Sabbatical Report Term 3 2007

Phil Straw – Tokoroa Intermediate School

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;
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Prologue

When I was considering applying for a sabbatical I contemplated a number of topics to research. One that kept coming back to me was from a concern I have that is based totally on anecdotal observation in regard to ICT in schools. This concern has grown from the observation that schools are under a range of pressures to provide access to ICT, often for reasons related to marketing and/or providing opportunities that are sometimes not really related to enhancing student learning. Hence schools, while well meaning, often develop plans and progress these with the best of intentions, but end up purchasing the latest gimmick only to see it under utilised or even worse, unused. This is not a new phenomenon. Some schools have tried to keep up to date with a wide range of resources, only to find them cluttering resource rooms for years to come.

With these thoughts and others in mind, I applied for my sabbatical. At the time I was under pressure to spend heavily on ICT in general and interactive whiteboards in particular. Looking at what was required I decided that I wanted to make the best decisions possible with the best information. To achieve this I set myself two major questions to research;

1. **What constitutes ICT best practice in schools that positively enhances student learning?**
2. **How do schools engage plans that enable them to sustain best practice in ICT? This question refers to both physical and human resources**.

I started the process by looking at Intermediate Schools including Tokoroa Intermediate. Where were we at this stage of our development? An assessment of our own situation at Tokoroa Intermediate would note the following.

- An excellent discrete (specialist) ICT programme that each child receives via our Tech Arts Programme. This programme would average 1 hour per week for 2 terms per year.

- An extension programme for two small groups of students 90 minutes per week for approximately 30 weeks.
- Each general classroom has access to at least 2 computers with internet access.
- Each syndicate has access to digital cameras, 1 camera per 4 classrooms.
- Two data projectors available on trolleys at request
- Two Interwrite schoolpads to enable wireless laptop interactive use in classrooms
- Teachers have access to laptops, currently 14 teachers have taken up this option.
- A plan for long tem development in ICT formulated in 2005

Looking at another local school, I would note that they would add to the list;

- Digital classrooms, available by parent purchase for full time inclusion or limited inclusion for balance of the school, plus 2 digital rooms that the remainder of the school population have a short allocated time.
- Radio station, broadcasting to local community
- TV station broadcasting within the school

At this point I am not suggesting we immediately proceed to purchasing the latest hardware for our students and staff to use, but rather investigate and plan what works, is suitable for our environment and is sustainable over the longer terms. It is also my hope that what I discover will also be food for thought for other schools and for planners at higher levels as I believe all schools must decide what is appropriate for their situation.

UK schools

Having read the literature extensively I decided to visit the UK and look at what was happening in their environment especially given that the reports, particularly relating to the Test Bed Project were extremely positive and appeared to enhance learning in the mainstream classroom situation.

I visited 12 UK schools in the course of the last 3 weeks of their school year. These included 5 Primary, 4 Middle and 3 Secondary schools. They appeared to cover the complete socio-economic range and were physically separated. (3 in Dorset, 2 in Bristol, 4 in the Wirral, 2 in Durham County and 1 in Yorkshire) I was scheduled to visit 1 further school but unfortunately poor health and distance prevented this from happening.

ICT learning in England happens in two forums;

1. Discrete ICT lessons based on an established National curriculum.
2. Integrated learning where students are exposed to or able to use the skills from the discrete programme to enhance their class programme.

It also appears which I will detail later, that schools, local authorities and National Government have invested heavily in providing ICT hardware to

schools. While this is evident within each school it is also a concern for school leaders as they struggle to sustain their investment and programmes.

Brief Synopsis of schools visited

School A

ICT within the school is delivered by a structured programme that appears to be based around the use of computers within the suites. During my visit neither suite was in use for an ICT lesson. An English class was in one, the other was empty. Touring classes interactive whiteboards were in all rooms. There had been some staff resistance with one teacher unsure of the health issues relating to standing under the bright lighting this was being overcome by professional development. During the tour of classrooms 50% were using there interactive whiteboards, in every case there was no interactive function being utilised, the set up was merely projecting work onto the board. (An OHP would have done the same job) There was considerable evidence of digital camera use to record evidence of work completed, particularly in the art area. The school had 60 digital cameras.

The library had just completed an upgrade to enable a search of resources from any computer attached to the network. Fingerprint recognition was used to issue books.

The school had recently employed a full time technician.

The school used webcams regularly; 1) to keep in touch with peer support leaders or buddies across at the local high school. This facility was an excellent model to prepare students for that transitional phase and was actively utilised to this aim. Students were given the opportunity but had to opt into maintaining the contact

2) To contact and talk to any other schools who also had this facility.

Each child had their own password to log onto school network, the ICT teacher had access to all activity on the network at all times, including Head teacher's. Each room had an email facility for students, not an individual email as this would lead to too much work monitoring the safety of student activity.

School B

This school has been rebuilt recently and consequently all wiring and ICT infrastructure has been included in the rebuild. This has freed up valuable resources to enable the interactive whiteboards and projectors etc to be put

into technology rooms and special needs areas. This school of 640 pupils of a monoculture (white) group has recently had an ofsted inspection. Notice of this inspection was on Monday morning with the inspectors arriving on the Wednesday. The school gained an "outstanding" grading on the national rating. (Outstanding, very good, good, areas to improve, failing) The head teacher was naturally extremely proud of this report and the school.

