICT skills (related to Intranet, e-mailing and PowerPoint) that they learnt also added to the quality aspect and the fact that they said they had fun must have something to do with it. The children were very positive and they became confident to help each other as they went along. My own computer skills also increased and I felt more able to use those to help the children enhance their learning.

Moreover, many of the statements from the Timaru West School pedagogical statement about what is *powerful learning*, *powerful to learn* and *powerful teaching* have been reinforced by my observations of the activities. I tried to ensure that *powerful learning* occurred in a meaningful context to children and that it was reflective and discussed so that the children could take some ownership of their learning. It is *powerful to learn* many skills and in this case I tried to include information literacy skills, communication skills and social and co-operative skills. Also, I consciously provided feedback and feedforward, had high expectations, involved the children in the planning of their fairytale presentation, and used reflective practice to improve my teaching.

Conclusion

I believe that effective ICT resources have the potential to allow learners to create, interpret and organise knowledge, allow active participation, motivate, develop social and co-operative skills, encourage visual forms of presentation, and develop learners' strengths.

In my research I recorded, analysed and discussed the optimising of computer use in my classroom. I looked in particular at how the frequency, variety and quality of computer use increased during the period of my research. I have decided as a result that using computers in my classroom needs to become a greater part of my regular planning to have the most effective use. Other research indicates that integrating ICT in a classroom situation is not only highly motivational, but also enriches the learning of the students. Creativity and problem-solving are also enhanced by the opportunities that effective integration of ICT into classrooms allows and the children benefit from opportunities to build their technical and visual literacy.

Many of my research readings talk about the social and co-operative skills that are increased as children share ideas, inspire each other, encourage one another and help each other with technology skills. Children interact with each other about their learning tasks, and call upon each other for help. My personal experience reinforces such ideas and indicates that children should be engaged in meaningful activities which enrich their learning. Quality computer use in my classroom was seen in that use of ICT resources involved active participation and motivation of learners, helped develop social and co-operative skills, allowed learners to create, interpret and organise knowledge and encouraged visual forms of presentation.

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**An Action Researcher Report from the 28 ICTPD
School Clusters Programme 2001 – 2003**

The Way IT Was!

– Graham Woodhead

The Way IT Was!

Graham Woodhead

Introduction

Back before the turn of this century, our school had installed a full computer suite, a network system tower, cabling, and network. We had great expectations of networking, sharing, storing and were even told we had the ability to communicate with each other and the *World*.

So we held our collective breaths and waited.

Fortunately, some of us decided that regular breathing was important and we stopped holding our breath. For it was not until February 2003 that the system finally staggered into the 21st century and began working properly.

Why was this, you ask? The answer is simple and at the same time, somewhat complex.

My story begins in earnest in 2001 with the advent of the ICTPD Schools Clusters research projects. As my PD requirement for our local cluster, I had chosen to investigate the use of the internet in my classroom with a specific focus on how it might be a powerful learning tool for pupils.

However, what was to be a story showing how the children and I achieved our goals, turned into one of dealing with technological barriers and hurdles.

My school is an urban decile 2 in a large provincial city. The children have little in the way of technology in their homes; some don't have many books. My classroom had one PC and the school IT suite had 12. At that time nothing was connected to the net but the plan was to link the suite first and later, the classroom PCs.

I embraced the plan with enthusiasm as I saw the internet as a means by which children could achieve at least two major learning objectives:

- develop new learning skills and enhance some that they already had.
- gain rapid access to the potential wealth of information available on the net.

Initially, my research methodology was to observe children working with me following set goals with the aim of investigating the achievement of those goals. The observation data would be enhanced by video footage and some photographs of us working together. The data collection would consist of keeping a full diary over a two-and-a-half year period of all significant incidents that occurred in the process of getting the internet working effectively in my classroom.

2001: In the beginning...

Being an old two level school, there was a lot of cabling to be done over a great distance. The cost was huge. With more than 15 classrooms and a 12 PC suite, a lot of hardware had to be installed. Someone, in their wisdom, decided that one printer

(housed in the suite) was sufficient for the all classrooms, so that is what we got and what we still have.

As for the internet, for a long time, it was not connected. So we played around with the limited number of programs that the then servers could handle and suffered infinite “crashes” and technological seizures. Windows 95 was adequate, initially, but that went out of vogue in the rest of the world, except for us. Two GB of C drive on each PC rapidly filled with all sorts of things. The 16-MB of RAM coped for a while. The server coughed and choked day by day as it struggled to cope with the demands of the classes. The printer regularly stopped as it lost its way.

This was all before we hooked up to the internet!

I looked forward to the day that the internet would come on stream. We had the “free” line to the school. We just needed to hook things up. Well, it did happen – for the office. For a long time nothing was available for the network. So I carried on dreaming of what might be, since I had been internet literate at home since 1996.

Then the magic day finally arrived. The line to the suite was ‘livened’ and *one* PC was hooked up! That was the way it stayed for months and months. It was rarely used, since teachers could not access the suite while the IT teacher was teaching and the password was not widely known.

So we waited some more. We even had a technician who came to demonstrate how to use the internet (mainly for email), but with only one terminal we found that 15 adults could not easily see what he was showing us. The system crashed a few times during the demo so even the techy became frustrated. The non-believers became even more non-believing and the ‘educated’ thought about all the other work they could have done during this time.

And that is the way things stayed for a long time. Then one day another unit got connected. Wow! We had two – one in the suite that couldn’t be used while other classes were there and one in the library, which you couldn’t use either while other classes were there.

So, why not connect the rest of the suite OR even the classrooms? It was deemed that the classrooms would not be connected until a full and all-encompassing safety policy had been ‘put in place.’

A few more moons waxed and waned. In the meantime, I somehow tried to fill the gap for the children by showing great enthusiasm about *The Internet* by bringing printouts from home of websites related to our studies.

But it is somewhat difficult attempting to emulate an interactive site by using a piece of paper. The children did not retain their enthusiasm and I think, stopped believing in me and the internet (except, thankfully, those competent in its use at home who remained true and even brought their own pieces of paper in support).

This is the way it stayed for a few more cycles of the moon.

At this point I was vacillating between frustration and anger but not submission. I maintained my persistence with the Principal, the IT teacher, the BOT (useful being a

BOT member), the techies (who came yet again to trouble-shoot the system in general) and even some enlightened parents. Our caretaker had even bought himself an old 486 and was having more success at home than we were!

I persevered with the library unit that was old and slow, complete with an out-of-focus monitor. Of course, we could only go there in our library time once a week or sneak in when other classes were not there. We endured multiple crashes, logging off and hanging. Time after time, the link would stop or take up to 10 minutes to download a site. “hey guys...it’s given us something to look at ...” only to have the connection fail when using a hyperlink.

I believe it is pushing credibility a bit to wait over 30 minutes to find the TV One website and another 20 minutes in a futile attempt to link with another.

Again and again, the children would muster up some faith in me only to have it shattered by failing technology. But I valiantly soldiered on in the knowledge that “I know the system damn well works at home!”

I am not quite sure what happened next or even why it happened. Deep down, I suspect my persistent comments to the BOT and the Principal and the inclusion of references to shortcomings in the system in my staff reports to the BOT, all helped to bring things to a head. I had talked about the current events that were so vital in our children’s awareness of the world and how we could not access the information at school and how this was disadvantaging our children. Yes, we were providing *barriers to learning!* *Though I noted that it seemed to help when the secretary and Principal also started losing their internet links!*

Anyway, some words were heard - ‘a new server and ‘Jetstream.’ My heart pounded – Jetstream! Faster than a speeding bullet (the bullet idea had previously entered my mind in relation to the PCs). Jetstream needed a system fast enough to cope with its requirements. I wondered how a ‘coal-fired’ system would be able to do that.

I also need to note at this point that in the background we had also been coping with a system that frequently failed to print, crashed, lost programmes off the server or just froze. Lack of adequate internet operation was another ‘add-on.’ How on earth were we going to cope with Jetstream? How was it going to cope with us?

So the holidays arrived with the promise of a new tomorrow complete with Jetstream and *an internet connection in each room!*

2002: Term Two

At the beginning of term two, the only thing that had moved fast was the speed of the holidays. The system was not up and running. Eventually the system was installed but basically it was as slow as ever. It seems the RAM in our PCs was insufficient to properly handle Jetstream. Essentially we were no better off – except that we could now have the frustration in the ‘comfort’ of our own rooms and rather than the library.

Then the techies came to show everyone how to use Webmail safe in the knowledge that the system would probably fail. To the cynical satisfaction of one or two, the

system refused to co-operate and the techies went away muttering unintelligible things.

Probably in sympathy at this point, the one and only printer haemorrhaged and went to hospital.

Not to be defeated, the Principal still reckoned that the internal email idea was great. We politely suggested that it might necessitate backing up emails with hand written notes, something that had an element of futility about it.

There was a distinctly circular feeling about the whole situation. I began pushing in earnest for a RAM upgrade. Sorry, no money, too expensive. There was a clear feeling of déjà vu in the air. The BOT chairman suggested he contact someone he knew in the industry who might be able to help.

All the while I kept labouring the point about our *children being disadvantaged*.

Meanwhile a service club suggested that we apply to them for a grant. Now that seemed like a good idea. The Principal then decided that until an internet safety policy was in place, there would be no access by children. But at least the teachers could use it.

At this point, Murphy got in on the act. Having been unable to let children access the internet due to the absence of a safety policy, the password requirement suddenly disappeared from the system and the net was open at the click of a mouse! To my disbelief, there was no effort made to reduce the risk of logging on by removing the desktop icon. For considerable time the system was wide open to anyone!

Then one day the techies arrived to fix up the email and other things. The IT teacher had no idea what they did. I couldn't be bothered finding out, either. I had found it easier to use my own email service provider. However, what they did made no improvement to the access problems. For example, it took me 20 minutes to link with the TKI site during my release time as SENCO (a large dent in my 1.5 hours release time per fortnight).

Around that time I was asked when I intended to complete the 'in-house training' of my children in 'something' to do with IT. I noted that I had been waiting for over a year for the internet to work. This was my chosen field. The response from the IT teacher was that there was insufficient RAM. I promised that I would have something done by the end of the year. In the meantime, the request for assistance still had not been sent. I suggested to the AP that it was about time for 'digitus extractum'.

Around ten days later the word was out that the RAM upgrade would be done. This looked promising - but not for running the Ministry issued software packages since most required Win 98!

We now entered a 'stand-off' phase. The principal was exerting pressure for me to do my IT thing by the end of the term. I was waiting for the RAM upgrade and an operating internet connection. It was suggested that I change to something else. Naturally, I pointed out that I had waited almost two years for the system to allow me to achieve my stated goal in the contract – using the internet as a learning tool.

But there was pressure mounting to do something I did not wish to do viz. repeat work that the IT teacher had already done. I did nothing for a while. Frustrations!!

Late June saw the RAM arrive but once again nothing happened. We were going to camp at Turangi and I wanted to show the children the webcams on Ruapehu and how to get snow and weather reports. Again, the relentless futility set in as I waited up to 15 minutes for the system to log on. By this time I was also taking an extension group. Yeah! – internet skill building as part of their development. No way – spending 20 minutes waiting to log on when there was only an hour with the group was useless. It appears that the system was now competing with the virus scan while undertaking a search.

2002: Term Three

Late August - RAM was finally installed. I had a play and it seemed much faster. But wait – there was more. The system has now developed a ‘time-out’ habit. It wouldn’t stay logged on for more than about ten minutes. Once the link was lost, the only way back was to log on from the start. At least this was something *new* to cope with. The IT teacher assured me he would contact the techies, but nothing got done.

Through September the challenges continued with lost links. The system required a re-boot each time it ‘logged off.’ We were unable to re-establish the links through back paging. Once again the issue was raised with the IT person and met with the same response: “I don’t know what it is. I will tell (the service company) when they are here next.”

By this time, the school had begun formulating an internet usage/safety policy. But things were moving very slowly. I provided templates from the MOE site, but little was followed up.

This was now proving to be a new barrier to children’s learning on how to use the internet and in a sense, we were back where we started!

However, I began using the internet with my advanced learning group under careful supervision. It was well nigh impossible to use it in the classroom, since we continued to encounter connection problems.

2002: Term Four

We reached October. The tech. came along and stated that he did not really know what was causing the time-out problem. It could be a line noise issue.

Since I was the only teacher bothering, persisting and valiantly trying to use the internet, I was a lone voice and little was really being done to sort out the problem! (Maybe some coincidence, but Windows 98 on one or two other PC had few hiccups).

There was still no movement on the internet safety policy but I was planning programmes that required access to websites, in any case.

Aha! The Louis Vuitton Cup! What a marvellous opportunity to use the internet as part of the skill development for language and social studies. I assumed, of course, that we might have at least some success. Not to be disappointed, the link disconnected at

least 10 times within 20 minutes! Another staff member who had begun venturing into the “unknown” was also experiencing similar problems.

I raised the issue with the boss but was told through the IT person that nothing could be done. It appeared that I was to be thwarted by both the IT system and general lack of interest.

At this point we had pretty much reached the end of the year 2002 and I had given up trying!

2003

2003 began the way the previous year had ended! Nothing had changed. A new router was installed as a possible solution to the internet and other problems. No improvement. In February a contract was let to a second company to provide extra technical support. I discussed the internet access problems with the new techy. Before long, we had a generally fully functioning internet link which he told me to give a ‘thrashing.’

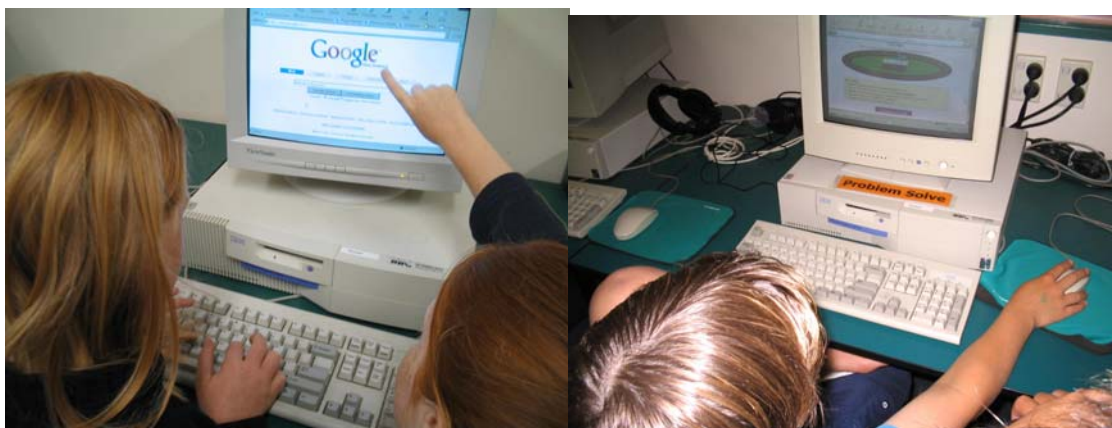
Success, it seems, does come to those who wait!

And the winner is...

At last, I have been able to fully use the internet in many curriculum areas. We have gone ahead in leaps and bounds. A whole new world has been opened up to the children in my class in our decile 2 school. It is fantastic to see the look of wonderment on the children’s faces as we unlock the “secrets” that live behind the screen.

We now actively incorporate internet use in many of our studies. These have included:

- *Weather* – Learning activities have included locating the Metservice web site; reading weather maps; relating forecasts to actual weather phenomena; reading and interpreting rain radar charts, pressure charts and overseas weather sites.
- *Metals* – Activities included locating sites for steel mills, metal types, and blast furnaces.
- *Family trees* – Locating sites on genealogy and meanings of names. This followed on from some incidental work in language.
- *Sequential adventure tasks* – A unit planned by my student teacher involving locating specific web sites and following hyperlinks for problem solving.
- *Social studies* – internet use is incorporated into a social studies topic based on ‘the way we were’. Tasks included using council sites to locate streets and find meanings, use council records, and satellite imagery
- *Census* – active participation in the Ministry support Census-At-School data collection (we are now working with the summary tables to interpret the data and make judgements and statements).



Many children are now making clear references to using the net as a source of information. Some of those on the net at home are actively finding web sites and sharing them with the class.

It has been a long haul and one journey I would rather not have had. We are not completely devoid of operating problems (the system is slow and some hardware is beginning to fail). BUT we have made the giant leap forward into the 21st Century, albeit a little late!

Some very basic guidelines:

- ❑ Before setting up any system in a school, undertake thorough and extensive research before making a commitment
- ❑ Shop around.
- ❑ Beware being talked into something by the “experts” who generally have a vested interest in selling their products.
- ❑ See if you can get some independent advice.
- ❑ Look ahead into the likely demands to be made on systems and what technology development is in the offing.
- ❑ Ensure that the system works. If it has problems, **GET THEM FIXED**. There is nothing more certain to turn users off than something that causes hassles and frustration.
- ❑ Basic to all this is ICT is part of education and we must not let barriers to learning develop.



**An Action Researcher Report from the 28 ICTPD
School Clusters Programme 2001 – 2003**

**Characteristics of Information Seeking
Behaviour:
A Comparative Study Around the Use
of ICT and Print**

– Jill Stotter

Characteristics Of Information Seeking Behaviour: A Comparative Study Around The Use Of ICT And Print

Jill Stotter

Introduction

“Research informing practice and practice informing research is a fundamental cycle in any sustainable profession.” (Todd, 2002)

New Zealand secondary schools are on the way to integrating Information Communication Technologies (ICTs) into lesson planning and teaching where appropriate; schools are becoming networked; much time and money has been spent on cabling, hardware, and professional development. There is a growing realisation that the focus must now be on teaching and learning practice if ICTs are to be successfully assimilated into the learning process.

The Action Research project reported here investigates the nature of the advantages and disadvantages (differences) to teaching and learning resulting from the use of ICT and print information sources. This study indicates there are marked differences perceived by both students and teachers in the use of both platforms.

Indications for further work in this area are signposted as part of the Discussion and Conclusion sections.

Research on the Information Process

As Todd (2001) comments:

The information environment of the twenty first century is complex, fluid, connective and interactive, diverse, ambiguous and unpredictable, and one that is no longer restrained by physical collections, time, place and national boundaries. (p 1)

A common thread running through all the relevant research appears to be that of process. Mastery of the research process involves the teaching and learning of information skills to enable students to achieve a level of information literacy. There is general agreement among researchers that information literacy can be defined as the ability to locate, use and evaluate information from a range of sources. As Henri (1999) puts it more succinctly “ Information literacy is: Mastery of the processes of becoming informed” (p 4).

In 2002, Dr Paul Newhouse from University of Western Australia developed an instrument for measuring the impact of ICTs on learning and teaching. He uses the term ‘computer literacy’ to describe the necessary attributes needed for students to engage in successful uses of ICTs . These are, knowledge, skills, and a positive attitude. Newhouse regrets the fact that a direct connection between ICTs and learning outcomes is not possible because “...learning is mediated through the whole learning environment and ICT is only one element of the learning environment” (p 53).

It is interesting to note that the terms ‘information literacy’ and ‘information skills’ were not mentioned in this paper.

Todd, Lamb and McNicholas (1993) carried out their qualitative interview-based research with Year 7 students using three control classes and two active classes. The active classes were taught information skills all the way through a piece of resource based learning. The three control classes were not taught the skills. They found there to be a measurable and statistically significant increase in learning achieved by students who have gone through a consistent period of teaching, using information skills strategies.

This was an important study for teaching and learning as it highlighted, for the first time, that the actual teaching of information skills improved academic levels. There have been significant positive spin offs from that research. For example, student ownership of the learning, the cognitive process becomes the structure rather than the content; teacher awareness of the need to expect and signpost the need to transfer skills from one subject area to another (Todd, Lamb & McNicholas, 1993).

Information Skills have been included as one of the eight Essential Skills Areas (ESAs) in the New Zealand Curriculum since 1993. However as yet there has been little evidence of whole school ‘buy in’ to the teaching and learning of this group of skills. This includes the many and various teacher training organisations in New Zealand.

Several researchers have examined the information seeking behaviours of students.

Fidel et al (1999) likened the searching of the WWW to visiting a huge shopping mall. Their analysis of students’ searching behaviour revealed the many difficulties encountered and highlighted again the need for training and development of a range of critical literacies.

Watson (1999) analysed the experiences of teenagers using the internet for both work and pleasure. His study showed that students’ self perceptions of their use of the internet were ones of confidence and competence but when using the web for structured school-based research tasks they lost that kind of confidence. This lack of confidence appeared to be directly related to their lack of competence in locating “trustworthy” information and dealing with conflicting information.

Carol Kuhlthau’s groundbreaking work with information literacy, “Seeking Meaning” (1993), uncovers another dimension to consider when examining students’ experiences with information: namely the affective or emotional domain. In her research Kuhlthau explores students’ information seeking behaviour and concludes that students deal with information on three levels: the physical – what they actually do; the cognitive – their thinking process; how they feel – their emotional experiences during the process. She discovered that students experienced ‘an incredible roller coaster ride of emotions’ as they moved through the research process. From vagueness with a new topic, to hope, confidence, uncertainty, anger, despair, or delight. She concluded that it would be important for teachers to know and understand the affective domain when setting resource based research tasks, and be able to make students aware of these emotions and develop strategies to deal with them.

Mackey (1999) in her Canadian study, explored the notions of teenagers reading across a broad range of media. She found that the readers were relatively indifferent to platform. They judged each text on its merits. This study challenges the stereotypical image of young people switched onto computers and switched off to print, and could have implications for ongoing collection development in libraries – print or online collections.

In his presentation to Borås University, Sweden, Todd (2002) discusses the changes in our information environment: print to digital, local to international, secure to uncertain, poverty to overload, service to empowerment. He talks about three major types of information: quality information which is sound and factual; misinformation which contains mistaken errors and disinformation which contains deliberate and misleading errors. He then builds his premise that all students must be taught the information skills to access, reflect on and evaluate their information.

In her presentation entitled “Information Leadership: Managing the ICT Integration Equation,” to the ICT Lead Schools Conference in Wellington July 2001, Lyn Hay introduces the idea of information leadership in schools. She saw the three key areas of information leadership as being information literacy, information policy and knowledge management. Lyn’s research in Australian schools has revealed that a high level of whole school understanding is essential for sound integration of ICTs into teaching and learning.

According to Jamie McKenzie (2003)

Ten years after introducing the Internet to classrooms, many districts and school are looking at ways to win a return on their sizeable investments in new technologies. [The]... impact on student performance has been weak or unsubstantiated at best. Ten years into this innovation, what essential question should we be asking in order to win better results and create a new, stronger generation of classroom practices? (p 1)

McKenzie continues in this article to talk about teachers and school leaders now having to play ‘catch up’ to fill the gaps and he puts great weight on pedagogy and the fact that “... it is effective teaching strategies and lesson designs that are most likely to win gains in learning.” (p 1)

Thus the international research literature suggests that any successful information use by students requires the teaching and learning of specific information skills within a process and within an authentic learning task. It also suggests the need for planned information leadership within the school. But what are the specific information skills in an ICT context? What do teachers and students see as the “value added” by using ICT based information resources? How do ICTs compare as sources of information with print and other media in teachers’ and students’ minds, and how can schools plan for sound integration of ICTs into teaching and learning? This research aims to give a small picture of a much larger issue for teachers and students.

The Present Study

The research questions focused on the following issues:

- Do students perceive an advantage to their learning through the use of ICT compared with print resources?
- Do teachers perceive an advantage to their teaching practice through the use of ICT as compared with print resources?
- Do teachers perceive an advantage to student learning through the use of ICT compared with print resources?
- What is the nature of the advantage or disadvantage to student learning through the use of ICT compared with print resources?
- What is the nature of the advantage or disadvantage to teaching practice through the use of ICT compared with print resources?

The teaching and learning followed the 6-step Information Process which is taught in several subject areas in the junior school curriculum at Rosehill College. Rosehill College is a decile 7 multicultural secondary school in Papakura, South Auckland, with a roll of 1900 students and a teaching staff of 120. Over the past two years the college has been a Lead School in the Ministry of Education's ICT Professional Development strategy which is a three-year contract funded by the Ministry of Education.

In May 2002 Rosehill College nominated 'Implementation of ICT throughout the school' as one of its areas for assessment. The school received an extremely favourable report back from ERO (Appendix 5).

At the time of the study, the principal researcher was employed at the school as Director of Library Information Services. A trained Teacher Librarian, Jill taught in the English Department, and administered an ICT Professional Development Contract with a cluster of local schools for the Ministry of Education. A passion for understanding about the use of ICTs as tools for learning, teaching and administration, has led her to continue to emphasise the need for information literacy intervention strategies in the classroom. This has now been highlighted by the Ministry of Education as part of its Literacy Leadership strategy, which encourages teachers to "use appropriate interventions with students to boost their literacy achievement through careful matching of and meeting of needs", and states that "Information literacy will become increasingly important as the NCEA has such a large component of assessment relating to research-based work." (Ministry of Education, 2002, p 3,21)

The design of the NCEA with a research component contained in so many subject areas at all three levels, has highlighted the need for information skill teaching and learning in all subject areas. A project-based approach has the potential to radically change the relationship between teacher and students and is characterised by [a shift from] transmissive approaches, to a more student-centred facilitatory structure in which the student knowledge development is scaffolded by the teacher.

The resource based learning model was used and information skills were taught within a genuine learning context throughout the research process. A study of the three

domains of student information-seeking behaviours - physical, cognitive and affective (Kuhlthau 1993) was included in this project.

The ‘voices’ of the student community and the teacher are heard throughout the study.

Data collection involved a combination of quasi-experimental and interview based research methods. Relevant school policies and the School Development Plan were looked at to assess the organisational framework in which the school operates.

The researcher chose to work with Kelly Anderson, a young second year teacher who is always enthusiastic about her subject, has a questioning mind, and is open to new ideas in teaching and learning. The units of work were planned collaboratively by the class teacher and researcher.

One of the two Year 10 classes was an advanced level class with above average students and the other was a mixed ability class. The two units studied were a) Reproduction and Genetics, and b) Ecology. In the first unit, Reproduction and Genetics, Class A used only ICT resources to access, use and present their information, and Class B used only Print resources. For the second unit, Ecology, Class B used only ICT resources and Class A used only Print resources to access, use and present their information to the class. In this way each class received the same learning and teaching opportunities. The classes are referred to as *Class A (Print)* and *Class B (ICT)* for Topic One, Reproduction and Genetics, and *Class A (ICT)* and *Class B (Print)* for Topic Two, Ecology.

Both classes completed their two studies using a 6-stage information process popularised by Gwen Gawith (1999) and others. Information skills such as questioning, note-taking, analysing, organising, and presenting were taught to all students throughout the process (Appendix 4).

Data were collected in several ways: diaries to record classroom observations by the classroom teacher and the researcher; informal interviews with students during the process; formal questioning of the same randomly selected group of students from each class at the end of each unit of work.

The sources of information were Kelly Anderson (classroom teacher), the researcher, the students and their completed work, and the students and their comments from both the informal interviews through the process and their comparative comments at the end of the study.

To maintain a level of transparency during the project, letters on school letterhead were sent to parents and caregivers, setting out the process and signed by the teacher and researcher. Parents were also given an opportunity to seek more information from the school if required.

Results

The results from the study are reported in two stages. What happened during the process with reference to each topic, followed by a sample of Student Voices and Teacher comment.

Topic One – Reproduction and Genetics

(refer to Specific Learning Outcomes and the Research Study Outline - Appendix 4)

- a) Pre-test – the standard pre-test for this topic was carried out with each class at the very start of the topic.
- b) Absorbing prior knowledge from a video.

The video on ‘Reproduction’ and the ensuing whole class oral discussion elicited enthusiastic response from both classes and excellent recall of facts was demonstrated in the follow up cloze exercise (appendix 4). The cloze exercise tested all students’ word knowledge and understanding of key concepts as well as generating useful discussion.

- c) Students were given a list of 10 topics from which to choose (appendix 2). They could choose to work with partner or on their own. Most worked in pairs.

During the Defining stage of the process students were asked to ‘brainstorm’ the topic ‘Reproduction and Genetics’. To do this, *Class A – mixed ability* used non electronic resources – pen and paper, while *Class B – advanced* used only electronic resources – the software program Inspiration – an information mapping and organising tool.

Class A (Print) used the think, pair, share method of brainstorming. They used their prior knowledge from the video to build up their brainstorm, mapped their information, and developed keywords, key concepts and the key questions. *Class A* felt secure using the non electronic method of brainstorming.

Teacher: “The video and the subject matter hooked this class in. They feel good about what they are doing. It’s familiar territory.”

Most students were able to use their prior knowledge to form keywords and their questions, although slow to develop, were thoughtful and in line with the information resources. The teacher and I spent longer than planned working with groups to broaden their thinking about their topics. Mostly the attitude of the students was positive.