The school had a computer suite dedicated to ICT; each class had 1 lesson per week in the ICT suite. This concentrated on presenting the skills as outlined in the national curriculum. Recently the school had focussed its attention on ensuring that ICT was integrated across all areas of the curriculum. To overcome obstacles key tutorials were developed in house and offered each term allowing staff to pick up as they felt comfortable. Step by step directions were also issued for key tasks; these allowed staff the confidence to try things out. This in house support was seen by the head as a key reason for the success of ICT in the school.

Head teacher observations pointed to widespread usage of interactive whiteboards as an integral part of the class programmes. Anecdotal evidence points to student lead developments of aspects of lessons.

Each class was now set up with a TV and video/DVD player. This had quickly leaded to a change in teacher practice. Previously when teachers had to book a video, wheel in the equipment and arrange the class they would show the whole video, now they were more likely to show only the short clip needed for the lesson.

An interesting point noted was the use of interactive whiteboards by the technology team. Materials, fabric and food were all reporting high usage in the planning sessions of their work. The fabric teacher also had a computerised sewing machine; the class I observed were designing there own embroider logos. These were transferred to the fabric of the project from computer via disc placed into the sewing machine. This faithfully reproduced the students design work.

School C

In this school I saw ICT being given pride of place to enhance learning, both in the ICT suite and in the classroom. Students were independently using the interactive whiteboard in the suite while the teacher worked with others. In the classrooms a number were engaged in interactive activities. The use of a visualizer to assist children with the presentation of their work and resulting discussion was quite powerful.

These visualizers were distributed 1 between 2 rooms allowing for teachers to take advantage of the teachable moments. Each classroom was equipped with a TV & video/DVD player, an interactive white board with projector. Teachers I spoke to enjoyed the technology and while they felt that initially it

had created more work the long term effect was that lessons could be reproduced but still adapted to meet the learning needs of the particular group of students.

This school had also been rebuilt and both had placed a second mini suite in a planning room between the technology rooms. Teachers reported high use by the technology groups and other classes for research and, word processing.

The ICT programme was skills based in line with the National curriculum, exemplars had been developed to assist with assessment Students were aware of these exemplars and were self monitoring.

This school operated on a model that was closer to our own, Class teachers were responsible for their own class programme with less specialisation than the other 2 schools in this county.

School D

These children were being given a great opportunity to learn in a quality environment where ICT was a real option to enhance learning. An example of this was the use of the South Gloucester learning portal. Each child had access to this and was able to work from home on set work. An example of this was the current research project that invited each class member to work either individually, in pairs or threes on a period in English History. A record of student interaction showed, students negotiating what they would do, students taking responsibility for their learning and their group by reminding each other of agreements and deadlines outside of school hours. Further discussions with students showed they were very aware that the learning that they were engaged in was about the process not the topic.

I also observed a project where pupils from this school were grouped with students from another school, (about 10 miles away) to negotiate and deliver tasks via the portal. These children never met and showed no interest apparently in meeting, they did manage to complete set tasks to a high standard. The tasks included a CV to introduce themselves to their group, a flyer to introduce their football team/s, a radio interview involving all 6 group members and a podcast.

It is fair to say not all classes would be at the level of this particular classroom. 100% of this class had computer access at home, estimate of 90+% across the school.

The ICT leader had planned the introduction of hardware in stages;

*Year 1- Each teacher was provided with a laptop, there was a requirement that **all** planning and reports would be on a standard format logged onto the school server.*

Year 2 – Each classroom was provided with a ceiling mounted projector.

Year 3 – The interactive whiteboards were provided.

The school now has two financial decisions to make;

- *laptops need replacing*
- *Projector bulbs are coming to the end of their lives*

I.e. there is the ongoing need of an annual capital injection to keep pace; this is without necessarily moving forward. We do owe it to our students to ensure they have the best opportunities possible and what I liked about this scenario was that students were being exposed, given choices and were freely choosing between ICT and traditional pathways. (One child spoken to expressed the view that without the ICT option," work would be harder and more time consuming but it would get done").
The school offered discrete ICT via a computer suite and this taught skills, however, there was a conscious effort to teach these in context and as students needed to learn them rather than as an isolated skill.

Each classroom had 3 PCs connected to the school network, a set of 12 laptops (COW) was also available for use and regularly timetabled.

The local educational authority provided a portal which gave schools in the area access to a wide range of resources and activities. It was via support in this way that the school had developed its programme. The portal can be accessed via the South Gloucester website listed below

The school outsourced technical support from the same local authority source. During my visit the network did experience some issues. A slight dissatisfaction with this system was expressed however I noted the problem was solved within 30-45 minutes.

Meeting with ICT advisers

This reinforced the good practice of this morning and covered a range of topics relating to ICT and others more general. They stressed a belief that successful ICT at this level had a 2 pronged approach. Discrete lessons and in class use. To achieve the second part of this it is necessary to bite the bullet and immerse the ICT into the room and provide appropriate support at the level necessary for the individual staff member. It was also necessary to give individuals the time and opportunity to learn new skills. They saw as an integral part of success that there was a culture of sharing and that all units would be stored centrally for staff to access. To use with integrity!

I have been given access to their website that has links to research and to professional development models that they believe successful.
www.learningwithsouthglos.org

School E

This community school is only two years old and currently has just under 400 year 7 & 8 pupils, At the start of next term it will have 3 cohorts (years 7, 8 & 9) As a new school the ICT infrastructure was set up and the issues they face in the near future are sustainability as all equipment comes to a time where replacement is necessary. The IT team stated that this process will be managed and they had confidence in the leadership team. The school was fortunate to employ 2 technicians and there appeared to be considerable amount of imput from a strong leadership team.

Every teaching space, indeed every available space was fitted with projectors, interactive whiteboards and speakers. This included the cafeteria area that could double as a teaching space if required. Recently OFSTED had used the school site to host a conference and the use of these spaces for breakout sessions had been utilised. The school had a set of voting handsets (34) for classroom use and it was hoped to increase this as staff became more familiar with the technology. Large plasma TV screens were in the reception area and library (2) this allowed for class group lessons on differing topics in these spaces. The library also allowed for video conferencing.

There are currently 2 ICT suites operating and one of these doubles as a general classroom. This reportedly gave a sense of ownership and ensured that gear was looked after. The music department had a recording studio and staff development on its usage was starting.

The school is becoming involved in a learning portal being run by another school about an hour away. This would lead to sharing resources and planning with approximately 50 schools. There is an aim to increase this to 150 schools in the next year.

The staff profile would be generally a younger group, and the reported enthusiasm and general "can do" attitude pervaded amongst those I met.

There appeared a strong consultative model of leadership happening. Support staff felt that they were on a level playing field with the teaching staff, indeed there were equal numbers. Two support staff was members of the leadership team, the head teachers PA and the Bursar. This inclusion was seen as a positive step by those I spoke to. There was an expectation that every staff member would contribute to the life and culture of the school. The 2 IT technicians ran a computer club and a soccer skills session; payment was in the form of free school dinners. (These I found to be filling, healthy and generally well supported)

The school site was open from 7am to 10pm for community use, the lavish facilities regularly being utilised by outside clubs. The students were able to enter school at 7.45am and were expected to be gone by 5p; the library and a range of outside activities were available. Lessons started at 8.30am at which time the school site was locked. Students who were late would report to reception for entry and an after school detention, 10 or 30 minutes.

Summary *After 5 schools in 5 days I have seen a range of practices. ICT being used at its lowest levels to a fully integrated, interactive approach. My thoughts are being galvanised to match the philosophy that matches the statement made by Rt Hon Charles Clark, Secretary of State for Education and Skills;* "My vision is one where schools are confidently, successfully and routinely exploiting ICT alongside other transformational measures. By doing so they will be delivering an education that equips learners for life in the information age of the 21st century"

School F

All classes utilised interactive white boards. Part of the current changes see the dismantling of the computer suite and the purchase of 4 sets of COWs. (Computers on Wheels, sets of transportable laptops) This they hoped would effectively turn every classroom into a computer suite. To enable this to happen the whole school was being set up as a wireless network. This also enabled staff to access the network from anywhere in the school with their laptops. I am not sure, but the English style of school building where they are effectively under one roof may facilitate this process.

This school had been congratulated by Ofsted for developing an innovative curriculum. They were running literacy, numeracy and science as other English schools, other subjects were using an integrated approach developed by Shell Oil for their international schools, this based whatever topic you were studying on what happens in your host country and what happens in your home environment. i.e. an English child from the UK studying recycling living in Tokoroa would look at recycling in Tokoroa and in there home community in perhaps London. This programme gave a range of choices always with learning targets and involved making learning fun. The school had paid 10 000pounds for the programme and also paid an annual fee.

School G

I met with the ICT leaders at this high school. This school was again operating a completely wireless environment. While they had two interactive

whiteboards they had found they were not utilised and indeed were regularly passed on by departments as they were not being used. They did have projectors in each room and 4 ICT suites to meet their needs. This enabled departments to utilise the suites and still meet the ICT department's needs. They were moving to ensure each curriculum department had its needs met via mini suites available close to the physical area they worked in. They had a number of e-Beams, a small device attached to the laptop via a USB port that turned any surface into an interactive whiteboard. This would be worth investigating as they were approximately a third of the cost. These are available in New Zealand under another trade name.

School H

Once again all classrooms were equipped with interactive whiteboards and I observed an interactive activity in one of the junior rooms. The insightful thing here was some of the software being utilised, also the district had set up virtual classrooms at remote secondary schools,(Learning lighthouses) children were able to work via the link then visit the host school to follow up their work and have a real hands on experience.

Wallesey High School and the Learning Lighthouse

On the Sunday 15th I was unwell and unable to travel to Suffolk, I emailed my apologies and as I was on good form on Monday morning I contacted Wallesey High School and requested a visit to the Learning Lighthouse based at this high school. The actual learning lighthouse was initially too busy to accommodate me but through a contact I was hosted by the DP of the School who proceeded to "pull rank" and I not only got to visit but had the full guided tour by one of the directors.

The Learning Lighthouse

This resource/computer suite is one of 3 on the Wirral set up to support ICT in the area. Each is focused on a curriculum area and this one had developed as a multimedia resource. Its success is perhaps best shown by the statistics, 100% of secondary schools were regular users and 95% of primary schools. The staff and equipment were available in a range of ways, staff supporting staff and students in their own schools or on fieldtrips, schools visiting the centre using equipment with or without the support of lighthouse teachers, combinations of both of these.

This centre had the latest equipment with rooms set up for filming, editing, recording both sound and video. These rooms were also set up with material (200 pounds per metre) for blue/green light technology. Video conferencing was also a facility available at the centre. A new hard drive with 2trigabyte capability was being installed.