Class B (ICT) learnt the basics of Inspiration very quickly and worked with great enthusiasm. They mapped their ideas and were highly motivated by the presentation choices available to them – that is, images, choice of templates, colours, shapes, etc. to develop keywords, key concepts and key questions. Many students were reluctant to discuss key concepts for their own research topics and seemed extremely reluctant to rework questions to improve their depth. Consequently many of the questions were either shallow or unrealistic. Several students, boys in particular, resented any intervention, or just in time teaching. There was a know-it-all attitude at the keyboard. For example, there had been some revision teaching of forming key questions from keywords.

Topic – Twins:

- R Is this question going to get you enough information?
S Why what's the problem?
R Remember we talked about open and closed questions?
S Yeah.
R What sort of answer will you get from this question?
S One word. It's closed.
R Ah – you remembered. What can you do about it?
S Think of another question
R Well let's look at your keywords again.

Teacher: “This is an advanced class but they're not putting any thought into their questions. They think they know it all. It's the thinking that is not happening. They can't wait to get onto the internet.”

This pattern was repeated several times with Class B.

Class A (Print) students were on the whole much less resistant to revision teaching and to changing and developing their questions.

Before the locating and selecting stage of the process revision teaching of basic use of relevant resources was done with each class. Both classes were familiar with the 'Dot Jot' method of note taking which is promoted in some subject areas, and drew up their own note taking tables in their Science books (Appendix 6).

Class A used print resources – books, current articles from the Information File, and the school library supplemented by quality material from National Library. Basic revision of use of keywords, the school library catalogue (we had to use this as no other way to access school resources), contents and index use.

Class B (ICT) used the internet and online databases – World Book online, INNZ online (some students queried use of INNZ as the documents were print resources. I replied that really all resources are print but the method of location was electronic). Basic revision of appropriate search engines (Google), and keyword use for search terms to narrow down the search was given.

Class A (Print) used resources well in that they located relevant information from the shelves, National Library books, and particularly the Information File to answer their questions. However, having found the information, many had difficulty using their keywords to skim the text to take notes. A lack of reading skills made several students frustrated and then angry. Some would not persevere with note taking but resorted to copying the text. The researcher and teacher worked to move students away from the security of information in the encyclopaedias to specific print resources.

Student 1

R How are you going?

S Yeah good. Just ruling up chart [note-taking]. I want to do it properly.

R Have you found any good information yet?

S Yep. Here. (He writes his first question at the top of his chart, puts the keywords underneath and starts copying out information from the book into the chart.)

R What about your notes? Remember we talked about writing jots of a main idea, not copying whole sentences. Use text-message lang.

S Yeah, yeah. (Started looking through the book.)

Student 2

Two girls – one of whom was a twin herself – had chosen the topic ‘Twins’ and were writing some really interesting questions to ask at an interview with her mother:

S1 Miss, what do you think about our questions?

R I think they’re really interesting. Have you made the time for the interview?

S2 Yeah, but K’s really nervous about these questions. She thinks they’re too embarrassing. Mum won’t mind though. I mean she had me and my sister.

S2 Yes I had twins too and I wouldn’t mind if I was asked those questions.

S1 OK.

The question referred to was, “Did your babies have their own placentas or did they share one?”

The researcher returned later to find that *Student 1* had ripped the page out and was ruling up another chart with great care. He continued to be very resistant to any assistance and continued to copy text. On the whole the class teacher and researcher had to work extremely hard with this class right through these Selecting and Using stages. Several students could not manage the selection without copying. Others just could not get the hang of the keyword to key idea in note form.

Class B (ICT) launched into searching the internet with great enthusiasm and confidence. Several boys were unwilling to take any advice and only wanted to use ‘Ask Jeeves’ where they can write their whole question with no need for keywords. Several started to change their questions to fit to the websites they had found. There was resistance to using the note-taking method. Several students (mainly boys) were going straight to PowerPoint from a website, and cutting and pasting onto their slides. Displays of impatience and then irritation with the process were frequent at this stage.

Student group 1

- R You seem to be getting heaps of information.
- S Yeah. Heaps of neat sites. Look at this diagram Miss. Look at the detail.
- R Yeah. Will that help to answer one of your questions?
- S Dunno.
- R Where are your questions? Let's have a look at your notes.
- S Taking notes sucks. Waste of time writing it all out. Diagrams are great though.

Student 2

- T How's it going?
- S Found loads of stuff
- R Why are you on PowerPoint? What about the notes and your storyboard?
- S Oh, this is how we do it in Social.
- R But where are your notes?
- S Can't be bothered. Takes too long. This is good.

The reference to 'Social' was to Social Science. These students had previously presented biographical studies using PowerPoint in Social Studies. The researcher referred the student to the class teacher who then called all the class together to discuss the way forward through the process. The arrogant and know-it-all attitude from certain boys in Class B remained throughout.

Sifting and selecting useful information remained a challenge.

Student 3

- S Hey Miss look at this!
- R Is that a personal website?
- S Yeah look at all the stuff. All about her miscarriage. Yuk. This is the second one I found about their own stuff. Look at this one about 'My Baby'.
- R Very pretty isn't it?
- S Yeah but there's no information in it, only her feelings and poems and things.
- R Go back to your search. Keep looking.

Some students were overwhelmed by the amount of information they found and had little idea of using a search string to narrow down the search and resented any assistance. For an Advanced Year 10 class to whom this process was not a new concept, the amount of resistance to following an intellectual thinking process through selecting and recording the information to answer their questions was noticeable.

Both the class teacher and researcher became increasingly aware of gender differences during this stage of the process. Most *Class B (ICT)* girls were able to settle to work

quickly without fuss. They were able to work independently, and asked for help with specific issues when necessary.

Class A (Print) students presented their information on their Science Boards which were used throughout the Junior School for just that purpose.

Class B (ICT) students had a choice to present either in PowerPoint using the data show machine in their classroom or the E-learning Room.

Once *Class A (Print)* students had collected their information in note form, recording the sources as they went, they worked to assemble their questions and answers on the boards. Some modelling of sound layout and the skills needed for effective presentation of information to an audience was given at the start of this stage, followed by class discussion. Many students had some understanding of shape, colour and effect from Art classes. Each group completed a layout design before working on their display boards.

Students in this class worked extremely well to assemble their information. They took complete ownership of their work and cooperated to complete the boards on time. The preparation of the oral presentation was another matter. Some students refused to either prepare a script or rehearse their presentations despite being given time for this. Others just read their questions and answers in monotonous tone, with little eye contact and interaction with their audience. The few well prepared and interesting presentations both oral and visual stood out very clearly.

Class B (ICT) students prepared a slide show presentation consisting of a maximum of 6 slides – an introduction, 3 questions, a conclusion and one extra. The skills of using PowerPoint were taught, despite many insisting they knew how to do it. As part of the process each group had to prepare a storyboard before starting on PowerPoint. This caused much resentment and negativity until the class teacher talked about storyboarding being an integral part of the film production world. A slightly improved attitude followed.

A similar resistance to preparing a script and rehearsing of their presentation was very evident, particularly amongst the boys. Again, despite the teaching of PowerPoint as a presentation tool that needs explanation and thorough scripting to expand on the bullet points, many students overlooked this. Consequently their slides were hard to read (font too small or illegible choice), contained far too much information, lacked definition in colour and layout, backgrounds too busy, or were uninteresting for an audience. These presentations seemed to fit the term ‘PowerPoint-lessness’ (McKenzie 2002.)

The students who responded positively to the PowerPoint teaching produced some quality work, especially when using quite complex diagrams to explain their information and when interacting with their audience to answer questions.

Topic Two – Ecology

In this unit *Class A* was the ICT resources class and *Class B* the Print resources class. Exactly the same process was used for each stage of the study throughout. As before,

the results were written for each stage of the information process. (See Research Study Outline - Appendix 4)

While the content of the Ecology video used for prior knowledge, was not as riveting as the Reproduction one, for either class, *Class B (Print)* (Advanced) focussed well, completed the cloze exercise with ease and participated fully in the following whole class discussion. *Class A (ICT)* (mixed ability) found the content harder to grasp and their understanding of the vocabulary and key concepts was thoroughly tested. They asked useful questions in the oral discussion but produced limited brainstorms using Inspiration. There was little evidence of transference of prior knowledge from video and discussion. Although the class understood how to use the software they were unwilling to map or group their information to take it one step further, but preferred to explore the images and shapes part of the programme.

Class B (Print) produced excellent brainstorms and mapping on paper, indicating significant transfer of prior knowledge and this led to sound use of keywords and key concepts. Students chose their own topics from a list of six. (Appendix 2)

The limited brainstorms of *Class A (ICT)* led to limited questions requiring factual answers – what is, what are the causes of, etc. A lot of teacher input was required here. For example:

- R Hi [removed] - you're doing Global Warming. How are you going with your questions?
- S Yeah I've got three now
- R OK. The first one's great. What is Global Warming? They all start with 'what' so do you think we could think of other starting words? How or why?
- S How does it happen?
- R Yes great. Remember how we talked about using the nouns or names instead of pronouns like it, they, them?
- S Mm – shall I change it to 'How does global warming happen'?
- R Great.

This quite intense level of teacher interaction was needed by many students when forming their own questions, particularly for this topic.

Class B (Print) managed their questions much better for this topic and worked independently asking for help when needed. The attitude of the boys in this class was noticeably improved this time round.

Locating the information to answer their research questions got off to a much smoother start for both classes. Although *Class B (Print)* made really sound use of their keywords to locate information, *Class A ICT* seemed unwilling to do this. As with the other class, many insisted on using Ask Jeeves.com and typing in the whole question. When using the information from the many and useful sites they found, many students of both gender had real difficulty understanding enough of the vocabulary used to make useful notes. Their experience with INNZ material was better as the information was more specific and at an easier level. Again gender differences

were marked. The girls would persevere with the text while some boys became really frustrated and angry that they were not able to copy and paste. Other boys kept clicking off into other sites – games, cars etc. Of course it may have been ‘end-of-year-itis’ setting in too. For example:

Student 1

R How’s it going guys?

S1 Boring. Stuff’s too hard.

S2 Don’t understand the words

S1 Can we change our topic?

S2 Hey, [removed], look at this! (This was a Holden car site.)

Despite having been advised to include ‘K12’ in their search string to select only educational material, many students did not do this and found the online information for topics such as ‘Deforestation’ too complex as it was contained mainly in academic papers. Two groups changed their topics because of this.

The class teacher and researcher called this ‘the stuck stage’ for the mixed ability *Class A. ICT*. Also, the automated catalogue in the Library was down and students had to rely on the Library staff’s knowledge of the Dewey system. With the resources from National Library and the School Library resources, especially pamphlets and current articles clipped for the Information File, *Class B (Print)* students were able to locate sound and relevant information to answer their questions. Their understanding of the process was vastly improved as was their attitude to their research. It was interesting to note that once the automated catalogue was up and running again, most students were unable to distinguish the difference between subject headings and keyword searches. Their search terms used were too specific for a Library catalogue. For example, in the topic ‘a typical bush community’, students would search for ‘rats’ directly, instead of the subject heading ‘rodents’, or would put in a string of search terms. The lack of cross referencing available in print material frustrated some who compared it with the ease of accessing material from the web. (However, in the ‘student voice’ section these same students thought internet searching was much harder than print searching).

When preparing their Presentations, *Class A ICT* were again keen to get onto PowerPoint before completing their storyboards, and similar “this is the way we do it in Social” comments were heard. The motivation to make the slides memorable was again evident but most students were good natured about having to put the content in before making it ‘flashy’. The technical understanding of PowerPoint (i.e. background, animation, layout) was high from more than 50% of the class. The next stage of preparing the script to speak from was not as motivating and gender differences in attitude and perseverance were evident once more. Considerable teacher time was spent here. Several groups never achieved a working script.

Meanwhile, *Class B Print* was hard at work on the charts. After an initial 20 minute discussion/lesson on layout technique, the groups got to work, grumbling about having to write and draw their text and diagrams by hand. Their layout skills were very sound with colour and shape contrasts clearly thought out and discussed. Even the hand

drawn diagrams looked effective with contrasting frames. The class teacher and I were again particularly struck by the high standard of interaction and cooperation between and amongst the groups throughout the classroom at this time.

The actual PowerPoint presentations, (after huge difficulties locating a spare suitable room for *Class A's* slide shows), were disappointing. Not so much in visual effect but certainly in quality of information, knowledge of their topic, and quality of oral speaking. There was little evidence of attempt at rehearsal and even less evidence of a prepared script to enlarge on their slides. Most groups were extremely proud of their electronic work and were highly motivated to show it to the class. It was interesting to note that 2 groups of girls, who were initially unwilling to work in PowerPoint, actually followed the instruction given and ended up with modest but effective presentations. Although they read their slides they were also able to expand on some points. (see Student Voice section).

Class B (Print) on the other hand did seem to learn from their first time round. Their chart presentations were on the whole of sound quality, both visually and academically. There was evidence that about half the class had rehearsed their oral presentation and were able to speak with conviction and understanding about their topics. Their attitude was positive throughout.

Student Voices

The following comments are examples of students' reactions at the end of the process.

Print –

Comments on Locating, Selecting, Using

“Had to use index and look through heaps of pages.”

“Diagrams were good and catalogue easy to use but had to write and not print off.”

“Hard to find right books. Information File easy to use and articles up to date. Not ‘crap’. What we found was relevant.”

“Taking notes sucks. Waste of time writing stuff out.”

“This time I did take notes. Books easier to find information. More variety.”

“Books in library at our level. Better quality information.”

“All the paper is annoying to manage.”

“Books simpler. Internet gives you too much stuff you don't want.”

“Boring. Taking notes takes too long.”

“Had to change my questions. Books didn't have the right information.”

Comments on Presenting

“Visuals hard to make look nice.”

“Typing easier than writing. Charts not as interesting to look at.”

“Better on a poster. You can see all the information at once.”

“We liked putting our chart together. We did this at primary school though. Nothing new.”

Electronic –

Comments on Defining, Locating, Selecting, Using

“Loved using Inspiration. Made my ideas clear.”

“Liked using pictures and diagrams instead of words in Inspiration.”

“Hard to find stuff you really want. Too many ads.”

“Can be annoying. Web sites not always accurate especially personal ones. This girl had one all about her miscarriage. Yuk. Photos too.”

“Too much stuff”

“Have to sift through lots of other stuff.”

“More interesting to look at websites than books.”

“Felt I was really doing something when looking at websites. Not just reading”

Comments on Presenting

“Easy to copy and paste onto slides. Broader information. Easy for images. Up to date stuff.”

“Diagrams great to insert. Better software here than at home.”

“Can present nice and quickly.”

“Have to know how to use it. Don’t like the script idea.”

“Don’t like dot jot notes. Don’t see the point.”

“Hard to get info into bullet point size.”

“Great to type stuff. Much faster than writing.”

Discussion – Addressing the Research Questions

a) Do students perceive an advantage to their learning through the use of ICT compared with print resources?

Working from students’ responses, and teacher and researcher observations, most students would appear to view the ‘advantage to their learning’ with ICTs as being closely linked to their personal enjoyment of and engagement with the learning process. This reiterates the similar findings of Watson (1999) in which students’ self perceptions of their use of ICTs were of confidence and competence. Observations of

students throughout the process by the teacher and researcher did not match the students' perceptions. Especially regarding competence levels.

What motivates students to participate so much more positively when using ICTs to complete school-based tasks? Very few students believed themselves to be unmotivated when working with ICT. Students themselves observed that when accessing information using ICTs, they were more inclined to share material both within their own group and with others in the class while when working with print material they were more inclined to keep the information to themselves. "... because books are separate things" was one helpful explanation. This is perhaps indicative of the potential for teaching and learning of the interactive and dynamic nature of online learning.

Some students did prefer the print environment as it made them feel safer "...you know where you are with books." This would relate to Kuhlthau's (1993) study of the affective domain. These students tended to be the less able but conscientious ones who were prepared to work carefully through the Information Process and accept guidance from the teacher.

An interesting gender difference was noted. Those students who demonstrated arrogant and know-it-all attitudes were more likely to be boys, especially boys who were big computer users at home, into gaming, and surfing personal interest sites. However, these students seemed to make less progress in either platform, perhaps because they were unable to distinguish between using computers for their personal leisure activities and for their learning in a school environment (Watson, 1999). A negative attitude to instruction seemed to block real progress. A subject for further research could be whether this attitude is a transitional stage specific to this generation sandwiched between print and electronic worlds.

Several students using ICTs were negative about having to take notes from the screen using pen and paper. They insisted they were able to cut and paste the main points straight into their page. "It's what we've always done, even at primary school."

This negativity was not as evident with either group when using print resources.

Even after going through the note taking process, few agreed it was necessary. Their own perceived confidence and competence with using online information to answer their research questions did not match their actual use and minimal understanding of keywords and key ideas. The language skills needed to synthesise information from several different websites were not apparent.

A number of students took the view that using either print or ICTs was a false situation anyway. They would have preferred to be able to use whichever tool was appropriate for the topic, environment and so on. As one student noted, "it was frustrating to have to use one or the other. It wasn't real."

b) Do teachers perceive an advantage to their teaching practice through the use of ICT resources compared with print resources?

The increased levels of student motivation and on task behaviour demonstrated by students using ICTs are very helpful to teaching practice. The students using ICTs

participated willingly and were generally interested in the task. This engendered a positive attitude in the classroom and had the effect of minimising classroom discipline issues.

Teacher: “Even the kids who didn’t want to take notes were still positive overall. They just did it their way and got low marks. We need to capitalise on this wanting to learn with ICTs.”

For many students the lack of basic literacy skills (i.e. reading in chunks, familiarity with vocabulary, ability to seek out key ideas) to answer their questions, was a major setback to their selecting and using information effectively in either platform. Several students became irritated that they were not allowed to cut and paste from the Web.

Teacher: “I think they have been allowed over the years to search the net and cut and paste willy nilly, even with CD ROMs. They’re not used to thinking critically about their information.”

“From observing my students using ICTs in the two classes, I think that information online requires a much higher level of filtering and critical evaluation. A lot more teaching of specific skills is needed here, and I guess this applies to Science teachers as much as English teachers.”

The continued resistance of students to instruction relating to effective use of technologies throughout the information process was puzzling to the classroom teacher, as in many cases instruction was necessary because there was little understanding, knowledge or experience of a particular technology (egg Inspiration, Library Catalogue, internet searching).

Using ICTs as a normal part of everyday teaching and learning does require certain essentials for classroom teachers. Essentials such as a reliable school network, reliable access to the internet, flexible access to machines when needed, space for small groups to work at a machine together (the machines in the e-Learning Room were too close together for small group work), and flexible classroom furniture.

These essentials were not always in place during the study. There were several sessions when the network/internet was down, machines were not available where and when they had been booked. Students had to be sent to work in other teachers’ classrooms and were widely scattered through the school to complete the study. This was an added stress for the classroom teacher.

Teacher: “I’m responsible for these kids and sometimes I just couldn’t get to them all in a period. These are the times when all you want is a huge lab. Full of computers – one per student. Then you can keep tabs on them.”

Access to machines where and when needed remained a major issue throughout – even right up to the Presentation stage.

The staged process posed its own challenges.

Teacher: “....teaching this way was frantic in class. I couldn’t do it with every topic. It’s so teacher intensive. The students’ frustrations all needed to be dealt with immediately. Marking their questions was a nightmare. If Jill hadn’t been there it

would have been impossible ... it needs two hands and two heads,” and “ ...okaying each group to go onto the next stage became too hard. I’m sure some went ahead when they shouldn’t have. The Library staff were certainly a great support for the Locating stage – both print and ICT.”

Having several groups carrying out different tasks at different times and sometimes in different places can be extremely concerning for many secondary teachers. They are generally used to their classes all doing the same thing at the same time. Independent group work happens often in the primary environment but can be a real challenge for secondary schools with bells, timetables etc. Increased use of ICTs in learning and teaching may be forcing these organisational changes for secondary schooling.

An unexpected advantage to teaching practice for both the print and ICT classes was the improved results in the post test results in the Reproduction and Genetics unit. The use of an inquiry based model of teaching and learning rather than the more teacher directed style used in previous years - pre-test, video, notes, post-test - showed improved marks across the two classes. Although not directly related to this print/ICT study this finding could have implications for teaching and learning in the secondary school environment.

Overall, the major advantages to teaching practice through the use of ICTs would seem to be the greatly increased motivation of the students, along with a more positive student attitude towards learning. As a consequence the teacher was able to teach and facilitate more effectively.

c) Do teachers perceive an advantage to student learning through the use of ICT compared with print resources?

It was observed that many students demonstrated a level of resistance to using the selecting, note taking, summarising, and analysing skills they had been taught in Science class time. However, by the second time through the process, these skills were being talked about and used more effectively. This was more evident with Class B (Advanced).

Teacher: “From my experience, using ICTs can encourage shallow thinking, shallow research and shallow presentation, unless the thinking skills behind the particular technology are taught and practised. We found that many students had a low level understanding of the use of PowerPoint as a multi media presentation tool and lacked the language skills to use it effectively.”

The transference of information skills from a Print platform to an ICT platform did not happen automatically for many students. In 1993, Todd and McNicholas. found that “...students appear to be very willing to transfer the skills with them as long as you clue them into the fact that you’re expecting it to happen.” For this to happen in a secondary school there would need to be a whole-school targeted and planned approach to information literacy to produce an information literate school community (Todd 2002, Henri 2000).

The fact that the ICT users were more inclined to share information found on the web and interact effectively within their group was very evident. This was perceived as a potential advantage to student learning with ICTs.

Teacher: “. to see the kids working together and sharing stuff between their groups was great. I hadn’t seen that before.”

The students recognised this increase in collaboration and social interaction too. Classes using print information tended to keep their information to themselves and within their group. Group interaction with print information tended to be much more passive. One person with one question. There was not the same group excitement.

Teacher:

“Online information enables several students to have access to the same information at the same time. This is a great help for the resourcing of our topics. With books, only one person or group can have access at one time. I guess this is why they can talk about their work more and share ideas and that must be good for student learning and teaching practice.”

As well as greater social interaction around information students were able to complete tasks at home. The more able ICT users quickly emailed work to their home addresses and worked on it for homework and in their own time. This would be another example of increased motivation for learning with ICTs. Although Print based work was also done at home, students were working in a vacuum, usually with just one question. (see p 29)

Teacher: “Using ICTs certainly enables students to learn more flexibly. Lots of kids were emailing stuff home and working on it at home. This will be even easier when we have remote access in place.”

All the students questioned agreed that using technologies has made their learning more interesting. Their confidence with pushing buttons and exploring new ICTs kept them on task. However, this increased engagement did not reflect improved learning in either topic. Increased engagement was reflected in quality group interaction, willingness to work independently, and sharing of and talking about online information sources (Svensson, 2000).

When students were selecting and processing relevant information in a group there were lots of instances of positive discussion and interaction observed during this study.

Teacher: “This has made my teaching time more productive and enjoyable as I could move around and interact with the groups. I guess this is what is meant by facilitation.”

The increased engagement was also reflected in the students feeling positive about what they were doing, and that always makes for a positive atmosphere in the class, as long as they were left to work on their own.

d) What is the nature of the advantage and disadvantage to student learning through the use of ICT compared with print resources?

A major and already mentioned advantage to student learning through the use of ICT lies in the increased motivation for students to settle to work. Students using ICTs were more likely to remain on task without expressing their boredom through

distracting classroom behaviours. But many students remained resistant to the teaching of the information skills that would enable 'better' use of the technologies themselves.

The increased interaction amongst students that occurred whilst working in small groups with ICTs could be seen as both an advantage to student learning and as a disadvantage to student learning. Several researchers (Tentin 1996, Laferriere et al. 1999, Barak et al. 2000) have all made claims from their studies of increased student motivation when working with ICTs, but none of these studies included a control group component. Subsequent studies that *have* used control groups offer conflicting results. Svensson, (2000) and Ockaret,(1999) found that when small groups used electronic tools, it was not the machines or software per se that increased the motivation, but rather aspects of social facilitation and the collaboration process that were important.

Alignment with the students' digital world (Strommen, 1992) could also be a factor here. The task becomes more authentic and meaningful to the student.

Increased motivation for learning does not necessarily lead to improved or enhanced learning. "... the impact of ICTs on student performance has been weak or unsubstantiated at least" as Jamie McKenzie (2003), and Newhouse (2000) so aptly remind us.

The flexibility offered by online learning – any place any time - also aligns with the student digital world and can encourage students to work independently. Again, there is no guarantee of quality learning taking place.

The overall lack of or at best low level of basic literacy and information handling skills demonstrated by the Year 10 students using ICTs was viewed as being a major disadvantage to student learning. The change in ability and attitude from dealing with print on a page and print online appeared to be a major difficulty for these Year 10s. This differs from the findings of Mackey (1999) in which she found her readers to be relatively indifferent to platform. In this study online text did not seem to be taken as seriously as page text, hence the tendency to cut and paste and the overall lack of critical thinking about the information and the process. Students viewed the technologies as making their lives easier and seemed to misunderstand the point of needing to 'process' and think about their online information.

The resistance to instruction about effective use of software programmes such as PowerPoint, indicated that since the introduction of multi media programmes, teachers themselves may have not really understood the powerful learning that underpins the software and many would not be able to use the program effectively themselves. Thus many students may have been largely self taught, and are more easily seduced by media effects.

This also raises the question of whether school students living in the digital age of instant access to the world through a cell phone, Jet Stream and Wireless, are willing and able to see the technology as a learning tool and not a means to instant gratification. In Watson's study (1999), he referred to differences in students' self perceptions when using the web for pleasure and when using it for structured school-based tasks. The findings from this study also reveal these differences. The Year 10 students were hugely 'gung ho' about 'getting onto the net' as were the students in

Watson's study. However, the structured research process irked many of them and the failure of many to retrieve relevant information from a variety of sources caused their self confidence to diminish early on. Several became negative and surly with the learning process. This was not noticeable when they worked with Print resources. This abrupt change of mood and attitude aligns with Kuhlthau's research (1999) on the affective domain.

e) What is the nature of the advantage and disadvantage to teaching practice through the use of ICT compared with print resources?

Advantage to teaching practice through the use of ICTs comes from greatly increased student motivation to settle to work and remain on task. On task behaviours enabled the teacher to teach in a positive classroom atmosphere without becoming distracted by negative classroom behaviours. As mentioned already, the lack of ICT infrastructure can cancel out this advantage and lead to serious teacher frustration and cynicism.

Alongside the increased motivation of students run the many examples of positive social interaction between and among the students, and their willingness to work independently within the group. Effective independent learning was dependent on the setting up of a process beforehand, the teaching of information skills within a learning context and strong facilitation by the teacher throughout. This advantage certainly enhances the class teacher's role by enabling positive and authentic learning and teaching experiences (Todd, 2002, Henri, 1999).

Teacher: "I don't think I had realised how much actual skill teaching had to be done all through the research process. You couldn't let them just go off and find their information. I thought they knew more about how to search on the internet and pick out main points. I thought they would have learnt to do that in other subject areas, like English."

Whether the class time taken to teach the skills, or at least to revise and practise them in a subject-oriented context could be considered to be a disadvantage to teaching practice, is a moot point, and certainly time is of the essence when managing a junior secondary school curriculum. As shown by the teacher's comments, this teaching time was not usually factored into the process and therefore seemed irksome to teacher and students alike. Time for skill teaching within the process needs to be built in when planning units of work. (Todd & McNicholas, 1993, Todd, 2002).

The facility for students to have access to such an amount and such a variety of information is on the one hand an advantage for teachers. It takes away the 'scarce resource' issue. All students have access to material. However, on the other hand, there is now too much material for teachers to view beforehand and 'vet' as with book resources. The book marking of specific sites on big school networks requires too much teacher/technician time. A selected list of previewed sites is the best teachers can do, but even that is limiting and restricting for students. It can actually defeat the purpose of the WWW. By Year 10, students need to be able to search the WWW effectively. This is now a life skill.

Todd (2002) talks about three types of online information. Quality information, misinformation and disinformation. During this study many students experienced all

three types, especially disinformation in the Reproduction topic. Many of these Year 10s were not equipped with the skills to search the internet and retrieve relevant, quality information to answer their research questions. They resorted once again to the 'info-glut' strategies of copying and pasting without processing and comprehending.

Conclusion

The low level of literacy skills and strategies and information literacy demonstrated by both classes when using online resources is a cause for concern for educators. The expectation was that Year 10 students would be able to attack the written word online with some success using keywords and key ideas from their questions as tools for comprehension. For too many of them this was not the case. When dealing with online information negative attitudes to information processing became apparent. However there was greater willingness to process and understand the text from book resources.

Although Information Skills have been included as one of the eight Essential Skill Areas (ESAs) in the NZ Curriculum (p.18) since 1993, there is much evidence from this study to support the idea that information skills are not yet being taught at all levels in all subject areas to *support* literacy and the use of information technologies.

The higher thinking skills of note taking, summarising, analysing, critical thinking and synthesising of information from several sources, were not evident in the practice of many of these Year 10 students.