The hardware was in my mind the lesser of the resources this centre offered, the staff expertise and availability was the major bonus of this resource.

I believe strongly that this type of resource is one that our MoE should consider replicating, particularly in lower socio-economic areas.
To investigate this further google learninglighthouse, Wirral schools.

School I

The corridors, classrooms and hall were alive with displays of student work. This was of a high standard and the lack of graffiti and obvious pride in achievement was evident. While the student work in corridors and around departmental areas related to those curriculum activities, work displayed in common areas and the school hall related to a school theme that was an annual festival. This involved researching and communicating with a community elsewhere in the world and integrating this study as a theme across the schools departments. The quality of the work produced and the photographic evidence of activities and learning was significant.

ICT is delivered via discrete lessons according to the national curriculum and in other curriculum areas there is common usage of projectors. The interactive whiteboards, however, are not popular with the staff and are being constantly shifted from department to department as they are not being utilised. The exception to this was the science department that utilised this technology and had become very dependent on it.

Student management systems tracked students and allowed comprehensive records and very up to date notes to be kept; this allowed all levels of management to be very aware of issues before they became too problematic.

School J

This school had had a large sum of government funding granted via an ICT project that involved a cluster of schools in the area and throughout the United Kingdom. They were now trying to come to grips with sustaining the physical resource that they had. The school was hardwired and also had wireless throughout. A roll of 180 and more than 80 laptops for student use was one feature. They reported that while the laptops were great the management was at times difficult, the major issue being battery life, machines being used then placed back into charging mode had resulted in about 30% of the batteries failing. The school had expensive video conferencing facilities but felt that while useful had not been value for money.
The school was moving away from the laptops to PCs as the wireless environment was not capable of handling more than 20 at one time. (This can be overcome I am advised by having 2-3 wireless routers in a room instead of one)

A major feature of their work was the use of animations using digital blue camera technology. This was demonstrated to me by a 5 year old that delighted in making a simple animation in a few minutes. I saw a number of examples that supported a range of curriculum areas. Animations were used to motivate and support literacy as well as to record learning across the curriculum

The head reported extensive use of interactive whiteboards and that this was one piece of technology that staff would hate to lose. The use was evident as you walked around the school. The head also reported that she had encouraged staff to turn these off as she worried about too much "visual" stimulation and sought a variety of approaches. Talking to staff they enjoyed the opportunity to utilise the technology and were enthusiastic about the learning they had achieved during the project.

The school was part of a cluster that was now working very closely together. They were sharing the expertise of 2 technicians each paying 20% of the 2 salaries. One of these had an expertise in network management and one in technology in education; this was a feature in Bradley Stoke at Bristol as well.

One feature of this school was the building of international links. The school had developed a close relationship with an African school and this had led to reciprocal teacher visits to see each others environment. These visits occurred during vacation periods. The staff were generously contributing to support one of their African colleagues for an upcoming visit.

School K

What was happening at in school J was also happening at this school, the animations were perhaps a step further advanced and this was perhaps related to a teaching assistant (NZ teacher aide equivalent) that focused a great deal of time working with children who were ready to take on the tasks.

The assessment programme was all electronic. Each child had a folder, each piece of work was sent to the teacher, this was then marked and annotated, sent back for redrafting, then remarked. Teachers highlighted achievements against curriculum objectives for each child, evidence of this achievement was then hyperlinked back to that individuals work. I was guided through this process by a year 5 student who proudly shared his folder with me. It was very clear he was proud of his achievements. He was taking responsibility for his learning and was aware of what was needed as the next step in his learning. He shared with me some animations he had completed as assessment activities relating to science and social studies topics. Not only were these of a high standard but he displayed a range of knowledge and an enthusiasm for his learning.

A feature of this school would be what I could only describe as mini suites. A bank of about 8 desktop computers placed in a space between 3 classrooms. During my visit these were in constant use by a range of children all on task. The main feature was the level of independence. When I looked closely the ages of the children were from year 2 right up to year 6.

During the afternoon while visiting a classroom I noticed that half the class were working on a literacy activity (writing), while the rest of the class working on an art activity that involved considerable movement, paint and water. What I found fascinating was the half on the literacy activity were all working away on laptops. The teacher was quietly crossing between the 2 groups.

Assemblies utilised the ICT focus of the school, even mass singing was downloaded to provide a wide variety of music and lyrics in a Kareoke style of presentation.

School L

This middle school of 180 pupils was operating a discrete ICT programme and most teachers were specialising in their selected curriculum area. The ICT leader only taught ICT to all students) and he also taught science to some classes. The school operated a different middle school system than other UK middle schools I visited, they covered a 3 year band, years 6, 7 and 8, hence this school was the nearest to a NZ intermediate that I saw.

The ICT environment was totally Apple Macs. The ICT programme was the national curriculum and was delivered in one lesson of 1 hour per week. Some classes had interactive whiteboards however it had been found that teachers could do all they needed with their laptop and a projector. A few used interactive whiteboards. There was evidence of the use of ICT to interact with a range of other schools around the world. They were keen to build this relationship with us and I emailed our art teacher at Tokoroa Intermediate regarding an international art contest they were running.

During my visit I saw evidence of event recording using digital movie cameras, and sharing this in an assembly.

Summary

All in all I found this an exhausting but worthwhile exercise. I have seen many examples of very good practise and have loads of ideas of how we can take the best examples and plan to give these experiences to our students. One recurring theme kept coming up, if you think that ICT will make up for inadequate teaching it won't but in the hands of good teachers it does add significant value. One anecdotal aspect that kept reoccurring, was that where there was good teaching and good ICT practice there was a calmness and a high level of engagement, particularly amongst the boys.

New Zealand Schools

School M

This is a primary school slightly less than 5 years old. It has been set up with an infrastructure conducive to an ICT environment. All teachers have laptops and they have created a paper free or electronic environment. All notices, minutes, timetables, workplans and inschool communications are carried out via the school's interactive website. Each class has its own page were the weeks work and related activities are posted. Parents are encouraged to interact with their children and reinforce learning at home. (There was evidence of both teachers and students communicating regards the child's learning programme outside of normal school hours.) Students as young as 5years old were using the schools website to discuss their ideas with teachers.

The school is reportedly budgeting $70 000 per year to keep pace with developments. The school currently has six pods of 10 laptops available to classes for use within the curriculum. These numbers are proving inadequate for the demand and there is a plan in place to increase these numbers by 50%. Another concern is the age of the current group of machines that are almost 5 years old. The school has opted to use the Apple platform and is very happy with this choice.

The schools website is interactive and provided you have a password can contribute at varying levels. This website has been developed in partnership with Waikato Wintec using "smoodal" software at a very reasonable cost.

Staff development is via a Ministry of Education contract within a cluster. This provides on site support for teachers, "techie breakfasts", staff meetings, conferences and targeted development. This cluster contract has enabled the ongoing sustainability of the human knowledge base within the school. What happens at the end of the contract period is unknown.

School N

This middle school is part of an ICT contract with 3 other schools and this has enabled them to access considerable professional development and support. Every class in the school has 4 desktop computers with internet access via broadband, including the technology arts rooms. Students have individual login and passwords. There is a computer suite adjacent to the school library available for classes to utilise. One classroom is set up as a digital room with 16 desktops, interactive whiteboard and other ICT hardware. (Parents who wish there child to be in this environment pay an annual fee.)
The school has ensured all teachers have laptops and is working towards an electronic environment for planning and communication throughout the school

School O

The school currently operated a computer suite for the discrete teaching of the skills needed to enable children to use ICT tools to enhance learning back in the classroom. This was evident from my own observations of work in one of the rooms where children were using graphs from excel to report findings from a science experiment (fair test) These were young children approximately year 3 and they were not only able to graph their results but able to discuss what the graph showed.

There are 5 interactive boards strategically placed around the school from year 1 to year 6. ICT held a special place in the schools thinking and teacher professional development and opportunities for improving teacher skills and sharing of resources are evident. This was achieved by way of release time in pairs and with key staff giving opportunities to lead and grow in parallel with the professional development. It also appeared to give a climate of continuous growth across the body of the staff.

The white boards were utilised in an interactive way within lessons and teachers reported using them in all curriculum areas. Teachers spoke of changing the way they planned units to ensure students had the benefit utilising the strengths of this equipment. Students were able to demonstrate activities and speak about their times using ICT.

Although all planning, and most communications, within the school were electronic, this did not appear to reduce the number of meetings staff had to attend.

Software purchasing was limited and staff were encouraged to make the most of what was already available within the school.

Technical support was outsourced and changes were being made as the school leadership was not happy about the quality of service provided. The new provider was to work closely with the teacher in charge of ICT. Much of the day to day support was to fall on this person's shoulders.

All classrooms were fitted with sound fields. This was in use in one room during my visit and the teacher reported positively about her experience with this technology.

School P

The school currently has a computer suite with 22 computers. Plans are being formulated to improve this space. The PCs in this environment are all recycled and consequently cheaper to ensure as many as possible are in use by the students. The aim for this space is to allow staff to teach appropriate discrete lessons to allow students to access and enhance learning back in their classroom environment. The 3 senior classrooms are currently being remodelled to accommodate 8 desktop computers.

The school's new Principal is endeavouring to build up the ICT resource in the school and is in the process of developing the next step in the plan to move forward in this area.

Conclusions

I have seen a wide range of ICT being used in schools, my first observation would be to state the obvious. ICT in the hands of a competent teacher will enhance student learning if the circumstances are set up for success. It will not however, turn a less able teacher into a highly competent teacher and may even make these situations worse for student learning.

Discrete lessons
I strongly believe there is a need for discrete ICT lessons to be taught in all schools. If ICT is going to actually enhance student learning there is a need to know the basics. The opportunities are significant but if you are unable to access the basic functions of ICT tools it is difficult to realise the tremendous possibilities. To this end I would suggest that a basic set of ICT skills/goals be set up at key levels, perhaps by end of years 3, 6, 8 & 10. All schools would then have clear direction as to the needs of their school. (I possibly need to acknowledge this as a change in stance, my thinking pre- sabbatical was different in this area.)

Enhancing student learning by Integrating ICT

In order to enhance student learning in an integrated classroom situation my observations would suggest that the following range of circumstances are in place;

- Teachers are given opportunities to develop planning to ensure that the ICT component is incorporated in a natural context within the unit of work. This will involve considerable guidance and support for some teachers as they get "blinded by the forest they see before them rather than look for the branches".
- The ICT tools required are readily available within the normal classroom environment.
- The skills required to access the tools are within the classroom and are at an age appropriate level.
- Teachers are given time and opportunities to improve their own ICT skills as needed.
- The technical support is available as and when required.