Common to both platforms was the attitude of students to skill teaching through the process. Many in this study openly regarded the ongoing skill teaching as having little to do with Science and more to do with English or Social Science. The idea of a body of generic skills or Essential Skills (ESAs), that are used in all subjects at all levels had obviously not yet penetrated into teaching and learning at Rosehill College. And this is despite the clear messages given in the curriculum document ten years ago. As long ago as 1993 the Todd and McNicholas study showed that teacher-talk and expectation of transfer of skills across curriculum areas was needed for this to happen. Change in this area of teaching and learning would appear to be slow

The gender differences referred to earlier in the male students' negative attitudes to receiving instruction with ICTs, demonstrates that for some years now, students have had more knowledge of Information Technology than their teachers. Many students have become used to a position of ICT power in the classroom. Many teachers refer students in their classes to their peers for help. Some schools have a system of highly trained classroom/syndicate/department 'experts'. While on the surface this may seem a great idea, teacher understanding of the process can be masked and very often teachers never increase their ICT skills and understanding. Once again, school and teachers have a lot of ground to make up here. They need to ensure their teaching staff are 'right up there' in their knowledge and understanding of the learning and teaching power of these tools. This is their world too.

Research has shown that unless there is shared knowledge and understanding of the need for an information literate school community, and the information literacy skills are actually taught and practised as part of whole school process, learning with ICTs may be shallow learning. It may lack critical thought (Henri 1999, Todd, et al. 1993).

The findings from this study indicate that for several years now students have been allowed to “run before they learnt to walk” with ICT. Probably because of a lack of ICT skills, knowledge and understanding in the school. There is a lack of what constitutes quality learning with ICTs, and an absence of a whole school vision of quality planning, teaching and learning with ICTs. A quantum leap by educators in mindset and skills development for teachers and students will be required to reverse this situation.

The need for sound and strong information leadership (Hay, 2001) in every school is apparent. Hay calls this time ‘a new era’ and asks “Who prepares and manages the implementation of policies, strategies and information flows in your school?”

Hay is adamant that these are the issues that need addressing now in schools, rather than the preoccupations with technical agendas which have been the driving force for so many schools over the past ten years or so. These agendas have so often not reaped the educational rewards across the curriculum that governments; principals, teachers and parents had so hoped for (McKenzie, 2003).

This study has confirmed that when teaching and learning with digital resources there is even more need for all students and teachers to be working through a planned and targeted whole-school ICT and learning development programme.

Some frustrations/barriers to the study at this time were related to technical issues such as the reliability of the network and internet access. Even more frustrating was the inconsistent access to machines – and this in a relatively well resourced school. Again some of this problem can lie with teaching styles. With thought and discussion about ICTs and pedagogies, timetabling and placement of machines, secondary schools and their teachers can ‘work smarter’ with scarce resources and not constantly expect every student to be doing the same thing at the same time. In the real world, when using a mixture of print and digital resources, and working collaboratively, students will only be using machines when they really need them. Unfortunately, the ‘computer lab’ mentality is still alive and well in many secondary schools.

Student comment about the unnaturalness of using only print or ICT resources, was heartening to both the teacher and the researcher. It indicated that students in the 21st century are able to glimpse a world of learning in which learners and teachers will choose the tool most suitable to the particular task. ICTs may not even be an option!

Significance of the Research

School-based research dealing with the impact of ICTs on teaching and learning practice is valuable not only to a school community but also to the wider academic education community. New Zealand secondary schools are well on the way to integrating a range of ICTs into lesson planning and teaching programmes where appropriate; schools are becoming networked; time and much money have been spent on cabling, hardware and professional development. There is a growing realisation that the focus needs to be on sound learning and teaching practice if ICTs are to be successfully assimilated into teaching programmes. For all these reasons it was timely to investigate the impact of ICTs on learning and teaching.

The students involved in the study were given major insights into learning using information literacy skills to access and use a wide variety of information sources and resources.

The teacher involved in the study gained increased understanding of information literacy in action in the classroom and library. Improved results in the regular topic post-test reinforced her belief in the value of inquiry-based learning.

This was a micro study and has not addressed the next steps. How do educators begin to address the pressing issue of creating “information literate school communities” (Henri, 1999) in the 21st century?

Erik Strommen as long ago as 1992 talked about the ‘revolution that technology is creating in education’ and how it has “revolutionised American culture” and “left educators rushing to catch up.” Strommen saw schools having been “estranged from society” and the students as being “caught in the middle of two worlds.” Their multi dimensional world outside of school and their linear, knowledge based school world.

Strommen advocates ‘deep change’ to teaching and learning in the form of Constructivism (Vygotsky, 1978) and the teaching and learning of the ‘new child’ through Constructivist principles.”

This ‘deep change’ to our education system would of course require major changes to teacher training establishments. These are presently staffed by a majority of teachers and lecturers who were educated in a Print age themselves. Their graduates therefore are probably more like their predecessors than the students they are going to teach.

“In this next century, an educated graduate will no longer be defined as one who has absorbed a certain body of factual information, but as one who knows how to find, evaluate and apply needed information” (Brevik, 1998, p 2).

“Our ability to be information literate therefore depends on our willingness to be lifelong learners as we are challenged to master new technologies that will forever alter the landscape of information” (Plotnick, 1999)

The Ministry of Education Literacy initiatives presently in many New Zealand schools place emphasis on reading and writing strategies. These have been keenly taken on board by school managements and by classroom teachers. The material and strategies used are familiar and therefore non-threatening to both classroom teachers and their trainers. No new resources are required and literacy has been able to be smoothly timetabled into classroom programmes.

However, this present study has pointed out the increasing need for skill-teaching intervention strategies to be given with online text as much as with hard copy text. There could be a need here for teaching students how to analyse online text; how to use keywords and read online text; how to ‘chunk’ text online and how to critically evaluate it using Todd’s three types information model; and how to synthesise information from several web sites without printing out huge quantities of material. Students and teachers need to learn and practise the transference of already known and practised skills for a print environment, to the electronic environment.

To become really relevant to schools and their students today, the Government's Literacy Leadership initiative could be expanded to include online information literacy strategies. This study has shown that different language techniques are needed and new skills and strategies for teachers and students are vital.

This study was set up to be replicated in other New Zealand schools. As has been highlighted throughout, organisational changes within today's secondary schools are long overdue. To enable best use of all scarce and expensive digital resources and working areas, a change to more flexible working hours and less rigid timetabling structures is needed. The NCEA will help to drive this change. Teacher training providers will then have to respond to the changed learning environment by presenting their students with a range of pedagogies appropriate for teaching and learning in a digital and interactive world.

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Appendices

1. Research Study with Kelly Anderson September – December 2002

This study will be carried out with 2 Year 10 classes – a mixed ability and an advanced class. Academic differences between the 2 classes will be recognised and discussed throughout the study.

Topic A Reproduction and Genetics

Pre-test – What do the students know already?

Prior Teaching – saturation

- Show video to each class followed by a cloze exercise to reinforce understanding of key concepts of the topic (2 periods per class).

Students to work in pairs (selected by Kelly) to research 1 of these 6 topics:

1. Twins – how and why
 2. Effects of drugs and disease during pregnancy
 3. DNA and identification issues
 4. Genetic diseases
 5. Stages of pregnancy from ovulation to birth
 6. Reproductive technology
- One class now uses only *ICT* resources to complete the task and the other class uses only *print* resources to complete the research.
 - Both classes will use the same research process with information literacy skills being taught throughout the process
 - Both classes will learn and practise information literacy skills within a genuine context

Print – mixed ability

- Work through Planning Sheet
- Teaching of IL skills will be done at each stage of the process
- Work to be presented in chart form with illustrations. Focus to be on quality of information, layout of material, presentation of material. (assessment rubric may be used)
- Formative assessment will be done throughout the process (egg. quality of questions, note-taking skills, organising information, presenting information).
- Standards for the above skills will be the same for both classes

ICT - Advanced

- Brainstorm using Inspiration software (some teaching may be needed here)
- Use only ICT resources – some teaching needed here
- Teaching of IL skills at each stage of the process
- Present using PowerPoint and Data Show in e-Learning Room
- Formative assessment will be done throughout the process (e.g. quality of questions, note-taking skills, organising information, presenting information)
- Standards for the above skills will be the same for both classes

Suggested Timeline for Project

| | |
|-------------|---|
| Period 1 | Pre-test |
| Periods 2&3 | Video and cloze exercise |
| Period 4 | Choose own topics with partner – brainstorm, teach ‘what is a good question?’ |
| Period 5 | In Library – check questions and introduce ‘Locating ‘ |
| Period 6 | Information searching |
| Period 7 | Information searching |
| Period 8 | Information searching |
| Period 9 | Writing up information in classroom |
| Period 10 | Complete write up, rehearse presentation |
| Period 11 | Presenting |
| Period 12 | Presenting |
| Period 13 | Revision of whole unit |
| Period 14 | Post-test |

- The pre and post-tests will enable the collection of qualitative data as well as quantitative data. Other data will be collected from the students, their families and observations by the researcher at set points through the study.
- Planning for Topic B, Ecology, will be started at the end of October. Teaching and learning format will be as similar as possible. Teaching of that topic starts in November after Junior exams.
- Letters to Parents/Caregivers will be sent out at end of Week 4. Friday August 9.

2. Research Topics

Reproduction and Genetics

- Twins
- Effects of drugs and disease during pregnancy
- Reproductive technology
- Stages of pregnancy – ovulation to birth
- DNA and identification
- Genetic diseases

Ecology

- A typical bush community. Identify key features: food web, environmental, biotic/abiotic
- As above for Antarctica
- How can pollution impact on an environment. Use specific examples.
- Global warming
- Deforestation
- The life of a plant: structural features, reproduction, how seeds disperse
- Impact of introduced species: possum, rabbits, gorse, Project Crimson
- The uniqueness of NZ flora and fauna: birds, NZ bat, forests

3. Specific Learning Outcomes

Reproduction and Genetics. Science in the NZ Curriculum: Living World 5.3

By the end of this unit students will be able to:

- Describe the difference between sexual and asexual reproduction and the advantages and disadvantages of each.
- Label a diagram of the reproductive system of the human male and female
- List the functions of the organs of the reproductive system
- Explain the processes of ovulation, menstruation and fertilisation.
- Define the terms gamete, sperm, ova and zygote.
- Explain how identical and non-identical twins come about
- Define variation and explain the advantages of variation
- Give the advantages of variation to the population
- Explain that DNA is the source of inherited characteristics and therefore variation
- Describe chromosomes as being a length of DNA, sections of which are called genes
- Explain that humans have 46 chromosomes, 23 inherited from each parent.
- Describe gametes as having one set of chromosomes and body cells as having two sets of chromosomes
- Understand gene code for characteristics/traits
- Use the convention of upper case letters for dominant genes and lower case letters for recessive genes when discussing an individual's genes for characteristics.
- Carry out simple monohybrid crosses for traits (complete dominance only)

Ecology

By the end of this topic students should be able to:

- Define habitat, population and community
- Understand abiotic and biotic factors and how they affect a habitat
- Name the trophic level for each link in a food chain
- Interpret food webs
- Understand energy relationships in a community
- Explain the effects of human intervention on food chains/webs
- Name the main parts of a plant and state their function
- Understand how leaves are adapted to their role in photosynthesis
- Name the main parts of a flower and how pollination occurs
- Understand how seeds and fruits form and how seeds are dispersed
- State the difference between native and introduced species
- Explain the effect introduced species have had on NZ fauna and flora
- Have awareness of human activity on other living things (endangered species, native species eradication)

4. Student Worksheets

RESEARCH PLANNING SHEET (electronic)

*The worksheet for Print groups contained “books” as an information source instead of ‘electronic’.

NAME : _____ FORM: _____ DUE DATE: _____

1. DEFINING

TOPIC: _____

Using Inspiration, BRAINSTORM – What do you know already about the topic?

Group categorise or web your information to select keywords using Inspiration software

Keywords: _____

Questioning: What else do you need to know?

What? Why? How? What if? How would?

1. _____

2. _____

3. _____

2. LOCATING

Where will you find the information needed to answer your questions?

Use 2 sources for information – people, electronic (people or books)

PEOPLE (interview using tape recorder)

family

friends

experts

teachers

organisations

ELECTRONIC

library catalogue

CD-ROM

phone/fax

e mail

INNZ

World Book Online

www.google.com

www.searchnz.co.nz

INNZ (Start/programmes/Library/INNZ)

Save useful information in your folder and work on it in your own time

3. SELECTING and ANALYSING

Skim and scan the text using your keywords as joggers

Dot Jot Note-taking

Write each question at the top of a clean page of refill.

Draw up a dot jot note-taking grid as follows:

Write your question here:

| <i>Dot</i> | <i>Jot</i> | <i>Information Source</i> |
|------------|------------|---------------------------|
| | | |

Skim and scan your notes for keywords and for each dot write one jot or main idea and where the information came from.

4. ORGANISING and CREATING

You need now to pull all your notes together into paragraphs of information that will answer your questions. This is a useful formula to use:

S statement: An executive toy is... a re-statement of your question

E explanation: Why it is... explain

X example: An example of this would be...

Take care with spelling and punctuation and you need 1/2 page of new information for each question.

5. PRESENTING

PowerPoint

Data show

Laptop

Rehearsal

Prepare and present a 3-5 minute presentation using a maximum of 6 slides including an introduction and a conclusion.

6. EVALUATING

How good a researcher am I? _____

1. Am I satisfied with the end result? _____

2. Did I complete each stage of the research before going on to the next? _____

3. Did I use a range of resources? _____

4. Have I acknowledged all my ICT information sources according to school practice? _____

5. Grade yourself on a continuum: ☹ 1 _____ 5 ☺

my ability to write open ended questions ☹ 1 _____ 5 ☺

my note-taking skills ☹ 1 _____ 5 ☺

my ability to select and organise information to answer my questions ☹ 1 _____ 5 ☺

my confidence as a researcher ☹ 1 _____ 5 ☺

6. What could I do next time to improve my research? _____



**An Action Researcher Report from the 28 ICTPD
School Clusters Programme 2001 – 2003**

**Non Linear Narratives: Where Might I
Click to Start?**

– Mike Whiteman

Non-Linear Narratives: Where Might I Click to Start?

Mike Whiteman

Background

Most of the writing that students are exposed to and create while at primary school is linear in nature. That is, the sequence is predetermined by the writer. A second reading will not alter any of the events. Encouraging interaction with and the development of non-linear narratives can help students think carefully about choices, and possible consequences that might follow according to decisions made.

A variety of terms have been used to describe this form of communication such as pick-a-path, twist-a-plot, interactive fiction, and tree fiction. One engaging aspect of non-linear narratives is that they contain secrets which are not revealed by turning to the last page. The development of the literary process takes on a different manner to that with traditional text. It proceeds in response to an interactor.

Some key concepts relating to non-linear narratives are:

- * ideas, stories and information can be communicated visually
- * text, graphics and sound may be elements
- * user choice of what is to be experienced, or possible outcomes, is provided
- * presentation may take print or electronic form
- * user 'journeys' within a presentation may differ
- * they may be cooperatively developed

Teachers interested in developing this form sometimes wonder where to begin. Hence this small scale action research that summarises possible features of four classroom organisers that might be used to initiate student experiences with non-linear narratives.

Method

A number of teachers who expressed interest in working with this form, were identified. These teachers undertook short workshops that focused on one of the approaches, and then used that particular approach when working with their own students (Y2 – Y8). During the class involvement observations were conducted, and at the conclusion of the units discussions took place in which the teachers and myself reflected on the introductory method used, and the impact of this on classroom implementation and achievement.

Outcomes

The following charts provide a brief summary of each method used and the relative educational merits of the exercise as perceived by myself and the teachers. This summary is based on the observations and reflections made during and at the conclusion of classroom activity. The purpose of the charts is to identify the various and different learning outcomes observed from each approach, not to rank them in any way. It is also acknowledged that other approaches or a combination of approaches may be used.

Conclusion

Perhaps our most important conclusion in discussing the effectiveness of these strategies was that helping students reflect on the consequences of the choices they make is an important aspect of teaching. Using non-linear narratives can help with this development and can also add to the range of text forms experienced. One non-linear experience does not a summer make, but it is a form of communication that is well worth considering, especially when one considers that in fact the World Wide Web is itself one giant non-linear world.

| Approach | With | Description |
|--|----------|---|
| <i>Story Starter</i> | Teachers | <p>A simple open situation was described, (while walking to school, children see a parcel lying in the grass), and the group cooperatively built from this.</p> <p>Small group loose leaf narratives were created, then published.</p> <ul style="list-style-type: none"> • story starter: ‘The parcel in the grass.’ • A4, in quarters • felts |
| <p>Organisational aspects of this approach:</p> <ul style="list-style-type: none"> * thinking of how to start is not a problem – the facilitator/teacher gives an open starter * models that thinking about a wide range of choices regarding possible action is an important aspect, as are the consequence of any chosen action * loose leaf pages for each choice/response stage encourages flexibility – groups within a class can emerge with different narratives from the same starting situation * working through a narrative in draft form means that the whole is planned and tested before creating the final presentation * allows a teacher to pace the experience * allows for on the spot discussion of possibilities at each stage so that pupils can make a choice from a range of ideas a range. <p>E.g. charted range of possibilities at the very first choice stage establishes teacher expectations such as:</p> <ul style="list-style-type: none"> -open it -leave it where it is -pick it up -tell someone -hide it so others can’t see it -take it to... -say “that’s mine – I dropped it yesterday” | | <p>Possible Teaching/Learning features of this approach:</p> <ul style="list-style-type: none"> * identify choices that enable the narrative to progress * think in ‘small narrative jumps’ rather than telling all in one go (e.g. ‘I took it to the Police Station and they found the owner.’) * can be used at all levels of a Primary School * requires no technology skills * quality determined more by the choices outlined rather than by art work (if any) * leads itself to text only, or the combining of text and static images * user instructions are simple: turn to page ‘x’ * can model avoidance of sudden dead ends such as ‘you die,’ or ‘ha ha, fooled you!’ * can use occasional conventional narrative to move the story on <p>* can become too divergent making resolution difficult or confusing</p> <p>* more suitable to small situations rather than larger social or historical issues</p> |

| Approach | With | Description |
|--|-----------------|---|
| <p><i>Walkabout</i></p> | <p>Teachers</p> | <p>A known environment was used as a setting for a simple narrative. (A teddy has been lost.)</p> <p>Possibilities were built in small groups, and models of these created.</p> <p>Digital photos were used with interactive HyperStudio links to create the narrative.</p> <ul style="list-style-type: none"> • environment: the school • props: a teddy • A4 in quarters • straws/wool • masking tape • digital camera • HyperStudio <div data-bbox="395 719 1193 1016" style="text-align: center;"> </div> |
| <p>Organisational aspects of this approach:</p> <ul style="list-style-type: none"> * loose leaf pages for each choice/response stage encourages flexibility – groups within a class can emerge with different narratives from the same starting situation * working through a narrative in draft form means that the whole is planned and discussed before taking the photographs and making the HyperStudio link buttons * allows a teacher to pace the experience * allows for on the spot discussion of possibilities at each stage so that pupils can make a choice from a range of possibilities * identify choices that enable the narrative to progress * think in ‘small narrative jumps’ rather than telling all in one go (e.g. jumping straight to the location of the object) * can be used at all levels of a Primary School * requires simple HyperStudio skills but can accommodate more experienced users through animation, or a is self activating action | | <p>Possible Teaching/Learning features of this approach:</p> <ul style="list-style-type: none"> * does not require drawing or painting but these elements can be added if desired * it can be completely visual except for a brief scene setting, but can have text elements if appropriate * user choice by button clicking * can model avoidance of sudden dead ends such as ‘you get locked in a cupboard.’ * can use occasional conventional narrative to move the story on * provides a worthwhile context for static image composition and terms such as foreground, background, close up, wide angle, establishing shot... * can become too divergent to enable some resolution * can use the wider community but this may require travel * organisation has to be thought about with regard to the technology available |

| Approach | With | Description |
|--|----------|---|
| <i>Commercial CD ROM</i> | Teachers | <p><i>Myst</i>, a commercial CD ROM was used to introduce the concept of interactive fiction.</p> <ul style="list-style-type: none"> • <i>Myst</i> • journal: blank paper A4, and A3 |
| <p>Organisational aspects of this approach:</p> <ul style="list-style-type: none"> * experiencing a high quality commercial interactive narrative enables teachers to get a feeling for the potential * models how visuals can create engaging narrative * the potential capacity for a narrative to become too large for classroom development becomes apparent (keep classroom narratives manageable) * shows that graphic violence is not a necessary narrative ingredient * effective use of subtle sounds * provides a clear example of the many choice opportunities open to the user * choices result in logical or context related results – they are not random or haphazard * does not use screen text as such but there are areas where text can be explored for information such as a library, paper fragments, signs * uses a format that HyperStudio can replicate: graphics, invisible buttons, animation, sounds, speech | | <p>Possible Teaching/Learning features of this approach:</p> <ul style="list-style-type: none"> * clear evidence of the prior planning necessary to create a successful interactive narrative * shows the interactive narratives are cooperatively developed * may create a feeling that “I could never do that with pupils” because of the sheer magnitude of the narrative and its superb 3D graphics * requires time to even explore a small part of <i>Myst</i> * patience and active thinking are desirable essential skills – some pupils may not exhibit these |

| Approach | With | Description |
|--|--------|--|
| <i>Narrative</i> | Pupils | <p>Conventional text based planning grids were used by individuals to develop a narrative.</p> <p>These were then thought about in visual, interactive possibilities.</p> <p>HyperStudio was the presentation vehicle.</p> <ul style="list-style-type: none"> • text planning grid • graphic planning grid • card planning template • HyperStudio |
| <p>Organisational aspects of this approach:</p> <ul style="list-style-type: none"> * an overall verbal/textual situation is created that establishes broad descriptions of the: <ul style="list-style-type: none"> -basic idea -setting -problem/complication -characters/objects * thought is given to the beginning and the ending/s * possibilities and outcomes are considered and refined * graphic creation is discussed * computer work begins after the individual card planned links are established | | <p>Possible Teaching/Learning features of this approach:</p> <ul style="list-style-type: none"> * special interactive features, such as animations, can be more effectively incorporated because of the overall plan * a group can work on different aspects of the project * having a “library” of characters/objects means they need only be created once, then flipped, scaled or altered to suit the scene * linking is more efficient if left till last * undirected testing of narratives (HyperStudio Stacks) by non-group pupils, is a very important part of the process * hand painted graphics can be time consuming * narratives can become unwieldy if groups depart from the plan without consultation |



**An Action Researcher Report from the 28 ICTPD
School Clusters Programme 2001 – 2003**

**Email @ Classroom.school.nz:
How Can I Use Email Effectively to
Enhance the Information and
Communication Skills of My
Students?**

– Karen Newbrook

Email @ Classroom.school.nz: How Can I Use Email Effectively to Enhance the Information and Communication Skills of My Students?

Karen Newbrook

Introduction

Where did this study take place?

Mangorei School is a Decile 10 full primary school of almost 300 pupils, in a semi-rural setting on the outskirts of New Plymouth city. We have nine fulltime classroom teachers and three part-time teachers, two of whom job share in a Year 2 class. One of the three teachers aides was, in 2001, designated as the permanent librarian/ICT helper (Kim), who spends most of the day, including lunchtimes and half an hour after school, in the library/research centre with five computers. This enables teachers to send groups of students to work in there with supervision and support. However, this was not always the case.

How did all this start?

In 1998, when I was studying part-time for a Diploma in Computer Education, one of my Year 3 pupils had an uncle who was “Wintering over” in Antarctica. During the middle term, the class made contact with him through the school email, keeping in touch with him once a week for three months. When he returned to New Zealand in October, just after sending us an amazing photo attachment of the first sunrise for the Antarctic year, he came to New Plymouth to visit us in person, so the students were able to meet the person they had been writing to all that term. They were totally overawed at his surprise visit, but still had many questions to ask once they were face to face with him.

At this time, the only access to the Internet was in the senior classroom, and the only time we could get in there was on a Wednesday morning when that class had gone off to Technology at another school. We made the most of our limited time each week by going to the senior room armed with more questions to ask, as soon as we had opened up our new email from Scott Base. This became the incentive for an intensive study on Antarctica, using first hand knowledge gained from the ice, and so began my interest in emailing people in other countries. It was such a quick, easy, cheap and effective method of communication. And that was before the introduction of Networking, Broadband and Bluetooth!

When did the research begin?

Three years ago, in 2001, on my return from an overseas trip during which I visited a school in Britain, I introduced my new Year 3 class to emailing as a method of communicating with other students in other countries. I was still in a prefab classroom away from the central hub of the school, which proved to be a problem, as the only computers connected to the Internet at this time were still only in the library or the senior room.

Our school was starting the first year of a three-year ICT contract for professional development and teachers from within the cluster were being encouraged to participate in some action research throughout the course of the contract. As I was working towards a post-graduate degree at the time, I volunteered to be the one from our school to undertake the research, even though I was not the lead teacher at the time. In hindsight, this has allowed for more consistency and continuity throughout the study than may otherwise have occurred, as since then, the previous two lead teachers have moved on to other schools.

Who was involved?

Originally my Year Three class were to be the guinea pigs for the study, but with the introduction of new computers and hold-ups in networking, it wasn't until the following year (2002) that the study began in earnest. Further, I had swapped class levels and inherited an enthusiastic and very bright Year 5/6 class, most of whom had good computer skills gained from their previous year's teacher, as well as faster reading and keyboard skills than the younger children I had been teaching. Changes were still being made to our computer networking system so we had to work around any interruptions in the system.

Access to the computers before this had proved to be the biggest hurdle to using the email regularly. My new classroom was next to the library. This allowed more frequent visits to the library, which was by then supervised by the librarian, who was also fully versed in ICT and enjoyed increasing her knowledge alongside the students. She has been my enthusiastic helper throughout this study, always checking the students' emails and ensuring they got their turn on the computer, ensuring my class was timetabled into the library programme on a Thursday – and coming to get the rostered e-mailers when I forgot to send them down.

Methodology

What is Action Research?

This research was carried out over a two-year period, in a Year 5/6 classroom, using action research, where the focus comes from the teacher and is generated by problems and changes that occur in his/her own classroom. This systematic approach allows teachers to improve their understanding of their teaching practice and how they are carrying it out. (Kemmis, S & McTaggart, R., 1984).

Once the issue has been defined, action research involves a four step cyclical process.

1. Planning a course of action
2. Undertaking the action
3. Observing what happens
4. Reflecting on the result

This in turn, leads to the continued planning, acting, observing and reflecting of each implementation of change. This cycle continues throughout the study, so that each "spin-off cycle" leads to renewed action (Piggot-Irvine, 2002).

During our two years of action research, the librarian and I used a variety of monitoring techniques to record our progress:

- Anecdotal records of students' progress.
- A logbook of what happened each week, and problems that arose.
- Document analysis of ICT team meetings, Board of Trustees minutes, and school newsletters.
- A tracking sheet of the class to monitor their time on the computer for emailing.
- Checklists for each student to keep track of the emailing steps
- Survey of the classroom teachers about their emailing skills
- Help sheets for following the process of sending an email.

The Process

What technology was available to us?

From the initial idea of using email to communicate outside the classroom, came the first major issue of what technology was available within the school and easily accessible to our class. What I had found during our Antarctica experience was that with only one computer available at a time, what did I do with the rest of the class while a group of students were using the email? How did I supervise them and keep them busy while groups of students were writing their emails?

In the end, I took the whole class to the other classroom along with some bookwork for them to complete while I worked with those on the computer. This became less of a problem once I got into the main block with a more senior class as I could send a group down to the library to work on-line with the librarian as supervisor and trouble-shooter.

Once the networking was completed within our block late in 2002, which included one iMac in each classroom and a pod of five in the library, we were then able to use the classroom computer during the day as well as the time we were allocated in the library with five computers being used at once. We quickly learnt to add a slot into the library timetable for Room 7 on Thursday mornings, so that Kim could supervise a rotating group.

What is the best program to use?

In 2001, before the networking was up and running, the question of which software we should use for emailing became an important issue. As we couldn't log onto the school email address, which was only on the office computer, and in order to give each student their own address, we used "e-pals" through the Scholastic site. These had to be set up through an adult, so Kim used the school address as the base, to monitor incoming emails. Some children also had their own addresses through home, such as Hotmail and Yahoo, but these brought up several other issues:

- Privacy of home based addresses.
- Inappropriate material arriving in the Inbox (now known as Spam).

- The differences in ease of using each program.
- Difficulty remembering their own addresses and passwords from week to week.
- Each program required different access steps.
- The Internet was often very slow to connect to.

The e-pals site allowed Kim to check all emails received before sending them on to each student's inbox, but the other programs did not have any method for checking before the student gained and read the material sent – which in some cases was not suitable for their age level.

At the end of 2001, we had only just got every class member organized with an address and only a few students had sent emails to nominated e-pals before the end of the school year arrived and these children moved on to another teacher.

The next year, 2002, things became a lot easier with the older students – or so we thought until we found out that we could only have 30 addresses through the Scholastic site at any one time. This meant that we had to give up the previous students' addresses to the new class. This appeared to be the only option until the networking was completed, as the other teachers did not have the strategies in place at the time to continue emailing with their class.

We persevered with the e-pals system for the year, until the network was established in the last term, and each class could have their own room addresses. A lot of time elapsed (nearly a term) when there was little or no access to the Internet during the setting up of the new system, so there was slow progress at times. This was frustrating to everyone as the students were all fired up with their new skills, e-pals and addresses and wanted to make contact with the other side of the world.

How do I improve contact time on the computer for emailing?

Even with the networking and access hold-ups, some children did persevere and kept up with checking their mail and replying to their e-pals even if it meant doing it on their home computers – one positive aspect of using the scholastic addresses because they can be accessed from the Internet.

However, it soon became evident that some sort of checklist needed to be kept for each student so that his or her progress could be monitored, as there were some students who never took the opportunity to check their email without a reminder. Then, as in any class, there were those who would take over the class computer at every opportunity.

We decided to use a class list, which was dated and checked each week, so that the more reluctant students were given the time and opportunity to use the computer throughout the day. I found I was checking it nearly every day when I called the roll, so that I could catch up with those who were more hesitant about being on the computer. Now, I have given each student in my class a day of the week as their day to email, and it is their responsibility to make use of the computer at some stage during the day. The timetabled morning in the library allowed for those who needed to catch up.

How do I monitor each student's progress?

It was during this time that Kim and I decided that a more accurate and detailed method of monitoring was needed, as we had no idea of the level of skills that each student had acquired. I devised a skills checklist that each student needed to update each time they visited the library. Kim kept them on file in the library and filled them in with the student each time they checked their email. These included:

- Setting up an email address
- Getting into an email site
- Checking for replies
- Checking the received replies
- Writing an email
- Saving a draft copy
- Sending an email
- Sending a copy to someone else (cc/bcc)
- Forwarding an email
- Sending a reply
- Sending an attachment.

It wasn't until the next year, that we realized we needed to add several management strategies onto the list as the students became more advanced in their use of the email:

- Setting up an address book
- Sending an email from the address book
- Using email to gather information
- Managing email into folders

I found that these last few strategies were extremely useful when I attempted the web challenge this year with several groups of students, as the students could access information at home and email it to themselves to get into at school. This enabled them to send digital photos and documents in digital form to use on their web pages.

Of course we soon found that most home computers used Word for documents so it became necessary to install Word on all our iMacs – not a big problem – and an obvious next move for the teachers to be able to email work between home and school as well.

Who should we email?

As I wanted to use the email as a method of communication as well as an information-gathering tool, I felt it was important to learn the correct language to use in each situation. The real importance of this became evident over the two years as the students developed confidence and skills at using the email for different purposes

The initial thought was to use family friends and relatives from out of town, as many of our students have travelled widely and their families are in contact with people from around the world. Another option was to keep in contact with a Japanese teacher who spent a month visiting our school and compare notes about schools and cultures, especially after the Last Samurai was filmed here. We have been very lucky to be able to do this, as we always receive prompt replies from Japan whenever someone sends an email. I found that the students soon lost interest in checking their emails if there were no replies from the person they had written to.

Another idea was to set up each student in my class with a student of the same age in a school in Britain after my visit there, but after a year both schools were still having trouble with the networking and by the time our class sent their introductions, the Northern Hemisphere was on holiday and so we lost our momentum. We got some replies but the British students had changed classes and teachers, and then we were on holiday and my class changed teachers, so this idea has not been too successful.

To overcome this problem, and keep continuity this year, I gave each student someone else in the class to be their e-pal. This worked well for a while as replies came in thick and fast, until Kim called me in one day to check out one of my girl's letter to her friend. Our monitoring system, Watchdog, had picked up a slang word she had used and stopped it going through to the recipient. This made me think about the value of emailing "mates" as a lot of slang and texting words had crept into their language.

Recently, now that all systems are up and running, I have encouraged all classes within the school to email their buddy classes, with the oldest class initiating the email so that the younger ones can click on reply and write a few words before clicking on send. This is being done through their classroom addresses, with the buddy's name as the subject, so that it is easy to see who needs to send a reply. So far this is working well with the classes who have started it, and I am sure that it is something that can continue into the next year, as the classes move on.

The future – where to from here?

Waiting for the network system to become fast and reliable was long and frustrating, but it was worth the wait. Having now convinced our Junior teachers (who have only been connected for a term), that the network is a good thing, they can see the benefits and the possibilities. We have even decided to do our reports on computer this year.

I found that the email checklists worked well, especially after the completion of the networking throughout the whole school, as every teacher can now use them to monitor their students' skills. Continuation of the buddy system will ensure all teachers and their students get into emailing and hopefully, keep it rolling along.

Our next mission is to set up each student with their own individual email address @school.nz. This could be a time consuming practice for already busy classroom teachers – maybe we can persuade our librarian to do it for us in her "spare" time!

Conclusion

My investigation into the use of email as a means of communication and information gathering turned into a real learning experience for everyone involved: principal, teachers, librarian, students, and even our faithful technician, who got many calls of distress for help with the network throughout the whole procedure, all learnt together and grew in our knowledge of technology and its capabilities. Now we look forward to the next giant leap forward: how to use cell phones with blue tooth capabilities to send wireless emails. As usual, it will be the students who are still one step ahead of their teachers when it comes to technological communication.

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**An Action Researcher Report from the 28 ICTPD
School Clusters Programme 2001 – 2003**

**Peer Tutoring For The Development
Of ICT Skills**

– Kieran Browne

**Can peer, rather than teacher, tutoring become
the dominant methodology? What works best?
How do I know?**

Peer Tutoring for the Development of ICT Skills

Can peer, rather than teacher, tutoring become the dominant methodology? What works best? How do I know?

Kieran Browne

School

Central School, New Plymouth had already been operating a networked system across all age classrooms for four years. Students involved in the research (my Year 6 class) had therefore been familiar with systems and programs for a number of years (we have a relatively stable school population) and arrived at Year 6 comfortable with the technology though with a range of skills and interest. They were used to producing written work on word processors and multimedia programs, seeing ICT as one of a range of options, and were well aware of expectations regarding originality (e.g. NO clip art) and procedures (e.g. drafting straight on to computer, not merely 'presenting').

The school runs a system wherein all computers are in classrooms (up to 3 a room). There is an understanding that a child needing a machine can roam the school and, on finding an available machine enter the room and commence work without disturbing the classroom teacher. This is a very successful system, worthy of its own story, but the pertinent points for this particular research are:

- All computers are in rooms and therefore supervised.
- There is access to more computers than there might initially appear to be.
- There has occurred (unplanned, but I'll take the credit) a great deal more sharing of work, ideas, skills and attitudes across rooms than would have otherwise been the case.

The software used by Central School at the time of this study included Appleworks 6 (Word Processing, Draw, Paint, Spreadsheet), KidPix (junior classes), and HyperStudio (senior classes) with access to internet. Pupils had individual files on a server and their work was therefore not machine-specific which facilitated their ability to continue a piece of work in any classroom.

Teacher

In common with the students I had been using our system and a core of basic software for four years. I was therefore comfortable with my state of knowledge and not terribly worried by the many occasions when the blissful state of ignorance arose. I have always believed in the superiority of the model of teaching alongside, rather than in front of, pupils and apply this whenever I can. 'Just In Time Learning' - the idea that skills should be taught when required rather prior to a context, informs the way I approach ICT (that is not to say that I always take on the teaching role). Because of this I do not have a time line for when each child should learn particular skills, nor do I have ladders and tables of who has had how much computer time, preferring to conference children at work.

Assumptions

- Specific ICT skills are best learned when they are needed. As in all areas context provides the best learning environment.
- If the above is true a single teacher will not be able to meet the needs of a class of 30. Perhaps peer tutoring is the only truly effective way to achieve deep learning of ICT skill
- These children feel comfortable asking for and giving help.
- This group of children has some understanding already of how to teach one another.

The Plan

Knowing what I think should happen, and having a clear idea of what I perceived to be happening in my room, I set out to prove why these children are competent, possibly talented users of ICT. As part of an ICT cluster which regularly shares pupil work across its six schools and beyond I knew that we were producing some good work. An ICT EXPO for parents (elaborated upon below) confirmed that this was the case throughout the school. I do not discuss their work in any detail here, as what interests me more is *how* they gained their skills. Having no hard data I set out to gather information on who learns from whom and to solicit student attitudes to this way of learning. A change of job after 1 year of what was to be a 2 year project altered my focus but also gave me an outsider's perspective of some of the wonderful things going on at Central School.

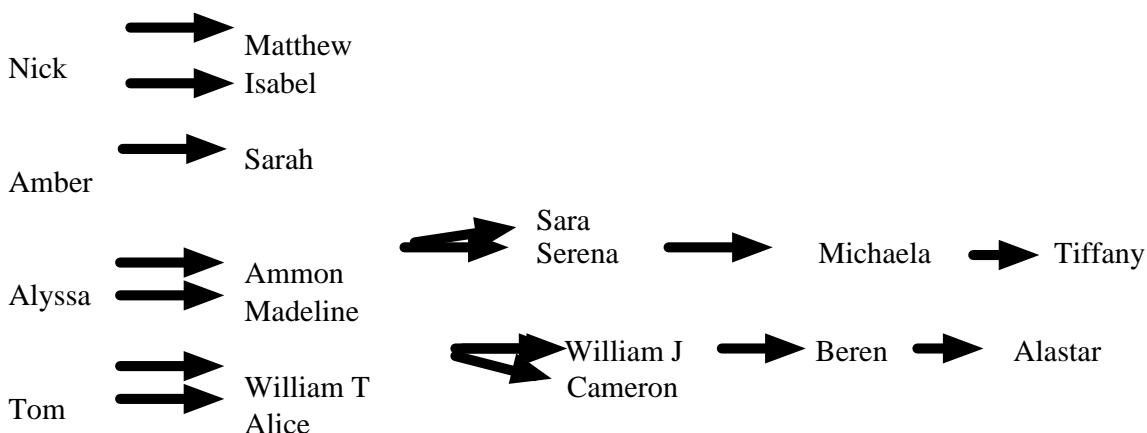
Data Gathering

Example 1. 18 March 2002

In order to establish some baseline data a simple task was artificially constructed. The weather was getting bad so a teacher aide with the help of notes taught six children how to construct a 'bloxx' game for use in wet lunchtimes etc. This was chosen as a high interest activity which would appeal to classmates. The deal was that over the next week, using notes if needed, these six were to teach at least one other and so on. Teacher and teacher aide were as hands off as possible, in order to ascertain how a completely unregulated task would filter through

Tayla

Talor



Samantha watched stealthily and taught Millie

Thus with minimal input a multi-operation task reached 23/30 in a week despite 2/6 of the original learners failing to spread the word. Initial thoughts are therefore that peer tutoring has a strong potential.

Example 2. HyperStudio: multi task July 2002

Those familiar with HyperStudio will be aware that this presentation package is multi-faceted. Once past initial 'starting up' skills it defies the notion of teaching skills prior to use. It is a tool which invites the user to decide what is wanted and then to discover the methods for implementation. Just In Time learning writ large! The object of this observation was to track the spread of particular skills as they were needed. Of interest to me are the children's responses when asked who they might go to help if there were a need, for unless there is a culture of expecting peers to help, the whole rationale is false. For the figures below (see Appendix 1) a cross section of 16 children from Room 12 was interviewed. They were asked how they gained a variety of HyperStudio skills the table shows either who taught them or who they would ask. In the 16 cases where a skill was not yet known 6 would ask the teacher 6 would ask a classmate and 4 would have no preference.

Across the range replies as to who had taught a skill or who the student would ask were as follows:

Teacher 41%

Fellow Student 48%

Self Taught 12%

The following observations and recordings from interviews were made:

- The “self” taught students had often taught themselves having observed a peer’s work therefore the stimulus, if not the formal teaching came from a peer.
- I was surprised how much teacher input there had been; I thought I was more “hands off”
- Several students then asked me “So who taught you?” and were very accepting of my reply that a teacher of Year 6 students learns through the questions and problems which the students produce. They are very comfortable with the notion of teacher as learner.
- Students can only learn from each other if a certain amount of movement and constructive noise is permissible within the classroom.

Example 3. ICT EXPO September 2002

At the midway point in our cluster’s three year ICT contract all 6 schools decided to run their own EXPO style events to show the wider community just where we were in terms of integrating ICT. The school decided on a format whereby parents were allocated 15 minute time slots with their children demonstrating their own work. Our thinking was that this was an excellent opportunity to give the task - a real task - of organising and running the event, to the pupils. Hence they surveyed parents as to when and what they wanted to see, collated results, made interviews; the whole show in fact. Pertinent to this research was the fact that they decided, in one of the initial brain storming sessions, that:

- 1) They should spend time in junior classes bringing students up to speed. The assumption was that in junior classes children need more practice with one-to-one help in order to learn, and that their teachers wouldn’t have the time.
- 2) They should be available during the parent/child sessions as ‘trouble shooters’ to help out as necessary. It was their show and they wanted it to run smoothly.

Of interest to me was the fact that the children naturally saw themselves as teachers. 18 out of a class of 30 performed this duty (they all volunteered, but there simply wasn’t the work). Once the task was identified as necessary we had a great context for exploring how children could best teach other children. The key elements identified were the need to be ‘hands off’ - no touching of mouse or keyboard - and the virtue of patience. We talked about initial questioning to ascertain how well the students understood what they were doing, the importance of valuing the work and skills of others and the value of allowing these younger students to share their work. Sound advice for us all.

In an interview the following year one of the students involved told me that these brainstorming sessions were when she really gained an insight into how to be a good tutor to other children. I had covered all of the techniques before; the important thing was that in this instance she had an exciting context for her learning.

Of key importance was the fact that all teachers in the school were willing to allow these pupil/teachers to do their work. We were all at different stages on the ICT road and teachers could have felt threatened by young ‘experts’. They did not and the

EXPO was a great success particularly in the way it demonstrated our school as a learning community.

Example 4. HyperStudio Repeat October 2004

At the end of 2002 I changed schools into a very non-ICT role. I went back to Central School to repeat my survey of July 2003. The results (Appendix 2) were broadly similar: Across the range replies as to who had taught a skill or who the student would ask were:

| | | |
|----------------|---------------|------------------|
| Teacher | 41% July 2002 | 34% October 2004 |
| Fellow Student | 48% July 2002 | 46% October 2004 |
| Self Taught | 12% July 2002 | 21% October 2004 |

The following observations and recordings from interviews were made:

- An increase in self-taught numbers ('having a fiddle around' as one pupil aptly put it) was pleasing though without a comparative view of work output one shouldn't read too much into it. *Ceteris paribus* the longer a system is in a school the students should be more confident and willing to explore.
- The children, on request, had not been primed for my visit and some had not used these particular skills for a while. The groups I was interviewing would often break off for discussions amongst themselves on what a particular procedure was or how to implement it. I took this as evidence that an atmosphere of collaboration and cooperation was alive and well within the school.

Example 5. Interviews with Year 7 Students At Devon Intermediate October 2003

The comments below are from a mixture of ex-Central School students and others in their first year at Intermediate. Necessarily things are now different in terms of access to ICT (there is a lab and classroom networking is just about ready to start being used) and freedom to go to other rooms (timetables, pupil numbers). We talked about how students prefer to learn and how things are different between the schools.

- We usually need the teacher at the very start of using new software.
- For small things I'll fiddle, then ask a friend, then the teacher.
- I prefer being taught one-to-one and that's more likely to happen if I'm taught by a friend.
- Teachers *tell* but I *ask* other pupils the things I need to know.
- I'd rather use ICT than learn about it.
- I don't get as much access to computers now (ICT lab) as I used to (networked classrooms).
- Other pupils teach well when they're hands-off and patient.
- I was taught how to teach ICT for the Central ICT EXPO and helped younger children. I found it frustrating when they were slow.
- My friends use my kind of language.

- I'd prefer computers in the room so I can learn things as I need them.
- Last year it was good going into other classes to see what they were doing, but I don't think you could do that here. There are too many students.

Conclusion

Can peer, rather than teacher, tutoring become the dominant methodology? I became aware, during my study, that I was dealing with a rather special group of children (what teacher wouldn't think that of his class?). A culture of cooperation and mutual respect was already well-established and the majority were self motivated and well supported in their work. They expected to help each other out and knew how to do so. Within this context my surveys proved to me beyond any doubt that peer tutoring ensured a much wider spread of computer skills than I could have achieved unassisted. Perhaps more importantly peer tutoring reflected and strengthened the school culture of cooperation within a learning community. Obviously the next question is how do we create this context?

What works best? And how do I know? Students identified that ease of access to peer support was crucial for their learning. For these reasons:

- They needed to be working in a room where it was acceptable to go and ask for help.
- They needed to share each others' work regularly in order to see new things and to become aware of who could do what. Hence when I am working on a project and need to import a graphic, I remember that so-and-so had a graphic in hers so I'll ask her.

Students identified that an expert (often the teacher) is needed at the starting point of using a piece of software. This is supported by the schools policy of using relatively few programs

Students identified the teacher as a member of the learning community and were happy to include him. One particular incident during the EXPO comes to mind; Matthew was showing his Mum some of his work and I looked over her shoulder and commented that I hadn't seen a particular function before. "Pull up a chair and I'll show you how to do it" he said. There was no question in his mind as to the value of helping me out or of his right and duty to do so. In that one casual, honest line he confirmed that peer tutoring was entrenched.

Appendices

Appendix 1

Who students learned skills from or who they would ask, July 2002

| | teacher | pupil | self |
|-------------------------------|---------|-------|-------|
| Make a button to another page | 8 | 7 | 1 |
| Make an invisible button | 4 | 10 | 2 |
| Animate a picture | 11 | 5 | |
| Quiz; user's name | 10 | 4 | 2 |
| Quiz; (in)correct answer | 9 | 7 | |
| No-click button | 5 | 9 | 2 |
| Use gradients | 2 | 12 | 2 |
| Make a text box | 7 | 7 | 2 |
| Change fonts | 1 | 8 | 7 |
| Import a picture | 8 | 7 | 1 |
| | 40.6% | 47.5% | 11.9% |

Appendix 2

Who students learned skills from or who they would ask, October 2004

| | teacher | pupil | self |
|-------------------------------|---------|-------|-------|
| Make a button to another page | 4 | 11 | 1 |
| Make an invisible button | 3 | 8 | 5 |
| Animate a picture | 4 | 11 | 1 |
| Quiz; user's name | 8 | 7 | 1 |
| Quiz; (in)correct answer | 8 | 7 | 1 |
| No-click button | 13 | 3 | |
| Use gradients | | 16 | |
| Make a text box | 2 | 3 | 11 |
| Change fonts | 1 | 2 | 13 |
| Import a picture | 11 | 5 | |
| | 33.8% | 45.6% | 20.6% |



**An Action Researcher Report from the 28 ICTPD
School Clusters Programme 2001 – 2003**

**How Can I Increase the Equity of My
Students' Use of One Computer in a
Class of 30?**

– Sue Cattell

How Can I Increase the Equity of My Students' Use of One Computer in a Class of 30?

Sue Cattell

Background

I was teaching a class of 26 Year 4 (8-9 year old) students in an Auckland primary school. After being part of an ICT development project and realising the potential of enhanced ICT use in my classroom, I wanted to find out how to best manage one computer in my classroom. I posed myself this question: "How do I best address the issue of equity of computer use when I have one computer in my classroom of 26 students?"

In finding out I decided to try three different strategies to deal with the equity issue, one each term, with input from the students being used to direct and review which strategies I used. I had thought often about various strategies for making access more equitable for the students, including completion of a task without a time limit, a strictly timed approach, and so on, but had not resolved which system of organisation was actually the most equitable. The ICTPD cluster programme and the action research project was my opportunity to find out in a more systematic way.

Over the period of the study, I positioned the computer so that I could observe the students' computer behaviours whilst still teaching the rest of the class. I kept a journal of what occurred, what I observed, what I heard and what thoughts occurred to me during this process. And at the end of each trial I talked to the children about how fair the process had been from their point of view.

The issue of equity in a classroom is a broad concept that encompasses many different aspects. "We cannot achieve excellence in education without equity" (Chris Green, 2000)

So what is equity?

Ensuring equity means that all students – regardless of class, race, culture, gender, socio-economic status, or physical limitations - have equal opportunities to participate in meaningful and authentic applications of educational technology. (North Central Regional Educational Laboratory)

The definition of equity that I used during the study really revolved around the concept of 'fair access' implicit in the quote above. If we are to achieve computer literacy in all students then we need to provide the means to do this. As with literacy development in reading and writing, where books, instruction and practice are integral components to success, so it is with computer literacy. But making sure that all students have a fair and just opportunity to work on the computer can be very difficult. For example, equitable access may or may not mean equal amounts of time, as students may need differing amounts of time to complete activities. How do you know what is equitable? Moreover, how do we achieve it when there is only one computer available in the classroom and 30 students to use it? Especially when we all have unique teaching styles and we use technology differently in our classrooms. If we tap

the potential of technology and incorporate that potential into our teaching styles, we need also to work out how best to provide an equitable classroom.

The Process – Strategy 1

For the first strategy, I decided to focus on the product, so I set this task for the students to work on individually and until they had finished. I set the students a task that should be achievable and rewarding. I printed a “How to...” chart on completing an acrostic poem using the initials of their own name. I would use this to explain the task to the whole class first.

I gave the students a set task which was to complete an acrostic poem on the computer using their name as the initial letters, and with no set time limit. I made a boy/girl rotation list that was pinned to the wall by the computer, and the students were told to tap the next person on the list when they had finished their turn.

Week 1

I explained the task to the students and put up an instruction sheet and a rotation list. I asked Terry to go first as he is a good role model and I thought he would work out the task easiest. We had 2 blocks of time available 9.00am – 10.30am, and 11.00am – 12.30pm each day.

The students were all keen to have their turn, and many asked “When will it be my turn?” Terry was quick to complete the task and I noticed him changing the font, size etc even though it was not required. He appeared to be trying to drag his turn out as much as he could. He spent a lot of time changing his mind over the wording. He ended up spending the whole block of time until morning tea adapting and “fiddling”.

Other students were complaining to Terry – “Are you finished yet?” “Hurry up” they said. Still others complained to me privately that he was taking too long.

Week 2

We continued with the rotations. By the end of this week, only 6 students had finished. This was due to some students “dragging” their time out, and to other factors such as school trips.

My thoughts at this point focussed on how to incorporate more off computer preparation in the strategy so that the time necessary at the computer was reduced. I wrote in my journal: *I think I need to have the students do the acrostic on paper first, so that their thinking is done off the computer. Some students are taking a long time just to think of the words, and how to spell them. When they need help, they tended to ask a friend, who stayed on with them and helps or does it for them. Alice, for example, asked Kerry to help from the start and she then became a passive participant.*

I am trying to let it run autonomously, but I feel that I need to keep reminding students that others are waiting for their turn.

Week 3

I started this week with a talk about fairness to others in respect of the amount of time some of them are taking to complete the activity. I also suggested to them that they do a written version first.

As a result there was a much higher completion rate, as this week a further 8 students completed their puzzles. Making them do the thinking first, before their computer turn, had definitely been faster. I observed that now the computer time was more taken up with things like choosing which Word Art style looks best, or Erin and Elizabeth asking others for their opinions! I noticed in particular, that that they still want to collaborate. So I noted that perhaps a future strategy to try would be to have them work in pairs on a task.

Week 5

By this time the roster was flowing smoothly. However, an incident occurred when Brian missed out on his turn, and accused Olive of doing it on purpose. When he eventually got his turn he deliberately took as long as he could (before others hassled him too much)! I also noted that when Olive was working, she asked Georgina to help. Georgina then wanted to do hers at the same time, though I said no, as she had to wait for her turn on the roster. She was not happy, and on reflection I understood her frustration. Perhaps another reason for trying the pairs strategy?

Another interesting equity issue was raised by a student at about this time. Derek asked “How come Terry is helping others all the time – it means he gets more time on the computer when it’s not even his turn?” I responded by saying that as a helper, Terry was not having hands on time on the computer, he was advising. But I thought it was interesting that Derek saw this ‘helping’ role as computer time too!

End of Term Summary

After 5 weeks of this strategy, most of the class had completed an acrostic poem on the computer. I had not found it an enjoyable experience, largely because of the complaints regarding how much time some students took. Those who had not had a turn yet, said they felt “cheated” (Sarah’s words), and wanted to know when they would get a turn. Some students did have more time on the computer than others. Some, though, chose not to take much time (Roger), and wanted to do the task quickly, and be finished.

I was also concerned about the amount of time it took to complete the activity. Had it been a topic based activity, we would have been past the topic and onto a new one! I therefore decided to have a class discussion about the free rotation strategy and the various aspects of it. Nearly all of the students said it wasn’t a ‘fair’ system. I asked them what they thought could be a “fair” system. One child suggested a time limit, which I agreed to try. Georgina asked what I was thinking: “But what if we don’t finish it in the time?” For a conscientious student like her, this was a real concern. I suggested that perhaps she could save it to a disk and complete it at home, or before school, but that we would try the timed rotation in the meantime.

Term 3 – Strategy 2

This term I had a new class in a new school, so I used the same topic of making an acrostic poem with their name, though this time they were given a set time to complete it. As we were on a prescribed topic timetable at this school, I could only use the Literacy time (45 minute period each day) for the research.

Week 1

I explained the task to the class – to write an acrostic poem using their name, after first having done this on paper. I put up a class list for the roster, with a time limit of 20 minutes. This meant that at least 2 students could complete their turns in a period. I put a timer next to the computer which buzzed when the time was up.

The first student, Larry, worked out quickly what to do, although I had to redirect other students who were hovering watching him. He finished before the buzzer, and Julie started. She was very hesitant working on her own, and kept looking around for help. She did not finish in the time. I felt she had learnt very little from the experience, and without the satisfaction of even finishing it. I suspected that the paired situation would have helped Julie enormously.

Sol completed his quickly, but stayed until the buzzer went, changing fonts and colours. He wanted to get as much time as he was allowed.

Ann completed hers in 5 minutes and left. She seemed happy that the task was done, and she could move onto the next task at her desk.

Kieran was hesitant, but would not admit he needed help. He kept looking around and did not complete it at all, although when I asked him if he needed help he said no.

Week 2

I continued with the task and the timed rotation, despite growing reservations about the one-size fits all approach.

Harry had an interesting experience. Although he had his acrostic on paper, he changed his mind when it came to the typing, so it took longer for him to type in the words. He then tried to add an outline to his black font and could not remember how to do it. He was quite irate when the buzzer went and the others told him to stop. Some inappropriate behaviour then resulted in him having time out! He said he felt frustrated that he could not remember what to do, and then someone laughed at him.

Joan then did hers – no emotion, no interaction, she just typed and left.

By this time I had become convinced that *a paired situation could have also benefited these students in different ways. It would have allowed Joan to interact with someone, and develop her oral language. It could also have allowed me to become aware of how she perceived the task, and if she enjoyed it or not. A paired situation would have also given Harry someone to ask for help to remember how to outline his font, and eliminated the frustrations that occurred.*

Week 3

The last students completed their timed activity. Henry spent a lot of time watching the timer to make sure he didn't run out of time. He completed the task, but only just.

Maddy kept asking me questions. "What if I add a different border?" "How do I change the font colour on the black one?" "Can I change the rainbow one to a different colour?" She kept getting out of the chair and wandering around asking others too.

My journal for that night read: *I think that personalities play a much bigger part in this equity issue than I realised. How the student operates and the type of learner they are, seems to have a large bearing on what is equitable for them.*

Overall this term was more successful in terms of the product produced, if only because the quicker students spent good time on editing and so on, although the individual timed approach was far from satisfactory in terms of process and student satisfaction.

Term 4 – Strategy 3

The third strategy saw me reverting to the first, more open-ended time allocation, but with a twist. After discussing the activities with the class, we decided to have pairs of students working on an activity until completed, not timed. We also discussed the issue of equality of needs, as opposed to equality of time. I let the students choose their partner, and I set the task. It was to create a bookmark with a Clip Art picture, their name, and a simple sentence.

Week 1

Julie/Teresa – Teresa worked first, while Julie sat and watched. Teresa said "This is easy". She talked a lot to Julie although Julie didn't respond. Teresa spent about 15 minutes choosing a Clip Art picture, while Julie watched. "Yep – that's cool" said Teresa. She was confident, and although she was working with Julie, she did it all herself. It took about 20 minutes. On Julie's turn, she used the first picture she saw, typed her name (plain font, no colour). When Teresa asked her if she wanted to change it, she said "no, it's fine". Julie took about 5 minutes.