If all these factors are in place then my observations would suggest that the ideal of using ICT technology to enhance student learning becomes a reality. To quote a young gentleman at Wheatfield School in Bristol in response to the question, "How would you manage to complete these assignments if this classroom did not have this technology?"

“I would still get the work done but it would be more difficult and my work might not be as good.”

Sustainability

This is a huge issue for all schools. I looked at it from two aspects;

1) The Cost Factor

This is a problem with no simple solutions, schools are currently budgeting and spending large amounts of money on ICT equipment and the age old adage that much of this is out of date by the time it is in classroom use is unfortunately very true. Even in the UK where schools reported receiving large amounts of Government funding to set up their hardware the replacement costs as the cycle requiring this, just to remain where they are are crippling. Most schools despite this were genuinely trying to manage this aspect. It could also be stated that the better a schools programme and hardware the harder it is to maintain. This comes about because the expectations lift and the hardware is in greater use, hence needing replacement sooner. I see as one possible solution that Central Government take the lead and set a minimum standard that every New Zealand child will be exposed to and provide the necessary hardware and software to achieve these stated goals at age appropriate key levels. The hardware replacement could then be managed centrally on a 3-5year cycle. A message that has also been given is that purchasing at the upper end of the market can lead to a longevity of the hardware initial being used for heavyweight computing and as they age being switched to more lightweight applications.

2) The Human Factor

Currently we have a number of issues within the education sector;

- Lack of ICT skills/confidence
- An aging workforce that sometimes don’t recognise the need
- Availability of appropriate trainers
- Retention of key staff in this area
- A cluttered curriculum – can we realistically add more workload?
- Lack of a shared vision, Nationally right down to within individual schools.
- Our “competitive” environment that has influenced decisions taken.

All of these factors have effected the sustainability of ICT in our schools to some degree. Once again I believe the solution lies in leadership. If we are to embrace ICT we need to be able to provide basic staff development within the working day as of right, an expectation that to remain a competent teacher certain basic skills are in place, then an expectation that students will be given opportunities to use ICT tools within learning environments. There are a number of ways to achieve this goal and one that I favour would be the creation of master teacher ICT positions to work for large parts of the school

day inside and outside classrooms with groups of teachers to build up the reservoir of skills.

What the National Leadership should investigate.

Many schools are not in a situation to provide quality ICT opportunities and there are many reasons for this. One of these is the initial and ongoing costs of equipment that has limited use within the current curriculum. Ie. The cost outlay cannot be justified by many schools given the limited usage of this equipment. The provision of "Learning Lighthouse" type facilities at selected Secondary Schools is worthy of consideration. Students and teachers have access to the latest technology and expertise and the only expense is the transportation. This also helps the inschool staff development and sustainability issue. An anecdotal story from Wallesey Learning Lighthouse relates to the teacher of a special needs class regularly using the learning lighthouse facilities and staff, over a period of time taking a more active role in the teaching until the present day where he now books the facility but teaches the programme without the "expert staff".

We do have a similar local example of this where the Central Otago pilot provided on-line teaching.

Beware of the gimmicks

Schools have always been susceptible to the purchasing of resources that appear at the time to be the answer to a perceived need, these have ranged from a simple text a particular teacher had to have to sets of photographs necessary for this or that unit through to large pieces of equipment that are sold as revolutionising education. All of these items are purchased at the time with the best of intentions. As a school leader and a classroom teacher I have been guilty of this. The pathway through ICT is strewn with gimmicks and as responsible leaders we must be prepared to say "no" at times. This is not an excuse for denying the children and teachers with the tools that will make providing today's education. It is simply a warning, Ask for in class demonstrations, who else is already using it and talk to them, does the item have versatility across a range of areas? How many times a day is it in use? If you are not satisfied with the answers – don't proceed!

During the course of my school visits a number of questions arose, These came from a range of educators, my intention in this section of the report is to put these questions and collate some solutions that are working in some of the schools visited.

1)What are the benefits of computer suites?

The major benefit noted was the ability to teach skills needed in an appropriate environment. The UK middle and secondary schools did this

effectively by way of discrete lessons using a national curriculum. (School A, Page 2) also included a systems of self monitoring to enable individual students to manage their current learning and decide what the next step would be.

School O (Page 11) was also using its suite to ensure all students had the necessary skills to ensure that once back in the classroom the required tasks were achievable. The lesson I observed required quite young students to graph science results using excel. Most of the class could manage this, talk sensibly about their work and assist those who hadn't yet mastered the concept.

How effectively does ICT support integrated teaching and learning?

ICT is a tool that will support learning in any area that you want it to. Tthe extent that you want that to happen is really a decision for each individual. At School D (Page 5) ICT had simply become another option that was included in the way things were done. It was a natural part of the process to utilise email and/or the internet to enhance the topic that was currently being studied.

At School K (Page 10) it appeared that the natural way to present findings was by use of ICT. This happened in a variety of ways but most commonly by producing an animation, a power point or brief film clip. And although I am sure ICT was utilised throughout topics it was as a presentation tool I observed its main usage.

How can schools get appropriate technical support?