This is better, I thought: *In a paired situation, Teresa liked having someone to talk to even if that person didn't respond. Julie benefited from watching Teresa first, which gave her the confidence to complete hers. I feel that this situation worked for them both.*

Lyll/Ken – Lyll went first and went straight to Clip Art. Ken said to him "Don't forget you can go online for pictures". Lyll replied "Yeah". Lyll went on line, and completed his picture. Ken kept excitedly saying "That one! That one!" Total time for Lyll was about 7 minutes. Ken had his turn but both were focused on the task. He finished as quickly as Lyll.

My observations on this pair were that *both were totally focused on the activity whether it was their turn or not. Interaction was positive and seemed mutually rewarding. The only "problem" was that their enthusiasm encouraged others to go over to them to see what they were doing.*

Week 2

We didn't do any this week, as we had production practices and a trip, but I was frequently asked by the students "When is it my turn?" I put up a roster with the order of turns. There were complaints from those who were to be last as they thought that they might miss out!

It was also a timely reminder to me that *there are many interruptions to my class programme that are beyond my control and impact upon equity issues from the students' perspective.*

Week 3

We continued with the task and the roster. Ann/Maddy – Ann went first and Maddy found it hard to sit still. She kept trying to grab the mouse, and excitedly pointing to the screen saying, "Over there!" and "That one!" until I had to intervene. I then became involved with other students and after about 20 minutes they both announced they had finished.

Harry/Sol – Even though there was only 10 minutes left of this period, they wanted to do theirs. They assured me that they could complete it in this time, and they did. They worked with quiet voices and heads down. When I told them time was up, they said they would both finished anyway.

My reflection that night: *Know your students. These students are used to working within timetabled periods, so they have relatively good time management skills. After working through 8 students, I felt that the paired situation was working well, although one can dominate. I needed to remind them to almost sit on their hands to resist the temptation to do it for the other one.*

When I asked the students their thoughts on this system compared to the others, the comments were mostly positive. "This is much better" and "I know I'll get a turn". When I asked why they knew they'd get a turn they said "because in twos is quicker". Interestingly, one student said it wasn't fair that they could not pick a partner that has already had a turn. When asked why, he said "Because Lyall's looks cool because Ken helped him, and I want Ken to help me!". Mm - one step forward, two steps back?

Week 4

The last few! Stacey/Nora – These two worked quickly and quietly together. Stacey went first while Nora prompted her to "do this" and "click on that". Then Nora did hers very fast. They were both focused on the task and finished in 10 minutes.

Seb/Mal – Mal went first and completed it quickly, while ignoring Seb who kept trying to suggest other pictures to use. When it was Seb's turn, Mal turned his back on him, and watched the class. Seb still babbled away "I think this one" and "No wait, this one", and "Oh cool" and "Yes this". Then Seb asked Mal what to do at a certain point (he sounded flustered), and Mal turned back and did it for him (he seemed impatient). They spent about 25 minutes in total.

During this exchange I was thinking: *I didn't need to interact with the students, so I didn't. I wonder though, whether I should interact more. What oral language*

component is there, and does there need to be one? I would like to try a group of 4 students around a table to work on 1 task together. I will need keyboard and mouse extenders for this.

And so the year proceeded - one strategy leading to another, never quite fixing on an ideal strategy, but getting closer to an understanding of the issues involved.

Summary

On the whole I thought the paired open rotation was the most successful strategy I tried, both in terms of student satisfaction and completed product. However, as an extra activity, I also tried the group collaboration method. In this regard I found that 3 students around a table were easier to manage than 4, given the space I had. I also found that there was more interaction between the students, although the activity took longer, and the noise level certainly increased.

Over the project I have come to see that equity is not so much about 'time spent' but about opportunity and their sense of security about having the chance to complete, whatever the organisational arrangements that are made. It is also about knowing the individuals in your class and accommodating for them. I felt the discussions I had with the students were valuable and they were articulate about what equity and fairness of access meant to them, and seemed most happy with the arrangement that gave them the security of knowing they would indeed get their turn, and that would allow them to complete the whole task set. I also realised that equity does not consist of control of the keyboard and that learning time on the computer was experienced by the helper/observer as well. In this respect the equity involved in student access to ICTs is not so much about giving them equitable opportunity to use the tool per se, as it is about giving them equitable opportunity to produce and learn.

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Facilitating ICTPD Action Research Studies



**An Action Researcher Report from the 28 ICTPD
School Clusters Programme 2001 – 2003**

Maintaining The Momentum
– Craig Price & Rochelle Jensen

Maintaining The Momentum

Craig Price & Rochelle Jensen

This report shares our journey through action research cycles focussing on methods for trying to ensure maximum transferral of ideas from our ICTPD programme to having ongoing benefits to the classroom.

The Perceived Problem

The theme for our action research project came about as a result of our reflections on our ICTPD project. In these reflections we felt very happy about the fact that we were delivering a professional development programme that was engaging and gave new skills to participants for immediate use within the classroom. Our concern, however, was the ongoing element of transferral and flow on effects of our practicum approach. We wanted to ensure that we utilised effective systems to try to maintain the progress and integration of ICTs made by teachers as a result of their participation. We wanted to ensure that our practicum participants' development continued once they had received the intensive support offered by our professional development project and that it was not neglected when the support wasn't as high.

In our proposal to the Ministry, we outlined a timeline of developments over the three years that would aim to meet our key goals.

During 2001, the main focus was providing principals, lead teachers and teachers with the expertise to be able to support continuing initiatives.

During 2002, the focus was to be on half the remaining group of teachers - moving into the practicum stage supported by the facilitator, lead teachers and those with developing expertise.

In 2003, we planned to focus on the remainder of staff to develop their expertise through our practicum approach.

By the end of the three years, we aimed to have given in depth professional development to a large majority of teachers within our 6 cluster schools.

As we embarked on and moved through our ICTPD journey some of our focuses and approaches changed. This was in reaction to regular discussion and reflection on our programme (with two facilitators this occurred quite naturally for us), and in particular with sustainable change management in mind.

Strategies that were identified and that we will focus this report on include:

- our initial programme - Lead teachers and our practicum approach
- the implementation and refinements of 'Techie Brekkie' sessions
- the facilitator support given at syndicate planning sessions
- the move from our lead teacher and practicum approaches to 'Think Tanks'

This report will investigate these strategies and their impact on maintaining the momentum and encouraging sustainability.

Research Method

The research model used in our investigation was an action research model. Action research is based on cycles of practice, observation and data collection, reflection and devising action plans based on this. This was particularly appropriate as it encouraged us to reflect on individual and whole school needs and make changes based on observation and data collected.

Background To Our Cluster

Our group of cluster schools brings together schools of varying sizes, decile ratings, locations and centres of focus. We are all located within the central North Island stretching from the Thames Coast to Tokoroa. Within the group there have been large investments made into the purchasing of ICT hardware and networking. To make this investment a worthwhile one, the provision of effective professional development was seen as crucial.

Method Of Gathering Data

| DATA SOURCE | DETAILS |
|------------------------------|--|
| Written Evaluations | These included baseline surveys, end of practicum sheets, end of project and individual school evaluations. |
| Unit Plans | Unit plans developed during practicums by classroom teachers with the support of a facilitator. A selection of unit plans gathered at least 6 months after teachers had completed practicum. |
| Transcripts | Interviews conducted with classroom teachers throughout the 3 year contract. |
| Journal Entries | From facilitator journals. |
| ICT Equipment Booking Sheets | Copies of schools ICT equipment booking sheets. |

Our Initial Programme - Lead Teachers And Our Practicum Approach



Lead Teachers

In establishing our programme, one of our key focuses was on the professional development of lead teachers within each of our schools. The aim was that lead teachers would take on aspects of overseeing and leading the developments of teaching and learning with ICTs within each of their schools. As facilitators we were going to provide them with support and release time to work together to establish goals. One of the first tasks undertaken by lead teachers, alongside their principals, and also the facilitators was to review their ICT strategic plan (if in fact they had one) and then to put in place goals to be achieved within a one to three year timeframe. This included aspects of budgeting (hardware and software - infrastructure) professional development provision, children's ICT use and opportunities, technical troubleshooting aspects, and growing the ownership and vision for ICT use in their schools. Another key role we had envisaged their taking on was that of being able to continue the facilitation and growth of development for other members of their staff following their involvement in a practicum with the facilitators.

Our Practicum Approach

Another of our key programme goals was to try to give in depth development opportunities for as many teaching staff in our schools as possible. One key way we aimed to do this was through what we described as a 'Practicum Approach'. In developing our practicums, we identified key components of the programme that we thought would give breadth and depth and be able to support teachers in their developments.

Initially in putting our practicums together, we aimed to have two participating teachers from each school who were working in similar levels of the school (for example, our first practicum was for teachers from the year 5 - 8 levels). We wanted to have two participants from each school so that they could share their journeys and provide their own level of in school support for each other. Group sizes for our practicums ranged from 10 to 15 participants.

A number of key components made up each practicum. These included:

| | |
|-------------------|---|
| Holiday workshops | <p>Two days of intensive professional development that set the scene for the rest of our practicum.</p> <p>Holiday workshop components:</p> <ul style="list-style-type: none"> * The setting up of learning journals. We provided each participant with a journal they could use to record notes, mind map, glue resources and record their reflections throughout the project. * Providing and explaining a series of professional readings that we wished to focus on throughout our practicum. * Skill development. We initially got all participants to use a draw programme to create a name badge for another member of the group that utilised digital photo's text and graphics. * An introduction to an inquiry learning process and how the philosophy behind this could support quality ICT integration. * The sharing of exemplar ICT work samples to see a range of ways of integrating ICT's at their particular level. * Website exploration that involved setting up the skills for utilising the internet and then being given time to explore a range of educational websites that could assist them. * Identification and discussion regarding issues of classroom management when utilising ICTs. * Unit planning that focussed upon integrating ICTs into teaching units for the following term. |
| Focus days | Each practicum group gathered together for two days (released) throughout the term of their involvement. |
| In Class Support | Each practicum participant received 2 half day visits by a facilitator to help in the achievement of their goals. |
| Sharing Session | Each practicum member presented an overview of their development as a result of their involvement in the practicum. |

These components and the content involved were reflected upon by practicum participants and facilitators at the conclusion of each practicum. As facilitators one of our key goals was to ensure that the professional development that was undertaken by our practicum participants was sustainable and ensure that they could in fact maintain the momentum they had gathered from participating in the practicums when the support from facilitators wasn't as high. What we found as our contract progressed, however, was that we needed to incorporate much additional support outside of practicums to help the teachers continue their development with both pedagogy and skills and that to some degree we had underestimated the enormity of what we were trying to achieve. In many cases, we were not only trying to give teachers the skills

and confidence to be able to utilise technology tools in their classrooms, but we were also asking them to teach in ways they had never been taught.

Overall, the practicums were successful in igniting sparks within participants. They gave them a solid introduction and food for thought when reflecting on their practice now and for the future, and they also gave them some new skills to utilise in their classrooms. What we wanted though, was to be sure that we were also growing within each participant the drive and skill to be able to continue this development, and also that each school had systems of development in place that would allow this growth to flourish as much as possible. What was developed to meet these needs at this time was the implementation of ‘techie brekkies’ and also facilitator time and support being given at syndicate or whole school planning levels. These also later grew into our ‘Think Tank’ concept.

The Implementation Of ‘Techie Brekkies’

The idea to implement ‘techie brekkies’ came in response to the above. It was hoped that an increase in skill level with ICTs would enable teachers to see how ICTs could be integrated to enhance their teaching and learning programmes. The plan to implement ‘Techie Brekkies’ at ***** Primary was a shared decision made by all teaching staff and supported by the principal. Techie Brekkies were planned to commence in term 1, 2002. These workshops were to be held fortnightly from 7:45am - 8:15am and attendance by all teaching staff was compulsory. An ICTPD facilitator ran the sessions. Ideas for session content were brainstormed with all staff and sessions planned on the most popular topics. Sessions would have a skill component and include ideas on how to effectively use this skill to enhance teaching and learning.

The content of initial sessions included:

- Setting Up for Success – Opening Applications, Saving, Printing and Creating Folders.
- Integrating Kidpix into the Curriculum 1 and 2
- Capturing the Moment with Digital Cameras 1 and 2

All staff attended term 1 Techie-Brekkies. However it was common for at least two staff members to arrive up to 10 minutes late. Most sessions began with a ‘show and tell’ from the facilitator, which often included work samples. Following the ‘show and tell’, staff were set a task to apply the skill shown. Teachers worked in pairs. During sessions, staff demonstrated high levels of engagement and satisfaction with workshop content. Staff were grateful for integration ideas and handouts that were a part of the sessions.

The majority of staff did not attempt the solving of minor technical problems that occurred during sessions. Staff with low levels of confidence in the use of ICT verbalised this frequently during sessions often to the detriment of recognising their new learning. Using school equipment in the school setting helped simplify the learning process for teachers and comments indicated a greater confidence and readiness to reapply the learning. Comments and questions from all participants were more frequent than in practicums and a ‘snow-ball effect’, once questioning had begun, was common. The completion of sessions always came far too soon and staff

with a whole day of classroom teaching ahead became frustrated with their inability to complete the task. As one teacher commented at one of the early sessions, “See, this is what happens, you just get into something and you have to stop, I don’t know when I’ll get back to it.” I noted reluctance from the majority of staff to think logically or apply problem-solving strategies when equipment did not operate in the way they thought it should or as indicated in the workshop handout. Rather than attempt to solve problems, teachers quickly indicated their need for assistance to us.

The huge variation in the skill level and confidence of teachers greatly limited the content that could be covered during Techie Brekkies. Some staff were still unsure of the saving process whilst others had a good basic skill level and were keen for new learning.

During Techie Brekkies it became obvious that repetition was vital. For example, during the digital camera workshop I went over the downloading and transferring process four times, I then commented “there you have it, quite a simple process”. However, some participants clearly did not see it that way and responded with a groan and comments such as “I don’t know about simple.”

Overall, we believe that school specific Techie Brekkies had a positive impact in raising the ICT confidence and skill level of all teachers. One of the positive effects of these meetings was that they provided a full-staff forum for the discussion and resolution of ICT matters. School wide expectations related to school procedures, the operation of equipment and curriculum integration were discussed and resolved. Such informal, needs-based discussions proved extremely effective in helping to develop a shared vision for the school use of ICT and ensuring whole staff ownership of this vision.

Another positive impact of these meetings was the rise in the perceived value of the place of ICT at this school. The principal identified attendance at these meetings as a professional development priority. All teaching staff including the principal attended all of the term 1 Techie Brekkies. This whole school approach also meant that when trying to reapply a skill later that other staff could assist. Staff areas of preference and expertise were also identified during these sessions. It became clear who was a whiz with the digital camera and who was exploring a new piece of software. A display that celebrated each staff member’s expertise and achievements whilst acting as a resource board for staff seeking support needed to be constructed.

However, we also concluded that some changes to the structure and content of these meetings would be necessary in order to maximize session effectiveness and encourage our primary goal of maximizing classroom momentum. For example, it became clear during Techie Brekkies that a greater incidence of problem-solving behaviour needed to be encouraged. Many teachers were relying too heavily on handouts and the presence of support people when using ICT. A culture of ‘learned helplessness’ was developing. Instead of thinking logically about what they were doing they followed handouts word for word. This meant that if the machine did something slightly different to what the handout indicated or we were not there to problem-solve for them, they were at a loss. We concluded that handouts and general workshop facilitation techniques needed to encourage more discovery learning, problem solving and lateral thinking by teachers.

The need to extend the length of Techie Brekkies was obvious. Techie Brekkies with a total duration of 30 minutes were not conducive to teachers developing a great depth of understanding. Teachers arriving late added to this problem. It became clear that teachers needed longer sessions in order to gain a depth of understanding that gave them enough confidence and skill to re-apply their learning on their own.

The need to build a follow-on component into sessions that strongly encouraged classroom application of skills was also seen as necessary if new learning was to be consolidated. Techie Brekkies would come and go and in-between there was often little application of skills to the classroom. Teachers often commented that they ‘wanted to, but just didn’t get the time’.

The Refinement of Techie Brekkies

In light of the above reflection, modifications to the structure and content of term 1 ‘Techie Brekkies’ were made part way through year two.

To overcome the lack of content depth, we planned to offer teachers strands of focus for the term. Three sessions would be held on each strand with the strand content being derived from teacher feed-back. Whereas in term 1 we had prescribed content for them, in term 2 staff could choose one strand from the following three options:

- Kidpix
- Inspiration
- HyperStudio

To ensure consolidation of session content, a follow-up activity was planned for each strand. This activity would utilize the skills from the workshops and would be negotiated with each classroom teacher to ensure integration was meaningful. A date was also set for a whole staff meeting where teachers from each strand would share their experience and outcomes. Strategies that would encourage a greater incidence of problem solving behaviour were infused into each session during planning. These strategies included:

- The formulation of handouts of a more interactive nature that encouraged teachers to make sense of workshop material and record it on their handout, in their own words.
- Facilitator modelling of a discovery learning approach during workshops by using more questioning and exploration techniques.
- A professional reading on Discovery Learning, by Jill Hammonds would also be given to teachers and a follow-up discussion held.
- Facilitator assistance in the tech-suite was made available for teachers who required assistance and wanted to observe a lesson in progress.

In addition, we decided that a display that acknowledged staff expertise and celebrated new learning would also be useful to help motivate them. Thus, a staff ‘yellow pages’ display was created. All staff would be expected to become an expert in at least one area. The idea behind this display was that when teachers required support in a particular area they could refer to the yellow pages for a staff member with expertise.

This display would also emphasise the need for whole staff ownership of ICT and allow us to take a step back from the delivery of software skill development.

Professional development for each strand was now to be made up of one after-school meeting and two morning meetings. Morning meetings were extended by 15 minutes. An after school meeting (3:15-4:15pm) was included for each strand. These meetings formed a component of the overall school professional development programme and were not an extra set of meetings for the term.

Smaller numbers in workshops assisted progress too as it enabled the facilitator to work with teachers on a one-to-one basis. When necessary follow-up activities could be given to those with a low skill level. Smaller groups also created a more informal and intimate atmosphere. This meant that workshop content became more specific to the audiences requests. In my case study school as in the others, syndicates generally grouped together to complete the same strand. This allowed workshop content to become more specific to a particular age –level. Depth and review became a major component of workshops, as time allowed.

Barriers and strategies for problem solving, relevant to the particular strand, could be discussed and questions answered.

Teachers were more prompt at sessions as they had fewer to attend though we noted that the principal opted out all together, attending no workshops. Even more importantly, ICT booking sheets indicated that more classes were using equipment more frequently.

We noted that at workshops teachers were sharing more evidence of integration, perhaps motivated by the need to present. In these presentations staff seemed to display a greater sense of accomplishment and competence in their chosen strand, and work samples that clearly displayed what teachers were doing with their classrooms to integrate ICT started to appear in the techsuite.

However, as the term progressed ironically technical problems increased as teachers/students demanded more of the equipment. Limitations in the amount and capability of infrastructure/hardware/software were verbalised.

Overall, full staff workshops/Techie-Brekkies that focused predominately on skill development of ICT were vital in creating a critical mass of staff who had enough ICT skill and confidence to recognise possibilities for integration in their own classrooms. This method of professional development also gave value and a whole staff forum to ICT enabling school vision, systems and strategies to be cemented. It was important that this method of professional development was temporary and later replaced with a more just-in-time and teaching/learning driven approach.

Facilitator Assistance with Planning

Another method we used, in some STAR cluster schools, aimed at optimizing the 'flow on' (classroom) effects, gained from practicums was to have facilitator support at syndicate planning meetings. This support would involve an ICTPD facilitator being present at each syndicate-planning meeting for the upcoming term. A list of themes, topics, objectives and special events were forwarded to the ICTPD facilitator

prior to the planning meeting. Support from the facilitator was to relate to how to quality integrate ICT in each syndicate.

The facilitator attended all syndicate meetings with prior knowledge of the upcoming themes and learning objectives. The facilitator was given a small segment of each syndicate meeting (15 minutes). During this time the facilitator asked the teachers some of the following questions:

What were their ideas for ICT integration?

What skills did they had? What skills would be required?

All ideas were recorded. Following this brief discussion the following questions were posed:

What are your key learning objectives?

How could ICT enhance the learning?

Electronic integration examples were then shown. For each of these examples attention was drawn to the learning objective and how ICTs enhanced the learning throughout the process.

We then looked a little more critically at our initial ideas, discussing why/why not some of them were effective integration. It became obvious that often teachers' software knowledge, rather than the depth at which learning outcomes could be achieved, drove the way teachers wanted to integrate ICT. Comments also indicated that most teachers still felt they needed to know the 'ins and outs' of a piece of software before allowing the children to use it. It also seemed that many teachers were not valuing ICT and just wanted the ICT to happen on its own without interrupting the rest of the class programme. It appeared that many teachers still saw ICT as an add-on and were not planning for its use or success.

The outcome of these meetings was a quality discussion that examined teacher's beliefs about the value of ICT and its contribution to learning. The discussion and the questions posed forced them to think more critically about how and more importantly why, to integrate ICT's.

However, the choice for ICT integration often fell back to what teachers felt safe and confident with. This usually involved all children doing the same thing and a focus on quantity and product rather than quality and process.

On reflection, we concluded that facilitator attendance at planning meetings was an effective way of getting alongside classroom teachers, in an environment where they felt very comfortable, and discovering how and why or why not teachers were using ICT. Examining teaching and learning beliefs that hindered effective integration helped the facilitator provide support and challenge to promote change. It was clear from all syndicate meetings that teachers felt overworked and did not feel supported enough to step out of their comfort zone with ICT. More support was necessary to assist teachers in seeing the pedagogical underpinnings for integrating ICT and for putting quality use into practice.

Follow-Up from Facilitator Assistance with Planning

Following the facilitator support at syndicate meetings the following ideas were implemented to help support the quality integration of ICT. The facilitator organized times early the following term to train experts in software that teachers had planned to use. These students would support the teaching by taking on the role of class expert during tech-suite sessions and class-time. The ICT committee met and discussed how to further support teachers with quality ICT integration. It was decided that resource pockets on core pieces of software would be placed in the tech-suite. Pedagogical reminders such as sayings/quotes that encouraged learning driven integration, problem solving, collaboration and higher level thinking were displayed. The ICT school vision was revisited by the committee and displayed in the tech-suite. Work samples from each syndicate that focused on process and the enhanced achievement of learning objectives through ICT were also displayed.

On observation it appeared that the facilitator attendance at planning meetings and the follow-up that took place assisted in ensuring that teachers had set meaningful and achievable goals in relation to integration. In-depth, classroom based discussion on topics including computer management and the greater use of discovery learning approaches also contributed to teachers feeling more supported and clearer about ICT purpose. The discussions related to pedagogy that had taken place at syndicate meetings had also been useful in providing individual teachers with an opportunity to ask burning questions to aid them in relating ICT use to the big quality teaching/learning picture.

The fact that ICT is a catalyst for changing the way we teach was reinforced during these interactions. The safe forum provided by these syndicate meetings meant that teachers 'told all' to the facilitators. It seemed that barriers were predominately pedagogically based, relating to challenges posed by the shift from an instructional to a more constructivist approach. Highlighted in these interactions was the need for repetitive connections to where ICT fits in the big teaching and learning picture and of the need to maximize infusion and alignment of school practices.

The Introduction and Development of 'Think Tanks'

Later in the second year of our project, we reflected closely upon the impact of our professional development programme, and in particular the methods we had in place to maintain the momentum of the project, particularly once our involvement as facilitators ceased at the end of our third year. We felt at this stage that our practicums were successful with upskilling individuals, giving them the focus time to move further ahead in their pedagogy and practice with the use of ICTs. We had also developed Techie Brekkies and had given support with planning. However, it also became apparent, that the further growth of their skills and abilities was still somewhat reliant upon external intervention from the facilitators. As facilitators we wished to set in place practices that would help ensure that individual schools had the systems in place to be able to cater for their own needs within their staff. We also wanted to help identify key people with the drive, passion and commitment to quality teaching and learning who could help in the leadership of these areas and help with the transfer of theory to practice within their own schools.

In the initial stages of our project, we had planned for the lead teacher in each school to take ownership of this process. In this respect we had also dedicated much professional development time to them with the aim of equipping them with the knowledge and skills to be able to successfully lead in this area of their own schools. Their professional development included software skill development and sharing, visits to schools within the cluster, professional reading and discussion and also a professional development trip away to visit schools and businesses leading in ICT use in Auckland.

Another key project undertaken by the Lead teacher group was the development of a software 'Skill Development Guide'. It was felt by the lead teacher group that one of the barriers that teachers within their schools faced was to be able to identify the skills, goals and directions that they could take with the integration of ICTs.

However, one of the key aspects we identified as being less successful with the lead teacher approach was the large scale of the job. We found that lead teachers were selected in their schools for varying reasons. These ranged from the person who had taken on a role of technical troubleshooting within their school through to the person who was an ICT specialist operating in a technology suite within their school. As our programme developed we found that leadership within the schools was required in many areas of the ICT and teaching and learning focus. Not only did lead teachers need to have skills in utilising ICT's, but we also wanted leadership in pedagogy, vision, budgeting for infrastructure, providing of professional development and also being able to help drive practices and developments with ICT at different levels within their own schools. As all our lead teachers were also full time class teachers with little in the way of classroom release, we found that the scope of the roles that we intended was too large for one person.

In addition, not all of the lead teachers felt ready or equipped to take on all the aspects involved in this multi faceted role. These factors directed our thinking towards establishing more of a team - to be known as Think Tanks - within each school. In establishing the Think Tanks we were able to identify key people who had participated in our practicums and shown the attributes and abilities required to take on a lead aspect in this team.

When reflecting on our programme towards the end of the second year of our project, we felt the time was right to make large changes to the structure of what we had established in each of our schools. There was only one full year left in the contract and after this time our schools would need to have effective systems in place to maintain and further extend their achievements with ICT, teaching and learning.

After much discussion about what we believed would set each school up for the greatest success, we developed the 'Think Tank' concept. Think Tanks were to have three or four members and would be charged with the extensive roles of ICT / Teaching and learning development within each of their schools. Having decided upon this approach, we set out to share the idea with each of the principals in our schools through a management team meeting. We then arranged time to meet each of them individually to discuss the focus for the Think Tank group for their school. At this time, we were often asked for input as to who we felt would be the best candidates to make up these teams. Having worked with many of the teachers through a practicum,

we felt we were able to recommend people who could take on the varying tasks required to ensure ongoing success.

In developing the 'Think Tanks' we instigated some key factors that we believed would help keep the groups focused and driven. The first of these was one of the factors many of our practicum participants identified as a barrier to ongoing development with ICT and teaching and learning - that is, TIME. From the outset, we decided that we would provide release time for these teams to get together, and we set this up at two full days each term. We felt it was very important to provide this time as release from classroom duties rather than as an add on meeting at the start or end of already busy teaching days.

The second key factor we identified was that of OWNERSHIP. We needed to ensure that the teams felt they had a key role to play in determining goals and how they were going to be achieved. Prior to the inception of the Think Tanks, many of the decisions made regarding ICT and teaching and learning directions fell on the hands of a single person. Often this person was charged with the large responsibility of purchasing and allocating equipment, as well as professional development and also being the technician. We wanted our Think Tank groups to take on greater ownership of this decision making and therefore sharing responsibility of it and adding depth to the leadership of these things within their schools. Initially, this proved to be quite threatening for some of the individuals who had taken on the tasks, because often giving ownership needed to start with a review (which sometimes was quite critical) of the current systems and practices, before goal setting for future development could take place.

ALIGNMENT was also a key factor identified for our Think Tank teams. In our earlier work with Dr Julia Atkin, we had spent much time using an approach which explored our values or beliefs about teaching and learning with ICT and then moved out to show the principles that drove these beliefs, and finally we identified our practices that showed our values or beliefs being lived out. As facilitators we wanted to do as much as we possibly could to help our schools work through a process to explore this concept of alignment. Upon embarking on this, we found that it could, and we felt should, have quite large and widespread implications. This did, in fact, prove to be the case. In thinking about and reflecting upon beliefs about teaching and learning, factors such as plans and systems for curriculum implementation often came to the fore. In some cases, these needed to be altered or redeveloped to fit with what was previously established as shared beliefs about teaching and learning. Themes and focuses for staff professional development also needed to be rethought with the concept of alignment in mind.

From this, we found that the greater the levels of alignment of beliefs, principles and practices, the greater the levels of ownership of school vision and therefore drive towards achieving this.

From our experiences with practicums, we found that having a level of ACCOUNTABILITY was useful in ensuring drive and focus for our participants. For our Think Tank groups, we aimed to ensure accountability by having them facilitate staff professional development meetings as a part of their role. These would focus on aspects of what the groups' focus goals were and again would help share ownership and alignment of goals and practice. Initially some think tank members were reluctant

about this aspect of their role, but with the support of the facilitators and also other members of the think tank teams quality professional development sessions were often developed and held for staff.

Findings from ‘Think Tanks’

Overall, we feel very happy with the pathways taken by the Think Tank groups and their ability to lead development and growth with teaching and learning practices within their schools. Although this includes the use of ICTs, we found that as we have aimed to ensure alignment of values, beliefs and practices, the key focus area initially for many of the think tank groups has been to reflect upon and further grow their ideas, understandings and practices of quality teaching and learning. As facilitators, we always aimed to ensure that ICTs are a key part of this (as this was one of our key roles through this contract), but as mentioned, this often came as a secondary part of the larger teaching and learning part.

A key example of this occurred at one of our schools which had identified that the acquisition of information literacy skills was a key attribute they wanted for learners in their school. In examining this, different teaching models such as inquiry learning were explored. Tools such as Blooms Taxonomy and graphic organisation tools were also explored. Finally, connected with these tools were the key questions of ‘What is the role of ICTs in information literacy development?’ and ‘What are the key skills children need to develop in the use of ICT’s to develop information literacy?’

By focusing our programme as such, we found that alignment of beliefs and practices was a natural outcome. We also found, however, that we needed to ensure a separate component of software skill development in the programme so that teachers not only grew their pedagogical understandings but also had the necessary skills to ensure that they could translate these into their practice with ICTs.

The same occurred with the planning and budgeting for ICT purchasing and maintenance. We needed to ensure that enough time was also allocated to ensure that effective decision making could take place within the area of infrastructure development. Once again, alignment was the key aspect that emerged from many Think Tank members. Feelings expressed were that ICT tools needed to meet the key goals for teaching and learning that had been previously identified. In the past this had not always be the case in some of our schools, with software or tools being purchased without the deeper thinking of ‘what will this allow me to do that will enhance my teaching and learning goals.’ This thinking led to what we described as a technology ‘tie down’ in some of our schools. Key pieces of software and tools were identified and their use investigated more closely. The skill development guide previously developed by our lead teachers re-emerged at this time as a particularly useful tool for achieving this. Professional development programmes with these key software at the centre also became more focused. Rather than having access to thirty pieces of software without great knowledge of how to use them, or the infrastructure that allowed them to run without problems, greater depth was given to a few key pieces of software, with supporting professional development and also ensuring that school systems would allow the teachers to achieve success with their use of the software in meeting teaching and learning goals.

Software and hardware purchasing policies were also explored and implemented in some schools.

Overall implications for ICTPD

This report has described our main programme components and their key functions. In reflecting on our three year contract, key themes that have helped us to ensure maximum momentum and sustainability of key program components have become evident.

These themes are:

- * Ensure ICTPD has a ‘place of importance’ in your schools.

The priority given by management to each method of professional development along with the expectation of full staff attendance contributed to developing school cultures that valued ICT.

- * Professional development opportunities must be multi-level and must evolve with the needs of your learners.

Facilitators must reflect regularly on the needs of their teachers and whole school journeys. Programmes must have the flexibility to change and evolve with the growth of their learners.

- * Grow a team of ICTPD leaders in each school.

As our contract progressed, it became obvious which teachers could be the most effective change agents in each school. A team approach as shown through Think Tanks also proved to be more effective than the lead teacher concept in spreading expertise and promoting whole school change.

- * Give teachers ownership.

In particular, once vision was clearly established, professional development methods/strategies such as offering workshop choices for Techies Brekkies and teachers facilitating staff meetings were important in ensuring staff ownership of the change process.

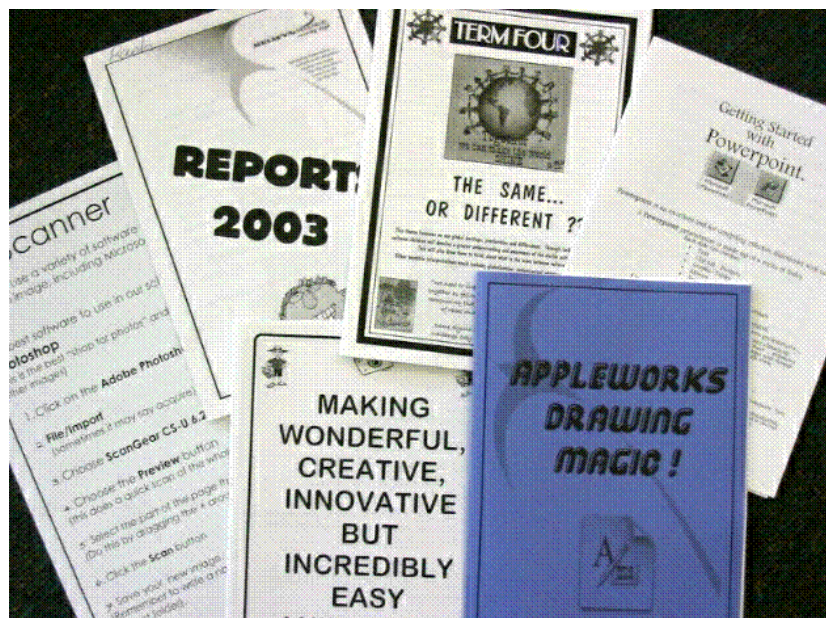
- * Explore the possibilities.

Teachers need to have a vision for quality teaching and learning. For our people this meant knowing what was possible. Feedback from teachers on what professional development they found the most effective always included professional development that enabled them to talk to other teachers, view and discuss work samples and visit other schools and classrooms.

- * Everyone must be accountable.

It is important that teachers are held accountable for some transfer following professional development. This may be in the form of unit plans as shown in our practicums or staff meetings as shown by the Think Tank method. Facilitators, however, must be aware of teacher’s current workload and where possible build in time for reflection and preparation for transfer.

- * Change should stem from values and beliefs about teaching and learning.
Pedagogy must form the basis of professional development. In all our interactions with teachers, it was shown that a clear understanding of the reason for change must be gained in order for content to be meaningful and relevant.





**An Action Researcher Report from the 28 ICTPD
School Clusters Programme 2001 – 2003**

**Meeting Teachers' Needs...
When I don't know what they are...
and nor do they!**

– Lyn Garrett

Meeting Teachers' Needs... When I don't know what they are... and nor do they!

Lyn Garrett

Introduction

As a Facilitator for an ICTPD Cluster I have responsibility for the ICT PD needs of the staff of five Primary schools. This article follows my experiences in trying to effectively find and meet the needs of the teachers.

ICT may be unique as an area of teacher professional development, in that most of us are “digital immigrants”. We did not grow up with computers and have had to learn a new language. This has taken many teachers out of their curriculum centred ‘comfort zones’ into new, and for some, scary territory.

David Potter (www.thenetride.com) has described the journey of many teachers coming to grips with ICTs in teaching and learning as one of becoming increasingly aware of what we don't know. By this model we move through stages from initial ignorance of our own ‘needs’ in ICT towards an ideal of the subconscious absorption of ICTs into our practice. At the beginning of our ICT journey we are in a state of ‘unconscious incompetence’ – we don't know what we don't know about ICTs, and what is more, we don't even know *that* we don't know. In the next stage we become ‘consciously incompetent’ – we start to realise that there is a lot about ICTs that we don't know and perhaps would like to know, or even feel under some professional pressure that we should know. After upskilling ourselves, through PD or whatever other means, we then become ‘consciously competent’ - the stage where we use ICTs with classes, and are confident about our own ICT skills and knowledge. Finally, we become ‘unconsciously competent’ - the stage which many of our digitally native children are already at, in which the ICTs are taken as much for granted as books or blackboards, and where we just use the technology without thinking too much about it.

In year one of the clusters programme most of our teachers were at the first or second of these stages - unconsciously incompetent, or consciously incompetent, aware or unaware of what they didn't know with regard to ICTs. At the same time, I did not know many of them well and although I knew I had an ongoing responsibility to do some sort of ‘needs assessment’ with them, I was not certain of the best ways to go about this. I was supposed to provide a PD programme to ‘meet their ICT needs’ when neither they nor I actually knew what these were!

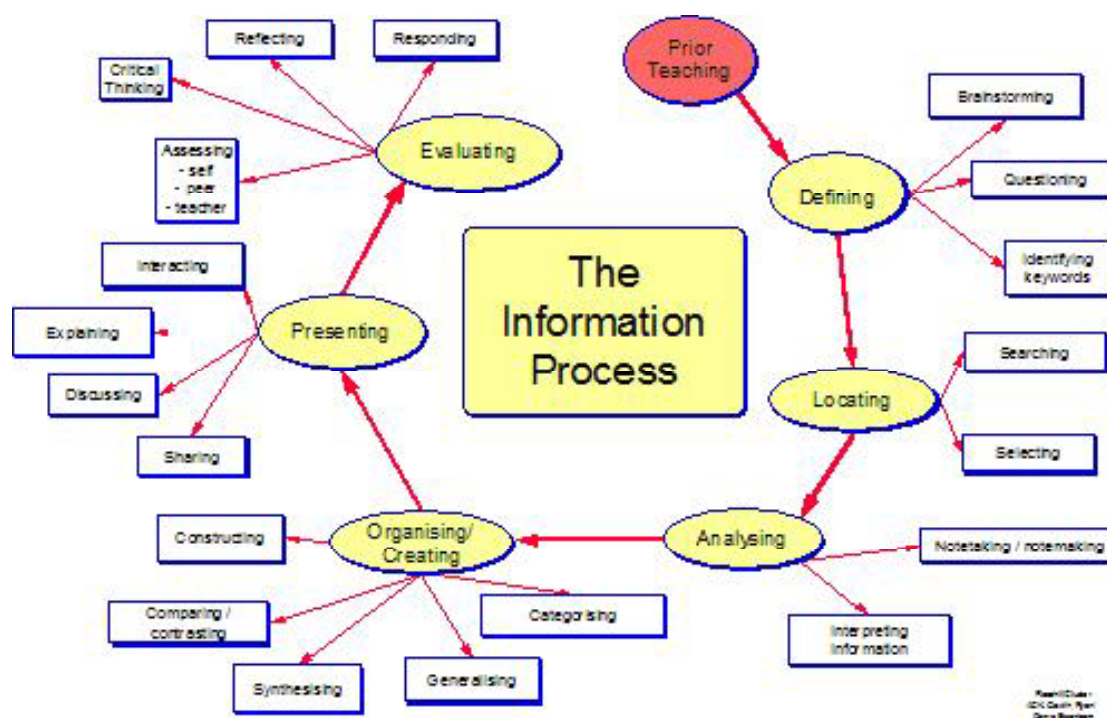
My action research project, therefore, focussed on the practicalities, from the facilitator perspective, of identifying teachers' ‘needs’ and getting the frequency and quality of feedback that I needed to prepare effective Professional Development workshops. I kept records of meetings and emails where workshops were organised, as well as journaling my reflections on the different strategies I tried over the three years of the project.

Year One – 2001

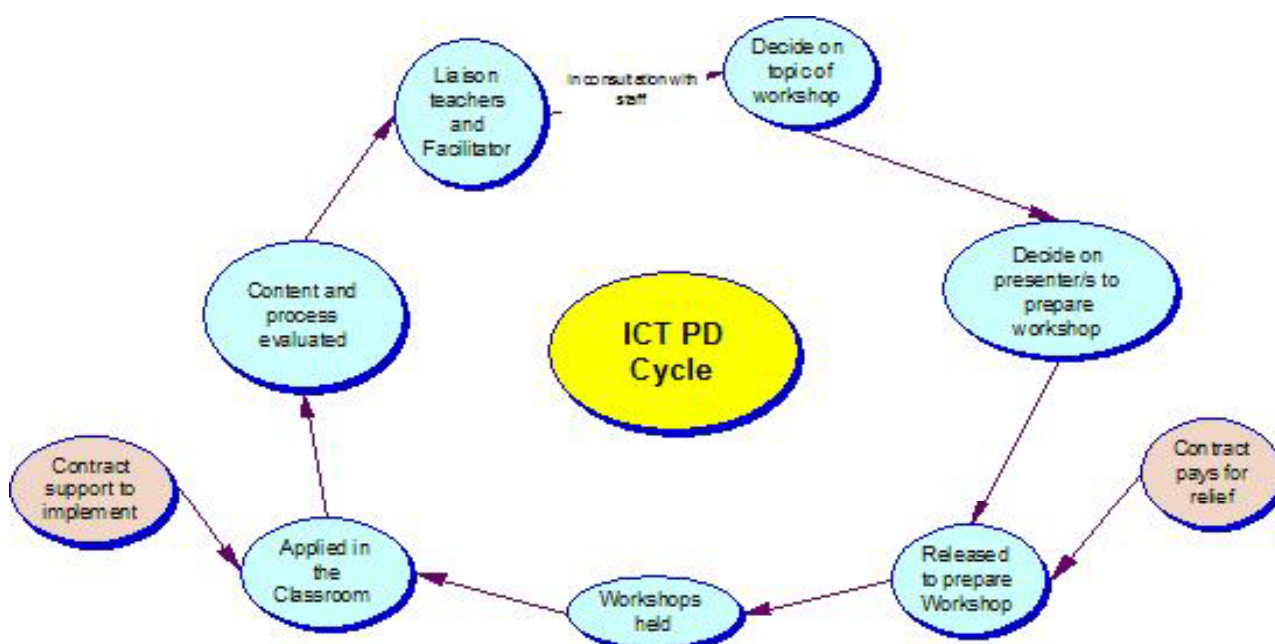
The first problem I encountered was the time it took to get feedback from the Liaison Teachers (LTs) to set dates for workshops. I was finding it could take a whole term just

to get an agreed set of dates and a programme! The second problem was how to find out what teachers wanted / needed? What ICTs will they use in the classroom? How do teachers know what they don't know? Some teachers were at a stage of unconscious incompetence, unaware even of where to start, while others were familiar with some things they 'wanted' to know, but I was not sure that was actually what they 'needed' the most? How was I to target the PD at the right needs, wants and skills levels?

In the first year of the Cluster Contract, the programme was planned to introduce teachers to TKI and to an Information Research Process that all schools in the cluster would follow:



Workshops were held in some basic skills in using email, Word, troubleshooting and basic maintenance, and time was spent in staff meetings to discuss Information Literacy – what is it? Why is it important? A PD Cycle was then introduced to assist planning of further ICTPD, by which the school LT and the Facilitator would decide on topics for workshops. To start with, the topics were simply based on whatever the teachers asked for.



After school “Wednesday Workshops” on various ICT skills were thus held at the lead school during Term 3. These covered such things as ‘making tables’, PowerPoint and ‘digital images’. However, I noticed that attendance at these waned after a while. I wondered why teachers weren’t turning up to sessions *they* had asked for. Reasons given included the time (couldn’t start until 3.45pm), the distance (one school is 20 minutes away) and that the lead school computers were not the same as the ones they had (different versions of software, faster machines). There were also huge ranges in the teachers’ technical abilities. This left me trying to think of something different.

In relation to the timing issues, I found myself having to be quite assertive about dates and the timing of feedback. My mode of making dates for meetings and workshops was refined from “Let us know when ...” in year one, to “Which of these weeks would you like to book?” in year two, the weeks themselves being decided at the Liaison Teachers’ meetings. Even then dates would often need to be changed when other things came up. The first and last weeks of term were usually avoided. Giving LTs a selection of dates, followed by an email a week or two before to remind them to let me know what the topics were, worked best.

Getting feedback on the desired topics for workshops was harder from my perspective. It relied on the efficiency of the Liaison Teacher in each school, and each one had their own methods of getting feedback from their teachers. Some decided for them (not always the best idea as it did not meet their personal needs), while some waited for requests, letting me know as late as 4.30pm the night before the workshop!

The problem of deciding on topics for workshops was discussed at the Term 4 LT meeting. We decided that there was a need to continue the Wednesday Workshops but that they should focus more on what the teachers wanted most to know or could most use with classes. Back to square one! What was it that teachers wanted to know and how could I find out? We decided that perhaps personal ICT goals, linked to appraisals, could be made for the next year and be recorded. Facilitators would receive

a copy of these goals in order to provide the PD teachers need to fulfil them. The Liaison Teachers would negotiate and collate the ICT goals identified by teachers at the start of the year. These goals were linked to the appraisal process to ensure teachers would be motivated to take part. The issue of privacy was raised, so it was decided that I did not need to know individual goals, but that the LT would gather the goals and email the topics to me and I would organise workshops on the basis of them.

Year Two – 2002

In the second year of the contract I wanted to provide PD more clearly based on school and individual teachers' ICT goals, so that the skills were more likely to be used by the teachers in the classroom. At a meeting on 19th February, Liaison Teachers (LTs) were asked to collate all these goals and advise us of the teachers' identified ICT and Learning needs so that workshop dates could be planned for Terms 1 & 2.

Also during Term 1, coverage was discussed at a regional cluster meeting. Other clusters were looking at all the software applications in the cluster baseline surveys and planning PD to cover all these applications. This sounded like something we should look at as well, so a table was prepared for teachers to fill in to identify what they knew (and therefore by implication showing what they didn't know). Hopefully, this would help teachers identify their needs, and from these needs a topic could be decided for a workshop. The sheet was emailed to Liaison Teachers on 19 February along with a second table to plan for the next two years. By Monday 4 March I had had no response. Further action was needed!

Face to face meetings were then held with LTs in their schools. One LT requested release time to discuss with teachers their individual needs. This was carried out but the result needed further analysis to arrange workshops for more than one teacher at a time. To make sure PD was relevant to what teachers were doing in the classroom, I attended syndicate meetings to suggest ICT rich activities that enhanced planned unit topics. This process was very time consuming, but did result in PD which was "just in time" for the teachers to use in their classroom. Could this be a successful strategy?

Eventually the topics were decided, and dates for workshops were booked, but it was going to prove a squeeze to get them completed. Only one school managed to set a date and topics for workshops in term 1 (in the last week of the term), with the other four booking two dates in Term 2. To meet with all syndicates in all schools (at least 20 syndicates) would take about 5 weeks. There had to be a better way! The personal visits got me closer to what the teachers actually wanted/needed, but I was now faced with the problem of getting the feedback from the LTs in order to plan workshops more evenly through the term.

At the July LT meeting, therefore, we started by setting the dates for the workshops for the term. I also attended syndicate meetings at a second school to help them decide on an ICT activity that would enhance their topics and then decide on PD required. This took four syndicate meetings (from 6th to 26th August) and six emails to try to organise one workshop day, but I felt it was worth it because it meant the PD genuinely related to what they were wanting to do with their classes. The workshops were held on 30th August and seemed very successful.

For Term 4, I tried a different, less time consuming (for me) strategy. By then the teachers had covered their prior stated ICT goals and so were now given an opportunity to decide on something new to focus on. This brought up a few interesting responses. Some teachers chose something they had done before, commenting that “I wasn’t ready to learn that before – I have better skills now” and, “I need more time / instruction before I feel I can do this with the children”. Other teachers had great difficulty in choosing something – they still didn’t know what they didn’t know – or what they needed to know.

At the end of 2002 the research findings from the 23 clusters evaluation were released, in which it was found that most teachers only used a few applications in the classroom (Ham et al, 2002). For the majority of teachers on the PD programmes, using the same few ICTs often took priority over using more ICTs. A breakdown of the range of ICTs used by individual cluster teachers also showed that about a third of them had used only one or two different ICTs with classes by the end of the three years, just under half had used 3-5 different ICTs, and about 20% of the teachers had used more than 5 different ICTs. Word processing and web browsers along with presentation programmes accounted for over two thirds of all specific uses.

This got me thinking that perhaps I should be spending more in depth time on the applications teachers were using, rather than trying to get coverage of many ICTs? Would the teachers get more from learning a little bit about all available applications or from concentrating on their favourite ones in more depth? And if the latter, then which applications do teachers have to know how to use? Which are essential?

Year Three – 2003

Thus at the first LT meeting for 2003 we discussed ‘what applications you would choose if you were limited to three?’ Consensus among the group was: an internet browser, a word processing programme and a presentation programme. Inspiration was another popular choice. Altogether there were eight favourite applications considered: Imovie, Hyper Studio, web browser, email, MS Office, PowerPoint, KidPix, Publisher.

We also had to plan in year three for the continuation of PD after the contract, so it was agreed that teachers would be invited to choose one application to become very proficient in and use with classes, and they would thus become “resource teachers” for the rest of the staff in the future after the contract was over. They could also receive PD in the use of other applications as well, but a core set was established.

Workshop dates were booked at the LT meeting, and LTs were to decide on topics as they were requested by teachers. LTs were also asked to let me know who were to be the “resource teachers”.

The Resource Teacher idea was not successful. Largely because teachers did not volunteer to become Resource Teachers. Many felt that it would be an “extra” that they didn’t have time to do or didn’t yet have sufficient confidence to do. The idea was abandoned.

At the next LTs meeting (May 2003) we looked at the different strategies we had used for deciding on topics for workshops, and discussed which should apply that year:

Option 1: What do you want to know? This was the option selected for Term 1 of year 1, by which teachers chose something they wanted to do in grouped workshops.

Option 2: Syndicate meetings so ICT related to Units planned for later in the term / next term. This was tried in year two and involved facilitator one-to-one visits to school syndicates.

Option 3: Ensuring coverage of all areas of ICT – This involved offering workshops covering what the facilitator knows hasn't been covered yet.

Option 4: Focus on relating the PD to the Information Process

Two schools opted for syndicate meetings, while others chose from a selection of topics based on a mix of Options 1 and 3. All agreed that it was important to build in Option 4 as well.

In the 'Syndicate meeting' schools, the PD was to focus on how to save information from the Internet to use later in class, although at these meetings teachers expressed some frustration with accessing the Internet. Each school had continuing issues with their connections and were frustrated with planning for the students to use the Internet and not being able to get a connection when needed.

In the event the Year 7 syndicate teachers created image libraries for the students to access. At the Year 5/6 syndicate meeting I showed the teachers how to save pages from the Internet so students could access them without actually connecting to the Internet. The teachers felt they got enough information from the syndicate meeting and didn't arrange a practical workshop! Ten minutes of "just in time" support, it seems, was sufficient. Once again, attending syndicate meetings targeted the PD with what teachers were planning to do in the classroom. Sometimes just suggesting an ICT activity was enough – the teachers had the skills but not the ideas.

At other schools a restricted choice of three or four topics/applications was given for teachers to choose from, thus combining Option 1 and Option 3. This gave teachers the choice of learning more about using in class an application they had already worked with, or learning something new. Some choices were: using digital images, making web pages, using resources from the internet, all of which meant that more than one application was involved (eg: putting digital images from the camera into a folder, on a Word page, into Publisher and into PowerPoint, copying and pasting website addresses into Word, making web pages for the school intranet). The focus in all these workshops was not on how to operate a given program, but on how it could be used with classes.

My own feeling was that these workshops were very successful. Teachers now seemed ready to apply the skills they had acquired in earlier more skills based workshops.

At the last LT meeting for the Contract, a short survey was filled in on what they felt had been the best PD and how to decide what to cover.

How to decide what to cover (1=Best; 5=Worst)

| Strategy | School | | | | | Total |
|--------------------------------|--------|---|---|---|---|-------|
| | A | B | C | D | E | |
| Set programme | 4 | 4 | 2 | 3 | 4 | 17 |
| Syndicate groups | 2 | 2 | 4 | 2 | 2 | 12 |
| Choosing from some suggestions | 2 | 2 | 5 | 1 | 3 | 13 |
| Teachers' free choice | 1 | 3 | 4 | 4 | 1 | 13 |

Interestingly, from their point of view different options were seen as the Best and the Worst, depending on the school. A pre-set programme was certainly easier for the LTs to organise, as they did not need to spend time finding out what teachers wanted and communicating this to me. Syndicate groups were favoured by most schools, but it was a very time consuming strategy for the Facilitator. Overall, I concluded that variety and mixture seemed to be the best option; a variety of PD opportunities, as well as a variety of methods on how to decide.

Conclusion

Looking back on my journal and the records of PD events and meetings, a major lesson learned was that at the start of a Cluster contract there will probably be certain things that everyone needs to be on board with. These will include the underlying reasons and rationale for using ICT in schools, which in our case was dealt with through discussions on Information Literacy. Teachers also need at the start some basic skills in using the computer (the hardware and software) as well as things like click/double click, copy and paste, highlighting, etc. For the novices in this area a predetermined programme set by the facilitator to cover all this is probably the best way to go.

Beyond these preset, facilitator-determined start-up strategies, I found that syndicate meetings where an ICT-based learning activity could be negotiated which related directly to the class work being planned was a good way to introduce teachers to integrating ICTs. The teachers learned how to do the activity immediately before working with their classes. This approach had varied results, but most teachers applied their skills in the classroom, though sometimes it was difficult to know. Offers to help teachers implement ICT directly in the classroom were not always successful, and I had to work hard to avoid situations which ended up with the facilitator working with some children while the teacher did something else with the rest of the class. A suggestion that a reliever be used to take care of the rest of the class during in-class facilitation is suggested.

In the third year, having them choose from a selection of ICT activities allowed the teachers some flexibility in what they learnt. They liked being able either to learn more about something already covered, or to choose something new. This semi-structured approach was easier to organise from my perspective than allowing them 'free choice' based on their own lack of knowledge. Making their own open choice also made it harder to group teachers, and needed to be more one-to-one. Grouping like wants, moreover, did not result in an ideal group either because of differing skill levels.

Therefore, overall, what appeared at the time to be a haphazard, trial and error method of determining ICTPD needs turned out to be a relatively effective way to do it. The variety of strategies ensured the flexibility to ensure basic skills were covered where necessary as well as allowing the teachers some input into what they wanted to do, thus meeting personal goals. If I was to do it all again I think I would plan on some set programmes in the first year, introducing new applications and activities, with some degree of selection by teachers in the second year, and some free choice in the third year.

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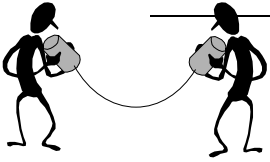
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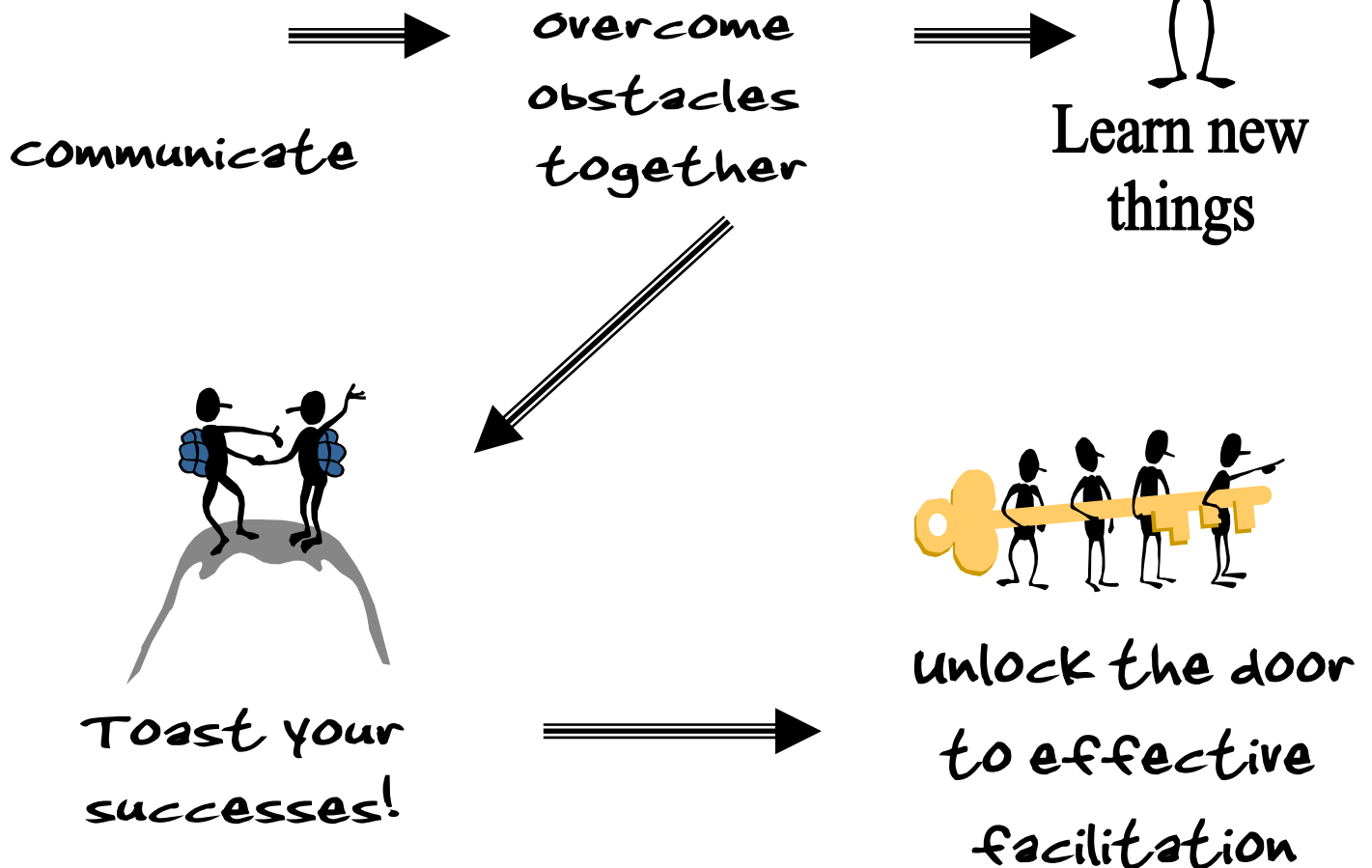
**An Action Researcher Report from the 28 ICTPD
School Clusters Programme 2001 – 2003**

**Developing Confidence in
Lead Teachers**

– Sue Ogden & Audrey Harvey



Developing Confidence in Lead Teachers



Developing Confidence in Lead Teachers

Sue Ogden & Audrey Harvey

Introduction

In 2001 we were fortunate to be selected as one of the clusters for the 28 Clusters ICTPD programme. Our Cluster consisted of 6 Primary Schools and 1 Intermediate School. We, Audrey, the coordinator/facilitator and Sue, the associate facilitator, had both been associated with many of the schools previously but were not actually staff members. Audrey had worked extensively with the lead school on the integration of ICT in teaching and learning and Sue was a part time teacher and part time ICT facilitator with the lead school.