This happened in a variety of effective ways;

- *Purchase from an outside provider, School D (Page 5) from the local authority, School O (Page 13) from a commercial company were 2 schools using this method. A word of caution might be the need to monitor the work as staff changes can severely effect the performance of this type of provider and being tied to contracts can make for difficulties.*
- *Schools can employ their own staff. This is perhaps the most effective way as then school management does have control of performance. School E (Page 6) and School I (Page 9) both employed 2 technicians each and in these cases the skills were quite different. One was a programming/hardware specialist, the other more a designer/problem solver working with the teaching staff. This worked very well in the larger school environment.*
- *Schools can cluster to employ the appropriate support, the Durham schools, School J (Page10) and School K (Page 10) are part of a cluster of 8 schools employing 2 technicians, like the secondary schools above they have ensured both these individuals have different specific skills.*
- *In the case of School O (Page 13), while they have purchased technical support from a commercial company it is a combination of 3*

components, phone support, remote monitoring and visits when required. This potentially places considerable load on the ICT leader.

One issue that arose for School M was forming a relationship with a business provider that called once per week (every Friday) this was of limited use when a fault occurred early in the week and teachers had a significant period of down time waiting for the issue to be corrected.

Another issue was the employment of Techies that had no teacher experience often failed as these workers found the complex relationships in a school difficult.

Is e-learning best facilitated in a discrete environment?

Prior to starting on this journey I strongly believed that the best way to facilitate e-learning was within the classroom environment, ensuring that the activities and learning related to real situations and were integrated into whatever was being studied at that point in time. Having spent time in schools I realise the value of the discrete lessons. I would draw the parallel between a range of other curriculum areas, eg; succeeding at mathematics without the knowledge of basic facts and tables, succeeding with reading without a basic vocabulary, succeeding in the materials technology room without knowing how to hold a hammer, the list could go on. To be successful in the ICT world we need to learn the basic skills and perhaps the surest way to achieve this is by discrete lessons. However discrete lessons on their own will not achieve success, we must then give children the opportunities to utilise their learning back in the real world of the classroom. It is also important to note discrete lessons must work alongside the classroom programme.

School O (Page 13) was doing this by way of deciding on what skills were needed for a particular task and pre-teaching these in a discrete environment. The UK middle schools, particularly School C (Page 4) was achieving this in a similar manner while still conforming to a National Curriculum. School B (Page 3), School A (Page 2) and School L (Page 11) were teaching the skills from the National Curriculum and due to the structure of the school, i.e. specialist subject teachers teaching ICT these skills may or may not be what was required in the classroom at that point in time. This was also evident in the secondary schools, School E (Page 6), School G (Page 8) and School I (Page 9), ICT was taught to the national curriculum without reference to the needs from subject areas. In School G's case the subject areas had set up their own ICT needs within the school. Interestingly both Schools G and I had utilised the Learning Lighthouse (Page 9) to teach skills and provide opportunities.

How do schools manage the sustainability of resources? –Human & technological!

Human; *Most schools managed their professional development in a way that put the least amount of pressure on already overworked staff. While their was*

a commitment to ensuring that staff meetings addressed the ICT needs of staff these were often small things that were shared, School M (Page 12) operated in this way while also providing "Techie Breckies" as a time for staff who wished to, to get together and work over an area of concern. School D also worked in a similar fashion with the ICT leader available every Thursday after school for problem solving sessions.

School D (Page 5) also recognised the need for a wider base of expertise and moved the ICT leadership around, Jamie, the current leader had picked up the role" with limited knowledge" 4 years ago and was moving to fresh responsibilities in the new school year (September) the school management saw this as a way of distributing leadership within the school and growing their human resources.

School O (Page 13) used internal release time to meet the needs of teachers, releasing them in pairs to develop skills and resources. This was noticeable for the teacher attitude and obvious feeling of value they felt.

Despite these efforts many schools recognised that as they lifted the knowledge and skills of their staff they also made them "attractive" to other schools, the general feeling seemed to be that this was a good thing as another group of teachers had to step up and deliver the training and expertise to the new staff.

***Technological;** This in all schools was a concern, particularly in schools that had received a large amount of outside funding. There were no magic bullets to overcome this issue, basically schools have to include replacement costs into their planning. In School L(Page 11) believed that by purchasing the more expensive Apple platform they were able to string their replacement cycle out further than if they had purchased cheaper hardware. On the other hand School P (Page 13) had mainly purchased cheaper recycled PCs to ensure they were able to quickly place as many in front of students as possible. The main issue is ensuring that budgeting plans include new and replacement hardware. Also the employment of skilled technicians as described above may ensure equipment is better maintained and hence could indicate a positive investment, This was demonstrated at a number of schools, the technician employed at School A (Page 2) appeared to spend considerable time on this aspect.*

How can teacher's best plan to use technology?

It was widely reported at the schools visited that ICT would not reduce teacher workload, this is particularly true in the initial stages. Generally the UK teachers reported that as units of work were developed, storage was a simple matter, as was adapting them for the needs of the new group of students. In areas like mathematics and science this seemed to be particularly true. School E had joined a group of 50 schools sharing resources, this was organised by a Birmingham school and once in the group there was an

expectation that units would be contributed to the resource as well as having access to the resources of the 49 other schools. It was hoped that the number of schools involved would be 150 within a short period of time.

School O (Page 13) indicated that in the early stages that a conscious effort had to be made to incorporate ICT, when planning reading using a taskboard approach that every day one group would have an ICT activity to complete independently. School P (Page 13) was restructuring its classroom environments to ensure that the teacher could oversee this type of activity while still teaching a group.