Our cluster vision was to make ICT an integral part of teaching and learning in the schools, and to motivate students to become independent learners. Equally though, we were conscious that there were risks involved in the schools becoming too dependent on us and our expertise. So our other main focus throughout the contract was to develop the confidence and abilities of a group of lead teachers in each school, so that they could continue to implement this vision within their own school at the completion of the 3-year contract.

It was our belief that for any ICT Professional Development programme to be successful in altering teachers' classroom practice, lead teachers and teachers would develop their own rationale on the relative benefits or otherwise of its use over conventional methods of teaching and learning, and link that with the support required to enable any necessary changes in their classroom practices. We believed that there must be a combination of activities that the teachers saw as necessary and important, and that it was our job to provide opportunities for the teacher to move forward and be faced with new challenges in their teaching. This process, linked with critical reflection, would allow the teachers to celebrate success and move on to areas that needed further development.

Our facilitation model was based on the experiences of the navigator project in Victoria, in which a coordinated trainer oversees the project, while facilitators work with lead teachers (2 per school), who in turn would work with classroom teachers on ICT related professional development.

Our PD model in the cluster had the following features as its basic structure:

- The ongoing presence of ICT contract staff, constantly available for modelling ICT use, for resource development, for innovative ICT leadership and to be seen as an integral part of the school's staff, rather than as visiting experts who appear and disappear.
- Development of collegial support structures based around the teachers in each school and the "buddy" system for immediate support.
- Lead teachers knowing that they would be helped and guided in a supportive manner.
- The use of a range of professional development approaches.

- The development of spiral activities termed the “Action Research Spiral” that were both timely and effective. These spiral activities followed the following phases.
 - At each stage there was *input* followed by *practice* then *reflection* on how it could be adapted or improved.
 - This process was repeated and *shared* with another teacher.
 - After once again *reflecting* on the *activity*, the *process* and the *outcome*, there may be a *change* or *modification*.
- A 3-year progressive cycle of input, facilitation and evaluation.

Our own action research, reported here, focussed on items 2 and 3 above. It centred on how we as cluster facilitators, could best foster effective support structures for teachers over the three years, and build their confidence in three key aspects of ‘lead teachership’: their own levels of ICT skill, their understandings of effective pedagogies using new technologies, and, perhaps most important as it turned out, their evolving development as ‘leaders’, ‘mentors’ or ‘change agents’ within their own schools.

Our reading in many different aspects of ICT showed us that there are several common strands to be considered when exploring the role of facilitators and the development of effective use of ICT in teaching and learning.

McKenzie (1998), for example, states that in the development of information literacy, professional development of teachers was of vital importance. Halliday (2001) also supported these findings when she identified these elements that she felt needed to be taken into account when designing professional development programs for teachers:

- An expectation that teachers will participate.
- Lead teachers who are trained so that on-going support is provided.
- Individual needs are identified

Regular professional development sessions (workshops etc.) were a major focus of our project and one of the keys to developing confidence in our lead teachers.

In a specifically New Zealand context, Ham (2002) also emphasises to facilitators of professional development, the importance of confidence building, both among lead teachers and teachers. In his evaluation of the ICTPD Cluster Programme 1999-2001, he states that “For most facilitators, personal skills with particular ICTs were a necessary starting point, but they were not generally seen as the most important part of their job description. These major purposes were more often than not expressed in terms of capturing teachers' hearts and minds; developing teachers' confidence first, and then developing their deeper pedagogical understandings about the use of ICTs as educational tools.” (p.40) The study also shows that teacher confidence regarding ICT usage seemed to be a better predictor of classroom usage than teacher skill per se.

Several other studies similarly argue that the best adult learning programmes have confidence building as a core component. A UNESCO study, for example, isolates effective PD programmes as being those which “place a high priority on developing confidence, comfort and calm along with competence. For many of the techno-

holdouts, emotions play a very serious role in blocking acceptance of ICT. Questions such as "What if I look foolish in front of my colleagues?" or "How do I fit this into my already crazy schedule and life?" or "What if I look foolish in front of my students?" may arise."(2003). Programs that emphasize coaching and mentoring relationships encourage the growth of technology enthusiasts while also supporting and enlisting teachers who have previously been thought reluctant, resistant and technology challenged (McKenzie 1999)

Leu and Kenzer(2000) also emphasises this aspect when claiming that: "In addition to preparing our preservice teachers to advocate for their own professional development, we must consider the role of mentorship on the motivation, decision making, and practice of beginning teachers." As does Watts-Taffe (2003) when arguing that "fellow teachers, formal mentors and the connection to this university based project were critical to teachers' technology use in the classroom". All of these helped confirm our thoughts that continual support from a source outside the cluster environment provided another means of ensuring progress among lead teachers.

We too saw confidence building as a key element of our facilitation role. Such readings also supported our belief that an important part of our professional development programme was our goal to move our teachers from being 'teachers' to also being 'facilitators' over the three years. As McKenzie (1999) comments: "The ultimate goal [of facilitation] is to pass the responsibility for continued success to the partner. This coaching experience should be viewed as an interim measure to support program development, with the coach eventually disengaging and moving on to work with others." In this case these partners were our lead teachers.

The literature thus reinforced our belief in the need for us as cluster facilitators to build a level of confidence in our lead teachers that would enable them to accept the transfer of knowledge and to use it to the school's advantage. To accomplish this they would have to be teachers who possessed the qualities necessary to become an effective facilitator and to be prepared to be leaders within their school, as well as teachers who were confident and competent in a more technical sense.



The Action Research Model

For our investigation we chose an 'action research' methodology, as outlined by Bigum, Henry & Kemmis of Deakin University (1988).

"action research is research into one's own practice; it is collaborative; it aims at improvements in one's own practices, understandings and situations; and it involves a self-reflective spiral of planning, acting, observing, reflecting the re-planning, further action and so on." (p.9)

As this was our first contract of this sort we were working in unfamiliar territory in many respects. We decided this style of research could be very effective as it was all about professional development *for us*, while we were helping others at the same time. It provided a means of gathering data about, and analyzing our own processes and finding ways to make them even more effective. The learning curve for us was tremendous. We thought we always self-reflected as facilitators, and we certainly always discussed things collaboratively, but this encouraged us to ask more questions of ourselves and analyze the needs of the lead teachers and our own ways of dealing with them in more depth and with greater validity.

Approaching action research collaboratively gave us the opportunity to look at the topic from a variety of perspectives, including some we may not have encountered if we had worked alone. It also provided us with mutual support and encouragement during the process.

Action research has 4 main phases that are repeated throughout the project. These are usually referred to as ‘cycles’ (Wood 1988). The cycles are:

1. develop a plan of action to improve what is already happening;
2. act to implement the plan;
3. observe the effects of action in the context in which it occurs;
4. reflect on these as a basis for further planning; subsequent action and so on, through a succession of cycles (Kemmis 1981)

Developing a Plan

Initially we began with an agreed area of focus: the facilitation of the lead teachers in the cluster schools. Questions in our minds were issues such as: What changes will take place with lead teachers as they incorporate ICT into their daily teaching and learning? What skills will they need to become facilitators themselves? What is the most important thing for them to have or know in order to make an impact? We concluded that one major focus could be that they must become *confident* and *competent* in three core ways:

1. confident with the technologies themselves;
2. confident about the many ways in which they could integrate them into their teaching and learning; and,
3. confident about their role and abilities as school leaders and mentors with regard to ICTs.

We then refined our ideas several times until we decided on our final question: How could we, as cluster facilitators, best develop such confidence and competence in our lead teachers and thus enable them to become effective facilitators within their own schools?

Data Collection

We identified the ways in which we would collect our data. We had developed an action plan for the 3-year contract and had already decided on the format our first year of facilitation would take. This incorporated in-school visits as well as workshops held

at a venue outside of the school environment. We had also, as part of the contract, scheduled regular management meetings, designed to keep the communication lines open between us and the lead teachers and to give the lead teachers the opportunity to discuss issues as a group.

We agreed to gather data from ‘*In School Visits*’ in the forms of:

1. Lead teachers’ reflective journals. Each lead teacher would complete these. We believed this would make the process clearer for them as well as us.
2. Examples of lead teachers’ planning.
3. Examples of planned and implemented classroom activities.
4. Their verbal reflections on the progress made with children and other staff.
5. Anecdotal notes from visits to lead teachers in their schools.
6. Our own facilitator’s journal.

Data from the Workshops with lead teachers came in the form of:

1. Transcribed notes from tape recordings of some of the workshops.
2. Observations from sharing time.
3. Shared planning documents and discussions.
4. Examples of activities designed.

Other data included:

1. Diary notes from off the cuff discussions at conferences and informal gatherings.
2. Cluster management meeting minutes.

Our Story

In the first year we planned to identify and upskill the lead teachers and encourage them to critically analyse their current teaching practice. In the second year we wanted to introduce action learning and facilitation within their syndicates. By the third year, when ICT was an integral part of their teaching and learning, we intended to assist them to develop effective facilitation strategies and support them in their new facilitation role.

We began by asking the principals to select two lead teachers who were:

- Good classroom teachers.
- Prepared to commit and complete extra tasks.
- Interested in ICT but not necessarily ‘experts’.

Our hopes and expectations were that by the end of three years these teachers would take a leading role in motivating and facilitating staff, thus sustaining and building on the scaffolding we had put into place. Little did we know this was going to mean several major shifts in our focus and practice as facilitators over the 3 years of the contract.

Year One – 2001

Strategy – Classroom Exemplar Workshops

In the first year, our main aim as facilitators was to raise the lead teachers' level of use from using ICT as an 'add on' to incorporating it into their daily teaching and learning. All the lead teachers demonstrated reasonable ICT skills, but most felt they were not thinking creatively about their use with classes. This alerted us to the fact that *we* needed to be the ones to initiate this progression. We decided to do this by enabling them to implement new ICT activities within their own classroom environment. In our initial workshops, therefore, we saw our role as relatively simple. Together we created examples of classroom use, which they then modified to suit their own classroom situations. These examples were simple, effective and innovative curriculum activities using ICTs.

We designed and tried exemplar activities that we thought might lead to an improvement in their confidence level. We exposed them to various teaching methods (Sauce Model, De Bono's Thinking Hats, and so on) in a step-by-step process using a curriculum focus that was relevant to a common theme being used in schools (such as 'Traditional Stories'). We provided them with a professional reading at workshops and had a group discussion on the findings using questions such as: How does this relate to your situation? What are the main points and relevance to us? Do you agree or disagree with these findings? Would you implement this? What would be the difficulties? And, as facilitators, we modelled and discussed different management systems and facilitation styles that we hoped they would then model to others.

Throughout these sessions we concentrated on the learning process rather than pretty presentations. As facilitators we demonstrated a variety of models encompassing a wide range of curriculum areas, thus enabling each lead teacher to select a curriculum area in which they were confident in order to further develop the learning experience. We encouraged them to use "Traditional Stories" as a theme for their class so they could trial one of the models we had demonstrated. At the following workshop they shared their achievements.

We were impressed with the unique ways in which they had adapted our unit to meet the personal needs of their classrooms. The work was of a very high standard and the variety of activities the teachers produced was amazing. As a result of this united project the lead teachers said they saw first hand how one single unit could be approached in many different ways.

From our perspective, although the strategy was successful and they were delighted with the outcomes, it informed us that many were still working as learners at this stage. For example, when we asked the lead teachers to identify the main benefits for them of the programme to date, they made a number of comments such as:

"We valued a time where we can share ideas and resources outside of the school environment."

"The opportunity to learn from others."

"Professional readings which create a forum for debate. These make us think and examine our teaching style."

“The focus on integrating ICT into the classroom learning.”

“Assistance with practical ideas for teaching and learning using a range of technologies.”

“Time to experiment on the computer so we can consolidate our learning.”

“Motivational ideas for us to use with reluctant staff members.”

Strategy – ‘Buddy’ Teachers

Another initial strategy we tried in the first few months of the programme was to ask the lead teachers to choose a particular colleague that they felt they could use as a buddy to share ideas and concepts learnt at the workshops. These teachers would be their buddy teacher for the first two terms. We planned for them to pick up a second buddy halfway through the year and their original buddy to do the same. Our vision was that whole syndicates would become involved in learning about effective use of ICT in teaching and learning. This was our first attempt at the ‘trickle down’ effect.

Our initial feedback indicated that the buddy process was successful, but largely because they had chosen someone to whom they could easily relate. However, some problems became apparent at the next stage when they each involved another person from their syndicate. At this stage we all felt that the trickle down effect began to break down. This in turn led us to rethink our methodology, as the lesson we learned from it was that it was relatively easy for them to ‘teach a friend’, but they needed rather different skills to facilitate other colleagues with whom they may not have such an established personal relationship.

This also revealed that personality, professional experience, and differences in status within the school could all be parts of the equation. For example, one lead teacher, who was a very quiet person and had only two years teaching experience, had to work with a member of the senior management team who was reluctant to use computers. Instead of working these power differentials through, the lead teacher just gave up. He also felt that some of the more experienced teachers did not want to listen to a second year teacher. As a result of this it became evident that we would need to instigate strategies that could assist the lead teachers in dealing with this kind of challenge.

Strategy – The ‘Brag Board’

During our regular classroom visits in term 2 and 3 of year 1, we came to feel that while the lead teachers were effectively using ICT in their own classroom, such experience was not always extending out to others in the way we had anticipated. We tended to see little evidence of a flow-out of ideas on ICT usage from the lead teachers’ classes as we visited other classrooms around the schools.

Because we were concerned about this, we set aside a discussion time at our next workshop to ask the lead teachers for suggestions on how they could meet this challenge.

Some of their ideas were:

“Get the teachers to come and see our classrooms.”

“Run a tekkie brekkie on a small activity.”

“Have a display board for teachers to see.”

“Have a segment in the staff meeting for ICT activity/teaching/awareness.”

Together we decided that the lead teachers would install a ‘brag board’ in a prominent place in each school. The most popular place for this display board was the staff room, where every teacher could be exposed to these teaching experiences. All teachers (not just lead teachers) were encouraged to contribute innovative and effective ICT activities to the board. These were supplemented with ‘how to’ sheets, where necessary.

When we next visited the schools we were pleased to see interactions between lead teachers and staff members, who were discussing the possibility of using these ideas with their classes. We, and the lead teachers, were delighted at the positive response from this simple idea. Finally, other teachers were coming to the lead teachers to ask for assistance. Several teachers and principals commented that the brag board was ‘fantastic!’ It led to a lot of discussion among staff, especially from those who were keen to try new ideas. Some of the more reluctant staff made comments such as “It looks great but I can’t do that!” or “One of our experts put that up, not me” , but at least it had stimulated some discussion and started the spread of ideas, and for most staff it was seen as very successful.

From such comments we concluded that it was an effective strategy to motivate the already motivated, and to spark an interest in some of the others, but a few staff felt it was beyond their reach. We alerted our lead teachers to these individuals and suggested they make contact and help them achieve something at their own level.

The brag board idea also overcame some of the barriers where lead teachers were not themselves confident enough to continually promote ICT. This was a way of assisting them to put these simple ideas in front of the staff without having to say much at all. They reported that teachers were now coming to them and asking how to do the things on the board. Initially this proved to be a subtle but effective means of spreading an assortment of ideas throughout the school. It was easy for the lead teachers to maintain and one school even made it the responsibility of a keen ICT teacher to add new things to the board from other teachers’ rooms on a fortnightly basis.

Strategy – One-to-One Visits in Schools

Between workshops we visited the schools and worked one-on-one with the lead teachers who were working with groups of children. This was done in order to help them develop sound management systems within their own classrooms. Lead teachers were then responsible for modelling this to another syndicate member later in the term. They were also encouraged to introduce simple but effective ideas in staff meetings as often as possible. In the event the latter seemed to happen sporadically, but everyone made a valiant attempt to do it. Unfortunately for some, they were not part of management and their space in the staff meeting was continually left till later until it either didn’t happen or everyone was too tired to really listen. This was very disheartening for them, and when the lead teachers shared this frustration with us at the workshops we could only empathise with them and encourage them to keep pushing it. Our strategy here was to encourage them to remind management that they

were on the ICT contract and they, as lead teachers, needed to be able to share the knowledge they were gaining with their staff as part of the contract.

Strategy – After School Skill Sessions

In order to further lessen the burden on the lead teachers we set up after school courses, run by ourselves. We hoped this would take the slow process of upskilling the staff away from the lead teachers and let them concentrate on getting things going in terms of classroom activities and ideas. We offered a number of after school courses, which consisted of 3 x 2 hour sessions using a specific application (Word) with particular reference to hands on activities for the classroom. These courses were designed to give teachers time to investigate activities with the intention of giving them the confidence to use ICTs in the classroom environment. We chose to hold the courses at the lead school as that also provided the opportunity for those attending to link with the lead school. Surprisingly, though, many of the lead teachers took up the available places themselves, leaving only a few spaces for other staff from the cluster! This indicated to us that the lead teachers still felt the need to reinforce and extend their own personal skills and gather even more new ideas before feeling confident enough to take up a lead role in ICT. Moreover, in some schools it also led to some resentment on the part of other teachers, who felt we were giving our attention to the lead teachers instead of working direct with teachers. Ironically, as a direct result of the lead teachers sharing their ideas from workshops and the after school courses they had attended, they found themselves bombarded by their staff with the question: “when are we going to get some PD from the contract?” We immediately responded to this demand by increasing the number of courses we were running and sought other ways of continuing work with the lead teachers.

The lesson we drew from this was that by providing this type of professional development we increased the interest in ICT for all staff members, while assisting our lead teachers with their goals to get ICT up and running in their own schools. They did not have to spend valuable time upskilling their staff. With more staff having the basic skills, we hoped the lead teachers would be able to come in on the next level with their colleagues and work alongside them to get simple and effective curriculum related activities integrated into a classroom environment. Although this did happen with some, a lot of teachers simply parroted the activity and waited for the next one. While many had moved from ‘add on’ to incorporation they hadn’t yet made major pedagogical changes in their teaching. For example, in one school we saw a simple activity, ‘Concertinas’, being used for everything! Nevertheless, it did encourage more teachers to approach the lead teachers for help with activities they wanted to implement in their classroom.

As the contract continued, therefore, we began to see slow but steady progress in terms of trickle down through the lead teachers. The lead teachers were working with a buddy teacher and were filtering ideas and concepts learnt at the workshops into their syndicates. More importantly, perhaps, the lead teachers themselves were becoming a bit more positive about their own impact. At our mid-year management meeting with lead teachers one representative from each school gave an update on the progress of their staff and shared some experiences from their journey. At this meeting they said things such as:

“Model classrooms are being set up.”

“We have been asked to run Professional Development segments for the rest of the staff next year.”

“We can see a shift in focus in staff towards ICT. Teachers have given many positive comments about the after school courses.”

“The brag board in the staff room has raised the awareness of ICT and its uses and has motivated staff to find out how to do new things.”

“We are still frustrated with old equipment.”

“Every school now has an ICT segment in their staff meeting.”

Strategy – Community Presentations

To highlight our progress in the first year we suggested a community presentation. One aim of this presentation was to show the community what was happening in lead teachers’ classes in relation to ICT and to offer the lead teachers some recognition for all the hard work they had done over the past year. Schools had spent a lot of money on ICTPD and we felt some pressure was on our lead teachers to show parents and colleagues that this was a worthwhile expenditure.

The major focus for this evening was to share *“How ICT has made a difference to our teaching and the students’ learning.”* Staff, principals, neighbouring schools outside the cluster, and parents were all invited to attend this evening (4.30 pm – 7.00 pm). Schools also made this their staff meeting to show their support for the effort the lead teachers had put into the contract. Students were rostered every 15 minutes to demonstrate various hands on activities they had been doing in their classrooms. They explained what they were doing to parents, highlighting the motivational learning that was beginning to become part of their natural classroom-learning environment. The local papers included a photo and an article on the event where over 600 people attended while a thunderstorm raged overhead.

To gauge the progress that had been made with the lead teachers in the first year we asked them to give an overview of the contract thus far and these were some of the pertinent comments we received.

“We liked the opportunity to get out of the school. It gave us uninterrupted time to do, think and experiment with things while having experts on hand to help.”

“It provided us with a time to discover things for ourselves.”

“Direction by facilitators allowed for personalisation.”

“The facilitation moved you on. There is always extra help if you get stuck.”

“We were able to have contact with contributing schools.” – Intermediate School

“We appreciated the after school courses. These were great for the whole school.”

“We are asked to make decisions, which are technical. Can we get technical training?”

“How do we get the whole school enthused and participating in PD?”

“Want a basic troubleshooting training. (TKI has technical support available these days).”

“Have all facilitators on ICT teams in schools.”

It was evident that lead teachers were proud of their achievements by the way they conversed with parents, principals and staff from other schools in the presentation evening, and our own journals commented on the confidence that had increased immensely over the year. But we were still aware that some key parts of our job of helping them become independent facilitators in their own right had not yet been accomplished. The fact that many of their end of year comments related to technical challenges rather than pedagogical changes, for example, indicated to us that many were still in the process of making changes in their personal teaching styles to enable the effective integration of ICT. It was also apparent that several were still struggling with their role as school leaders and mentors.

Conclusion

Overall, we were both very pleased with the way the first year had gone, but we realised that the lead teachers were still very much reliant on us for support and to provide ideas for them to build on. It was made very clear to us that the programme needed to include both facilitation skills and pedagogical changes for the next year. As a result of this we then set about modifying our focus for 2002.

Year Two – 2002

Towards the end of the first year we had identified a few challenges. The most relevant of these for this study was that we believed the lead teachers had not been as effective in sharing ideas with other staff as we, and they, had hoped. As a result of this, our own focus for the second year became:

- To empower lead teachers with strategies and confidence to become effective facilitators.
- To further develop pedagogical changes in their personal teaching style.

We therefore developed an action plan to include these focuses. In particular we planned workshops where the theory and modelling of facilitation would be demonstrated and explained, and a programme of focussed in-school support implemented. In contrast to the previous year, where we had worked with the lead teachers for a day at a time, this year we decided to increase the frequency of our visits but to decrease the duration. We began the year with a survey to review the progress and skills of all staff in each school and to look at what their goals were for the coming year. This data was used to identify staff members for whom facilitation would provide the greatest benefit during the coming year.

Strategy – Lead Teacher Workshops

The workshops were held at a venue away from the school environment. Every workshop followed a similar pattern. As part of our confidence building we always started with a time where they could share highlights, show examples of progress, and discuss challenges and frustrations with the group. This led to a very honest and

supportive discussion time. The lead teachers then had the opportunity to further build a support network within the cluster.

As well as discussing pertinent facilitation issues that arose from our sharing time we also had a particular time set aside to model challenging aspects of facilitation. We also insisted that the lead teachers read and discuss professional readings, chosen by us, as an extension to their personal growth.

As part of their professional development we suggested that some of their facilitation time be used to go and see what other schools within the cluster were doing. We emphasized, for example, that primary teachers visit the Intermediate and vice versa. This proved successful in two major ways. First, it reassured some teachers that what they were doing was on a par or better than some other schools. Secondly, they could see how their teaching impacted on other schools. The Intermediate teachers suggested activities that would be advantageous for students to know prior to arrival at their school. For example: 'How to find main ideas', or 'How to make a table', as a lot of their work used tables. This gave some teachers another focus for their implementation of ICT into their programme.

During the afternoon sessions we always introduced them to new ways of integrating ICT into specific curriculum areas. We selected these based on current topics in the cluster to demonstrate the ease with which ICT activities could enhance these units. We also included activities that would encourage independent learners, for example, Web Quests, Creating web pages etc. The benefits of conferences were also frequently discussed as we actively encouraged the lead teachers to attend these where possible. Several lead teachers or principals attended various ICT conferences throughout the year and shared what were the highlights for them.

In-School Visits

Although we thought this would be a similar focus to the first year, it became apparent within the first term that this was in fact going to become a major focus of our job as facilitators. The survey had indicated that most teachers favoured a buddy/mentor situation and this was to be the role of our lead teachers. We hoped that they would work with one teacher in the first term and include other teachers as the year progressed.

Accordingly, we spent term 2 working very closely with the lead teachers, either facilitating alongside them so they could see the process modelled, or facilitating within their syndicate to provide a wider coverage of teachers who were exposed to facilitation. Activities were kept very simple and were designed in such a manner that allowed them to be used in a number of contexts. For example, the concertina, which can be used in all curriculum areas. The acrostic was also popular and teachers found many innovative ways to use this simple design. For example, in the Year 2 classes they listed the letters in a book title vertically and found words in the story that had the same initial sounds.

As a direct result of the lead teachers moving into buddy/mentoring roles we were finding teachers beginning to use their computers, children using computers more often and children and teachers working collaboratively to achieve a common goal. However, the process was a very slow one and the lead teachers needed constant

support from us in a variety of forms. By the beginning of the third term it was apparent that we would have to take up even more of a support role and that just being there to talk to them was going to be a big part of our job. Apart from the facilitation strategies that we concentrated on in the workshops, we felt the best way to help the lead teachers become facilitators was to work through any problems with them both individually and together, helping them to brainstorm suitable solutions.

As a means of alerting other lead teachers to these problems we encouraged the lead teachers to discuss their successes and failures during our sharing time at subsequent workshops. Two areas of particular concern which came from these discussions were dealing with reluctant colleagues, and the lead teachers' professional 'status' within their various schools.

Working with reluctant teachers

One school had a number of teachers who were already reasonably confident with ICT personally and using them in the classroom. They were expected to work with teachers who could not see the advantage of having or using a computer in their classroom. This meant that our lead teachers were put into a difficult situation right from the beginning. Their facilitation job was to work with these reluctant teachers who were mostly more experienced teachers than them. Unfortunately their job was made even harder by the fact that some of these reluctant teachers were also part of the management team. Techniques needed to be developed to get these teachers onside and to encourage them to accept the suggestions and guidance from a less experienced teacher. The following excerpts from our annotated transcripts and journals show how one such discussion with a lead teacher played out during our facilitation time.

- Lead Teacher 1 - *“Colleague 1 has started to use the computer. The course she attended with you in the holidays has got her going and she wants me to show her things.”* There appears to be a bond building between these two and the lead teacher is very excited about it.

- Lead Teacher 1 - *“I’ve found a programme that Colleague 1 can use. I showed her basic Kidspiration (mind mapping programme) and she was able to use it herself. She’s even showing some of her kids how to use it.”*

Sue - *“Okay let’s build on this. Keep her using Kidspiration and begin to teach her and the children to put it into Word and make something of it.”* You can see work going up on her walls and children on the computer as you go past. She is allowing them to use things that they know more freely now.

- Lead Teacher 2 was reluctantly targeting a senior manager, whom he felt would rather he, the lead teacher, did the work for her and was not very interested or did not have time to learn it herself.

Teacher 2 - *“I’m having problems with the [senior manager]. She isn’t letting me share ICT at meetings and is quite disinterested. I feel like I am being shelved and what I have to say isn’t important.”*

Sue - *“Why don’t you start your facilitation with the Deputy Principal. You can then show her how much ICT can help her programme. You will be working directly with her and this may help both your confidence and build*

her confidence in you.” Teacher 2 was very nervous about this but agreed to give it a try.

- [Later] Lead Teacher 2 - *“I had a really good time in the senior manager’s room and she sat with me and had a go at making some things.”*

Sue – *“Great work. I think you should go to her room every time you facilitate and build a rapport with her.”*

- Lead Teacher 2 reported that in Term 4 the manager was now asking her to help out with minor problems in her room, asking for her advice on a good activity to use with the children and was being much more positive towards ICT, although her usage is still very much a guided one.

Not being part of the management team

Some lead teachers mentioned to us that they had difficulty making things happen, not so much because of any lack of ICT or pedagogical expertise on their part, but because of their perceived status within the school. This was quite a common concern and we decided to make it part of our discussion at our next workshop. We wanted to know what the lead teachers, as a group, thought the causes were, and what were some possible solutions. After a lengthy discussion the lead teachers felt that it was primarily because they did not have the authority to bring about change as effectively as management. In some cases we had to provide a link between these two sectors to help facilitators gain the support and confidence they needed to keep moving forward. From this discussion we found this was a problem in more than one school. Below are some excerpts from our workshop transcript which describe how we dealt with such issues and where we took time to look at possible solutions to this problem as a means of supporting the lead teachers who were experiencing it.

- Senior Teacher - *“This term I am trying as a facilitator to put a bit more pressure on colleagues to actually be a bit more accountable for what they are doing or what they are not doing, because there are some teachers who are just not turning their computers on and doing anything. I have actually managed to incorporate ICT objectives into the aims of the term, so one objective we are doing is about presentations, so that every child should at some stage be involved in a presentation of some kind.”* ie. KidPix or a PowerPoint presentation.
- Senior Teacher - *“I have been through having an ICT slot at the syndicate meeting and trying to present lots of ideas and saying ‘this is something you can do, just pick one of them, just get one group to do it’. And that’s all it needs to be but it’s still been a bit of a struggle.”*
- Audrey - *“In some cases it is. Now you are never going to succeed with everyone. If you do, great. But look at the ones you are succeeding with and what you’ve got to say is ‘I’m going to keep on with them and the others will feel like they are being left out’. So that’s where sometimes you’ve got to take various tactical approaches to get them all going.”*
- Lead Teacher - *“The way we have got around it is that we have got this ICT committee, which we have just started this year. We have found by having the minutes and giving the minutes to principal and syndicate leaders, talking about the things that we felt we needed, it’s all done professionally.”*

One syndicate leader took it on and then it's like in small steps but all the time knowing that it is a time factor – teachers have got a lot of demands on them and that was just another one to put on and also everyone has done something simple.”

- Senior Teacher - *“We have achieved great progress to get ICT included in the staff and team meetings and it will be really good this term so that it doesn't get overlooked. We have devised a system which we have put to the senior teachers and to the principal and we should hear back this week, that the first fifteen minutes of team meeting time is spent with a buddy in the classroom and then the team meeting carries on afterwards. If it's put at the end it just gets missed.”*

- Senior Teacher - *“I have some time in each syndicate meeting if I get anything to show or try out I put that on the syndicate meeting agenda.”*

Audrey - *“What about you as the facilitator? Are the others in your syndicate doing the same sort of thing?”*

Teacher 1 - *“Yes. They are. Even just like walking through and seeing these, everyone is like; “wow” we are going to go and have a go at that, also sharing at the syndicate meeting. Also now at the beginning of the term I am trying to get them to do a bit of a brainstorm with the unit together as a group. I want to get an ideas folder started up as well for the syndicate that everyone could come along to and add to it.”*

- Teacher 1 - *“It can be threatening to those who are techno phobic.”*

Audrey - *“Particularly ones who have been teaching for a number of years, who have not yet seen the necessity for it and hope that it will probably go away before their teaching career ends. You don't put everyone in that category by any means because some actually pick it up very nicely but there are some who always want to teach in the same way as they always have because that is the way that it is comfortable for them, so pushing them just gently out of that comfort zone, it is a challenge but we will work on it.”*

- Sue - *“Unfortunately other things have taken precedence in staff meetings and they have only just shared their visit to the cluster earlier in the year, at the end of Term 3. They were given little warning of their intended presentation at the staff meeting and had lost a lot of enthusiasm.”*

- Teacher 1 - *“I was about to throw the presentation I had organised in the bin. It was really disappointing.”*

- Teacher 2 - *“It's not fair. We worked hard to get a fantastic presentation ready and had some neat ideas and I didn't feel like sharing them in the end.”*

Note by Sue: I tried to cheer them up but this situation is really a problem for a lot of schools. As teachers we know what this does to a child. Have management forgotten? I suggested they look back at all they have achieved and be proud. There will be other occasions for this, and maybe they need to be more forceful about the time to report back. Get it on the agenda and make sure it is not the last item! I made a gentle reminder to the principal to this effect.

- Note by Audrey. Lead teachers are gaining confidence in their own ability to facilitate. Some are running staff workshops, Tekkie – brekkies and 15 minute hands on sessions for syndicate members.

Teacher 1 - *“Colleague 2 said that she is now feeling more confident with how the suite can be used after her sessions with you. She thought we had to teach skills and all children needed to be doing the same thing, now she can see the creativity that can be used when you are in the suite.”*

Sue - *“Get her telling everyone in the syndicate how she has been using the suite for her work. Perhaps this would be a good discussion for a staff meeting as this seems to be an area of concern for other staff members as well.”*

Conclusion

At the end of the year we again asked the lead teachers to highlight the things that they would find beneficial to them in their final year of the contract. They came up with many ideas, which fell generally into four categories.

- To develop strategies for all schools in the cluster to become fully independent
- To develop all teachers into facilitators within each school
- To encourage as many teachers as possible to further their professional development by taking graduate study papers
- To visit a number of other schools and combine the best features from each to meet the need of our students, teachers and cluster.

These four points provided the focus that we would put on our professional development for the lead teachers in the third year of the contract. Although we felt the year was very successful, again it was clear to us that we had not come as far as we had hoped in terms of lead teacher development, and we had to refine our thinking somewhat for the last year. Perhaps, we began to think, our expectations had been too high and the changes would take much longer than we first thought. Many of the upskilling issues still apparent at the end of year one had disappeared, and some of the pedagogical issues had been partly resolved for many of them, but there were still considerable issues for several of them around their comfort levels as professional leaders in their schools.



Year Three – 2003

Our core focuses for the final year of the contract, therefore, became in part to further help our lead teachers to allow ICT to become an integral part of teaching and learning, but even more importantly to develop their confidence and independence in terms of their facilitator role. Various strategies were tried in these regards in the final year.

Creating Opportunities for Reflective Thinking about Teaching and Learning

A variety of strategies were tried for the lead teachers to engage more deeply in thinking and critical reflection on teaching and learning in the third year. One of these was to firm up on the criteria for the selection of lead teachers, which was an opportunity given to us because a number of the lead teachers left their schools in year two, thus creating a need to appoint new ones. It also meant that in year three we had to look at ways of moving forward with new people in some schools. The decision was to select new lead teachers who were motivated, reasonably skilled in ICT, and wherever possible were open to changes in their pedagogy. Having used these criteria to select our new lead teachers we were able to continue without major changes to our current structure. We did, however, allow for extra facilitator time to go out and work with them one on one. We also encouraged them to use part of their school facilitation time for themselves, to work with groups within their own class. We encouraged them to train students from their own class to be tutors in other classrooms. This would assist them in their facilitation.

Strategy – Conferences

As facilitators the lead teachers needed to be aware of progress in the world of ICT. Therefore, we also suggested that as part of their personal professional development, our lead teachers attend at least one conference. We discovered that most had never been to a conference before, so we took all our lead teachers to the TUANZ conference in March 2003. This exposed them to new ideas and activities, introduced them to key contacts, and gave them a basis whereby they were able to talk confidently about what is happening in ICT to other staff members.

One of the most rewarding comments for us to hear came from two lead teachers who had already done some advanced studies and were integrating ICT with no difficulty at all. They had just been to a hands-on workshop together.

Teacher 1- *“That was okay, great for beginners.”*

Teacher 2- *“Yeah, we can do all that and more though.”*

Teacher 1- *“We could present just as well if not better than that.”*

Teacher 2- *“I agree. I think we are further ahead than them.”*

The other thing that came out of TUANZ was the opportunity for much informal contact with the lead teachers. As people were away from school they were feeling more relaxed and began to talk more freely. At lunches we were exposed to many of the frustrations people were experiencing in their schools. Schools talked amongst themselves and compared frustrations. This helped vent a few problems and gave

others an opportunity to help each other that would not necessarily have come up in our normal workshop times.

Strategy – Payment for Further Study

We also offered, as part of the contract funding, to pay course costs for 2 lead teachers from each school to engage in graduate study papers, and we planned for our lead teachers to experience first hand some of the ways in which other ICT schools were handling integration of ICT. In relation to the former, it was interesting to note that those who had availed themselves of this opportunity not only benefited greatly but also found it so valuable that they voluntarily enrolled in additional papers in the second semester.

Strategy – Visiting Other Schools

After discussions with the director we decided to broaden the lead teachers' horizons by exposing them to the effects of different school visions. We decided to visit an Auckland school and another outside the Auckland area. We gave the lead teachers a task sheet so that they had something specific to focus on during their visits. The first school we visited focussed on encouraging students to 'think about thinking' and posing 'big questions'. Our second school focussed more on 'thinking skills' and 'inquiry based learning'. These visits reinforced the lead teachers' reflection on teaching and learning generally. As one lead teacher commented before our second visit: *"I want to get more into the thinking side of things but I don't feel confident enough yet. I am hoping this visit will help."*

As we had hoped, this was a great confidence builder for our lead teachers and principals. The renewed motivation of some lead teachers after this visit was evident in their comments to us and on the evaluation sheet we gave them for the trip. Some found new ideas and stimulation (*"Loved it! It made me excited about education again."*, *"Inspiring! Their vision was an active living thing not something to be stuck in a folder"*). While others felt confirmed about the fact that they were doing similar things in their own rooms (*"I thought it was going to be too far ahead of us but we are not that far behind"*).

Helping Lead Teachers Facilitate

As a direct result of several comments from our lead teachers at the conference and workshops, Audrey and I decided to change our style and focus of facilitation visiting. They were having minor problems and expecting us to solve them before they had even thought about them. We believed the effort needed to come from the lead teachers and that they were going to learn the most from encountering difficulties themselves and trying to solve them. We would make ourselves available should there be a problem. We were going to visit all the schools together and talk to the lead teachers together where possible.

Some of their problems, and our suggestions as to how to deal with them, are captured in the following extracts from annotated transcripts of one of the visits:

- Teacher 1 - *“My facilitation with a staff member was cut short. Classroom tasks took precedence so I did not finish my planned rotation.”* Not her choice, management decision.
- Teacher 1 - *“What do you do with senior teachers who are scheduled but make excuses and cancel when it is too late to reschedule? It’s a waste of my time.”*
Sue – *“Keep documentation of it, go to them at the given time and I will talk to principal direct.”*

Sue discussed this with the principal who said he would make this a priority.

- Teacher 2 - Frustration plus. All spare time and any release have been spent trying to sort out technical problems with machines and “Classroom Manager.” Buddy chosen has been off school most days with sick child. *“There is so much else going on we are not getting the support we need to get on with it.”* Very disillusioned. We suggested he forget about a school focus, and on discussion even a syndicate focus was felt to be too negative, so he is going to get colleague 1, and 2 or 3 other keen ones and get into it. Feed each other, lead by example.
- [A whole new syndicate. 2 BT’s and a senior teacher from another school who was very skills based.]

Teacher 1 - *“Feel like I’m right back at the beginning.”*

Audrey - *“Don’t rush them. Everyone needs to move at their own pace. Your job is to be there to make sure they are moving and to assist them along the way.”*

Teacher 1 - *“Biggest problem is getting them to maintain it when I’m not there.”*

Audrey - *“Look at strategies – It is their responsibility to incorporate ICT into their teaching and learning, it is your responsibility to encourage the sharing of ideas in your syndicate”.*

Teacher 1 - *“But they say I haven’t had time”*

Audrey: - *“ Well then, ask the question, so how can we make time? Set up a time with them and discuss progress. It might be very effective to do a PMI at the end of each study unit.”*

- Teacher 1 - *“My class is lacking because I haven’t spent enough time with my own class. I feel like I haven’t got enough time anymore because of these changes in staff and having to start them again.”*

Sue - *“Have your class experts get other classes going. Ask syndicate to bring along samples of what your class experts have done so you can evaluate the success of this idea and to quietly take the onus off the teachers initially.”*

Thus visiting time became a 4-way conversation and we felt that the collaboration of ideas, problems and solutions were invaluable. In some schools this also helped the lead teachers become aware of what was happening in the other lead teacher’s part of the school as communication was not always as easy as might have been expected.

Strategy – Targeted Visits

Some comments over the last term of the second year such as: *“Look at the concertinas all the juniors have done”*, *“I’ve thought up some other activities to get them to do”*, *“They are getting really good at copying what I do”*, led us to believe that a few of the original lead teachers still felt they were passing on activities to others in a step-by-step manner, rather than being able to focus them how to integrate ICT into their programme and on getting them to come up with their own ideas to suit the learning they wanted from the unit. This conveyed the message to us that they were not yet fully confident *as facilitators*. These lead teachers were targeted for extra visits from us and we found that they were still working on integrating things themselves, before they would have the confidence to show others how to integrate. We worked through their overviews and discussed the best places for ICT and once they got going they began to come up with ideas themselves. We also encouraged the other lead teacher in the school to work a little more closely with these teachers.

Strategy – From Facilitators to Presenters

By the end of the third year most of our lead teachers showed very clearly that they had already reached the integration stage and were beginning to assimilate ICT into teaching and learning. Lead teachers would make comments at the workshops like: *“Have you tried this...”* and *“You could use the digital camera to make that more effective.”*

In these discussions it was also interesting to note that those who had moved into a successful facilitation role were very often teachers who had been involved with advanced study papers. They had also been encouraged by their principals to do these papers and this helped to make them feel more valuable within their school. A confidence booster like this gave them a tremendous lift, as this of course is where they really needed to be recognised and appreciated if they were going to continue to facilitate efficiently within their school once the contract finished. This was borne out by comments made in our PMI at the conclusion of the contract, where one lead teacher went so far as to say that *“all lead teachers should be made to do one of these papers.”*

In keeping with the programme of the previous two years we decided our final presentation would continue again but this time taking a completely different slant. This year our lead teachers would become presenters. The principals were asked to make this a staff meeting time and we requested that the staff of the entire cluster attend this mini conference. Each lead teacher was required to give a 20-minute presentation to approximately 10 people. They repeated their presentation another two times.

Our aim was to get our lead teachers to investigate new aspects of ICT and explore the potential within their own class. This meant that they had some learning to do. They also needed to trial it with their class and then put it together with a ‘how to’ sheet and accompanying unit plan showing how this technology could enhance their curriculum delivery and student learning.

As part of our support for the lead teachers we set aside a workshop time for them to present their work to their fellow lead teachers. This was a time to ask for suggestions,

think up a catchy name, sort out technical needs and possible challenges and get over some nerves. We also suggested that they show their presentation to their own staff before the conference, as we would be encouraging staff not to attend presentations from their own staff members.

Some of the presentations we had were:

1. Creating activity sheets using Hot Potatoes software
2. Unpacking the Kete
3. Groovy Movie making
4. Kidspiration without Perspiration
5. Sue's Hues (Colour mixing from the Internet)
6. Creating Animated Gifs
7. Book Backchat
8. Using Video with Juniors
9. Let them Loose With Logo
10. Using a Tablet PC with Juniors
11. Making Maths Meaningful
12. Number on the Net
13. Lights, Camera, Action

This was a very successful mini-conference where staff from all cluster schools attended at least 3 sessions. This gave the lead teachers a real boost to their self-esteem and confidence when they reflected on the journey they had taken personally over the last three years.

In Hindsight

At our final workshop all lead teachers were asked to complete a PMI of the 3-year contract. Specifically, we asked them to comment on:

- their own personal growth
- professional development
- workshops
- their role as a facilitator working with staff
- the general progress made in ICTPD in their school

Interestingly, in all respects but one, the pluses far exceeded the minuses. The one area where the minuses outweighed the pluses for many were in relation to preparing them with the solid educational rationale necessary if they were to successfully take on their role as a facilitator working with their colleagues. Most seemed to see formal courses for qualifications as the best route to this understanding. When asked what changes the lead teachers would make if (in hindsight) they were to begin the contract again, one of the areas they identified was to recommend that "at least once in the 3 years, every lead teacher must take part in some tertiary study course". They were convinced that

professional debate was a very important part of developing a pedagogy that is supported by ICT and particularly valued this aspect of the courses they had attended.

The final year was challenging for us in that we ended the contract period feeling that several of the lead teachers still did not have the vision of becoming a 'leader' in ICT within their school, as we had anticipated. Some were content to be excellent users within their own classes, and did not see themselves as equipped to take a more leading role in this area. Of those who did take up the challenge, many are either making great changes within their schools, or are moving to more responsible positions in other schools.

Some of the lessons we have learnt through the study of our attempts to build confidence in the lead teachers as 'leading teachers' are:

1. Lead teachers do not necessarily have the same view of their role as the facilitators. We have had three distinct groups of lead teachers whom we have worked with. Those who see the 'big' picture for the school, those who work well within their syndicates, and those who do fantastic things in their own classroom or with a 'buddy'.
2. Practically all lead teachers came (in hindsight) to feel that they needed to make personal pedagogical changes before trying to inspire others. For most of the lead teachers, an understanding of things such as inquiry-based learning went hand-in-hand with their understanding of the effective integration of ICTs.
3. In retrospect, we should have asked principals to select teachers who both met our year three criteria and were also already part of the management team. This may have overcome some of the challenges we faced later on when lead teachers were dealing with those in more senior positions than themselves.

In talking with facilitators from other clusters, we now also believe that our expectations for our lead teachers were probably unrealistically high. As others have found in this area, it takes time measured in years rather than terms to develop pedagogical understandings in relation to how ICTs, or any other medium or resource for that matter, can most effectively be integrated into classroom teaching. And it takes even longer for teachers to become comfortable in school leadership roles in such areas.

It is also interesting for us to note that there remains a strong desire among the schools and the lead teachers to continue networking and meeting together after the completion of the contract. This indication perhaps proves the extent to which the contract work has tied these teachers together and given them a common developmental purpose. If so we would consider this a very satisfying outcome.

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**An Action Researcher Report from the 28 ICTPD
School Clusters Programme 2001 – 2003**

**Towards Progression in Textual and
Visual Literacy**

– Shelley Cook

Towards Progression in Textual and Visual Literacy

Shelley Cook

Introduction

Waitara East School is a decile 2 school with a roll of 206 pupils. Waitara is one of six schools in the New Plymouth ICTPD cluster with funding from 2001 – 2003. The resulting professional development programme has been one focused on inclusivity of staff and students and reflects a whole-school journey towards developing some indicators of progression in textual and visual literacy. These indicators will hopefully facilitate and enable continuity of the students' experience throughout years 1-6. The particular ICT focus in the programme was the effective integration of graphics and text applications as *part* of the curriculum and not a curriculum within itself. The school had previously purchased a range of relevant applications and made these available on all school computers and teachers' laptops. I was the Team Leader within the school for the final two years of the contract, while Mike Whiteman was the PD facilitator for the cluster. Together we led the whole staff through a PD programme which included:

- Upskilling the entire staff, including teacher aides in the use of a range of ICT applications / tools
- Collaboratively developing a succinct overview of intended pupil ICT engagement and outcomes within the Waitara East School curriculum
- Consultation to determine criteria for quality in student use of ICTs
- Collation of a range of annotated exemplars (the intention is that these samples are evolving, will be added to and monitored for relevance and quality)
- Providing 'Just-in-time' support for staff and students
- Developing a Progression Grid (indicators of progression) in the use of ICTs within textual and visual literacy for years 1-6

It was the story of the last of these that was the particular focus of my research project.

Professional Development Model

Our professional development model took a two-pronged approach, offering support in ICT skills on the one hand as well as leadership and guidance in the development of a set of annotated exemplars and criteria for effective use of ICT within the school's textual and visual literacy programme on the other. Ownership of the initiative was encouraged by establishing a *committee* to coordinate development of the curriculum support guidelines and an *exemplar group* to support collation of the exemplars. The overriding focus was one of improving the quality of learning outcomes for students. The initiative was inclusive of all staff and students, and extensive consultation took place at each stage of development. There were no key teachers or leaders appointed, so each member of staff had equal access to support and professional development. That is, all staff were involved all of the time, as opposed to some staff all of the time,

or all staff some of the time. This consultative process ensured that the teachers maintained ownership of the programme and that the resulting criteria and exemplars were realistic and usable. Throughout the programme teachers were encouraged to share experiences and expertise through regular ‘sharing’ sessions in syndicate and staff meetings. The students also had opportunities to share their work in syndicate and whole school ‘expos’ which parents and other members of the community were invited to.

Teachers worked in syndicate groups to decide on which ICT applications were appropriate at each level within the programme. Once teachers were confident with the applications, they introduced them within their classroom programme. Mike provided support with teaching / learning strategies and support materials, while I was always on-site to provide encouragement, co-ordination, ‘just in time’ tuition and sourcing assistance for any queries or issues that couldn’t be answered from within the staff. For example, when students were first introduced to the digital camera, they made their own models of cameras to learn about the various parts and features of the camera and how to handle it. Sessions on photographic techniques followed, so the students were scaffolded in providing quality photographs. While there was some focus on technical skills, discussing the images within the context of curriculum ensured that students considered the purpose of the image, and the appropriateness of content and style of text accompanying the image within the presentation.

Indicators Of Progression

We produced a starter paper for years One and Two, Three and Four and Five and Six, identifying aspects and types of ICTs which could be used within the Text and Visual Literacy Programme, and what the expectations might be at each level. Teachers then trialled these *indicators of progression* with students at each level within the school. The indicators were then reviewed and amended by all staff and it is the intention that these will always be working documents which are constantly under review. We intended the indicators to be used to monitor students’ progression in the implementation of ICT within the context of textual and visual literacy, so a great deal of discussion took place regarding the format of the indicators and the individual pupil monitoring sheets that were developed concurrently. It was agreed that as well as providing guidance for teachers as to what to incorporate for students at a particular stage, the documents should also be used to record student progress and provide feedback and feedforward.

Monitoring

The purpose of the progression indicators was to identify pupil achievement through formative annotation (not a summative checklist), indicating that pupils can produce work independently, consistently, and in day-to-day work across the curriculum

Exemplars

It was agreed that it would be extremely useful to have some exemplars at each level, so an *Exemplars Group* was formed to collate a folder of samples of work. The format for these samples is based generally on the Ministry Of Education Written Language Exemplars. Their purpose is to:

- promote discussion and demonstrate what achievement looks like with pupils, colleagues and parents
- motivate and extend pupils
- provide focussed unit planning ideas
- assist teachers to move pupils on
- enhance school-wide achievement and expectation

These exemplars were annotated and serve to provide benchmarks. Each teacher is encouraged to bring a wide range of samples of work from across the curriculum to the group, so that the range, quality and usefulness of the school-wide set can be enhanced. The samples are then discussed within the context of the level of ICT skills and the quality of visual and textual literacy. For example, the following are some of the elements which were considered:

- Relevance of images
- Use of clip art – how appropriate?
- Visual elements of the image
- Digitally produced images
- Text appropriate to image
- Style of text
- Presentation
- Grammar and punctuation
- Image quality
- Representation from across curriculum areas

Benefits Of Our Approach To The Professional Development Model Within Our School

With the generous budget made available to each school, we took advantage of the opportunity to be in charge of our own direction, both in content and the way we chose to administer the money. The result was what has been agreed by all staff as being the most satisfying, high quality and well organised model for school and professional development that we have ever been involved with. We chose to include all our staff, the principal, teaching staff and teacher aides alike in the professional development which obviously then had a flow on effect to all the pupils in the school. All of the staff has been involved all of the time – likewise for the pupils. The three words which essentially capture what was positive about all aspects of our involvement, in the

contract (but especially the professional development) are: inclusiveness, continuity and consistency.

This was for us a far superior and effective a model compared to the approach to professional development whereby you go to a couple of courses or have an 'expert' in and then you're expected to 'get on with it' with minimal opportunity for follow-up with the 'expert' or on-going development.

Another positive outcome of the contract was the development of documentation to explain and support whole school direction in terms of philosophies and expectations (both for teachers and pupils). While it is prescriptive in terms of setting out such things as minimum standards of both content and quality, it is supportive, open-ended and therefore unrestrictive. Teachers quickly gained a sense of how 'it' is done at Waitara East School which was handy for us all - especially for any new staff. All teachers have had input to this documentation at all stages.

It has helped to further emphasise the importance of the integration of ICT for powerful learning in the context of the curriculum (i.e. to better promote thinking skills), and it has provided further opportunities for children to use ICT while learning and applying skills in co-operation, and the 'Habits of Mind' which have been introduced recently. We are excited about the potential this has for the children in our school.

It has improved the use of the computers in individual classrooms for better learning outcomes for children. Before the contract, very little teacher planning reflected the use of ICT in the context of the curriculum. As a result of our professional development all planning now reflects this. Teachers are recognising how this can contribute to more powerful learning for children.

Prior to the contract, also, most teachers had strong feelings of inadequacy in terms of using our ICT suite, which had been an initiative from a previous Principal and the BOT. We are now much more confident about using this facility with more effective management strategies, so the contract has had a very positive influence on how and how often it is used.

Part of our goal especially at the start of year two of the contract, was to develop much more effective use of the resources (hardware and software) already available in the school. We had a reasonably wide base of software available which is now being utilised far more readily and effectively. Due to the successful use and great demand on the digital cameras, we have purchased two more.

Overall, the contract has had a very positive impact on teacher attitudes toward using ICT in the curriculum, as the following quotes from staff across the class levels show:

I have found the contract very helpful. It has given me the skills I needed, to be able to take my class to the ICT room. I now feel confident with Textease and Dazzle and am able to teach the children to use these programs and gain success with them. I now feel that I am able to learn to use the equipment associated with ICT such as digital cameras and am able to pass this knowledge on to the children. I have been able to learn in my preferred style and this has helped a great

deal. It has removed the “fear factor”. The sessions we have had with M. Whiteman have given me a focus for work in this area and have made me try things that I might not have tried before. I have been able to develop a programme for my class that has logical teaching steps and can be assessed. I no longer feel as if I am drifting and not really achieving anything. This has made the area of ICT less stressful. Overall I feel I have made a lot of progress this year because of the contract.

I have enjoyed the PD and have learnt a lot and enjoyed the opportunity to formally share ideas to use in class. I found having to use a computer in class has helped me develop my skills and teaching computer skills. The children have responded to it well which encourages me to use ICT more. I have reasons to use the computer now – not just dreaming up ideas so the computer is in use. The contract has developed my own skills and my teaching skills in ICT.

The ICT development has been extremely beneficial to me as a classroom teacher this year, in regard to practical ideas and activities I can use in my classroom. As a result my children have developed their skills to a satisfactory/good level. The facilitation/development and training has all been of a high quality and things have been well co-ordinated. High quality personnel have contributed greatly to the success of the year.

Excellent – the staff PD not only up skilled teachers in the use of programs and the workings of the computer, but also delivered ideas for effective use of the ICT suite. The discussion regarding standards and benchmarks for achievement at each level also helped to focus teaching and learning. Confidence as both teacher and pupil has developed accordingly and I now feel that the whole school is now heading progressively in the same direction.

This approach I believe is the best for any contract development as all teachers are on the same kaupapa and are able to support each other.

Helped me know which curriculum areas I can use ICT in (all of them) and how I can plan to use ICT in areas such as maths.

It seemed a long time for a contract but there was a lot of work to do in that time for both staff and facilitators. The time was used well and it took time to go through the development with staff remembering that ICT is still very new for many of the staff, and was considered threatening by some at the beginning. These same teachers (myself included) are now doing much of their planning, reporting and admin on laptops now. On the other side of the contract the computer suite is used well and most staff feel confident teaching ICT skills.

Being included in this contract has been instrumental in improving our confidence in using ICT in the curriculum, in a range of ways. We are now in a position to take what we have learned and build upon it so we will better able to provide relevant learning

opportunities for our children, which will help develop skills in thinking, cooperation, questioning and posing problems and ICT (technical).

Where To From Here?

Recommendations (Suggestions After Consultation With Staff)

We have come a long way since 2001 and have been lucky enough to maintain a very stable staff over the period of the contract. So while the ‘scene has been set’ we acknowledge and accept that we have immediate work to do in a number of areas regarding ICTs in visual language, including:

- Fully implement school documentation including a review and update cycle.
- Provide further opportunities for professional development in the various curriculum areas
- Maintain the exemplars committee and timetable sessions for consideration of new samples for possible inclusion (at least once per term).
- Ensure that the momentum started by our inclusion in the contract is maintained and built upon despite the contract period having expired.
- Continue to explore ways of making positive use of the ICT suite.
- Put in place a plan for on-going teacher professional development in terms of program use to ensure people maintain personal skill levels.
- Put in a long term plan for ensuring new members of staff have sufficient training. A full retraining should take place every 3 years to allow for this.
- Develop and introduce user-friendly ‘help-sheets’ for use by staff and pupils (when introducing/using new programs).
- Update and re-circulate list of areas of teacher expertise, so we know to whom we can ask for assistance regarding particular curriculum area/program/problem.
- Address hardware needs. In particular develop a better ‘long-term’ plan for replacing/up-grading equipment.
- Ensure that staff continue to be consulted to find out what their needs are.

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