School D (Page 5) planned units to give the students clear opportunities to use ICT specifically for presentation purposes, this school also ensured the communication aspects of ICT were utilised by grouping students with students from remote schools and setting parameters that meant they had to negotiate their final presentations.

School M (Page 12) also added the dimension that plans, topics assignments were online and parents could interact with the school/class website to be part of the child's learning process. While this was impressive I felt a word of caution was needed to ensure that teachers were not on demand 7 days a week as emails showed interactions between staff and students on weekends and into evening times.

How can schools best capitalise on developments and resources in other schools?

School E had joined a group of 50 schools sharing resources. This was organised by a Birmingham school and once in the group there was an expectation that units would be contributed to the resource as well as having access to the resources of the 49 other schools. It was hoped that the number of schools involved would be 150 within a short period of time. (Repeated from above)

In NZ Sitech an independent ICT provider carries out this same service free of charge.

Does ICT impact positively on the learning of boys?

Every school I visited, remembering that they ranged from low to high socio-economic areas, mono to multi cultural it appeared that where ICT and high quality learning was evident there was a calmness. Often boys were chosen to explain work or guide me through how things were done, I found them to be enthusiastic and knowledgeable about their work and education in general. At School J (Page 10) boys demonstrated animations and how they were used in the class. At School K (Page 10) a boy described how his work was handed in, marked, returned etc. At School D (Page 5) it was again a boy who worked through his folders to proudly show me his achievements. And so the list went on. Anecdotally I would suggest that quality teaching is the main factor but an extra motivational aspect is quality ICT.

Navcon 2k7 Conference, Gosford, NSW, Australia 2-5 October 2007

This conference focusing on ICT based around the practise of originally the Navigator schools from the State of Victoria, now in its 7th year focuses on a blend of keynote speakers and workshops run by practitioners. Like all such events there is an element of luck when choosing the workshops from a brief synopsis.

The theme for the conference was "Generation.com; Where to next?" this was introduced by the first keynote speaker, Dr Yoram Harpaz, who described the sociological conflict between the 3 main educational ideologies, he maintained there was an impossible situation arising out of this conflict and while most attendees would want a foot in each of these camps this lead to a confusion. The 3 ideologies; socialization, acculturation and individuation have each had their time in our educational history but the ideal portrayed by our speaker was individuation. This was also portrayed by a formula;

Teacher- a facilitator of learning
+
Instruction – permissive guidance to individual needs
+
Content – has value as long as it supports individual development
+
Student – each unique (and should remain so) learning by self adjustment
=
Purpose – educated person who fulfils him/herself

While this is the ideal the conflict or confusion of ideology between this and socialization or acculturation is defined by the purpose of education ie
Socialization –educated person, well adapted to his/her society and has a successful career.
Acculturation – educated person whose character reflects values.

This keynote set the scene for this conference, the other two keynotes equally challenged our thinking,
Leigh Blackhall speaking about de-schooling our society was chaotic , yet thought provoking.

Adam Lefstein, I found the most interesting and useful of the three, dealing with how changes outside the school impinge on the culture within the school.

There was a similarity of message delivered by all 3 keynotes and many of the workshops built on this theme.

The workshops and spotlight sessions were taken generally by practitioners and consequently generally of value. I will not regurgitate all here however I do need to state two points;

- The completion of the sabbatical by attending the conference with Tokoroa Intermediate management team was a worthwhile finale as it enabled me to bring together all the ideas of the preceding weeks.
- The Navcon 2k7 conference is one that I would recommend to any school trying to improve its ICT delivery.

Final summary

- ICT integrated into classroom programmes effectively enhances the learning of students provided that there is quality teaching happening and adequate ongoing support is in place.
- Discrete ICT lessons teaching skills at appropriate times will add extra value to ICT and learning in general.
- The use of ICT should be planned into the unit from the outset if learning is to be effectively enhanced.
- Technical support to schools using ICT is of paramount importance, it appears that the most effective support is when there are two or more technicians with well defined different roles. Schools can effectively cluster to achieve this.
- Purchasing for ICT delivery needs to be well planned and flexible. Those with powers of decision making need to beware of the gimmicks/toys that can be of little value for learning.
- Boards of Trustees need to come to an understanding that once the decision to enhance learning by the effective use of ICT is made the budgetary implications are ongoing.
- The budgetary implications relating to professional development are also an ongoing cost to the school.
- While overseas schools face these ongoing costs they do have the advantage that National Government or Local Authorities have invested huge amounts of resource into the ICT area. Our government needs to recognise this and to assist schools to address this. The September issue of STAnews states we have an extremely low level of per pupil spending (at under $US5000 per pupil we are lower than Utah $US5257 the lowest American State), perhaps it is time decisions were made to directly and positively effect the learning of New Zealand children.
- The overseas schools have a curriculum document to assist teachers, giving some idea of what skills etc should be in place at key stages, it may be time to develop a set of suitable guidelines. Leaving it to each school to devise there own does not appear to be working.
- A number of colleagues shared that they felt some ICT decisions had been made for marketing rather than, or as well as educational priorities. More education of Boards of Trustees and parents may be necessary.

Recommendations

1. Nationally

- New Zealand MoE seriously consider developing a curriculm designed to meet the needs of children in New Zealand schools. This document should give clear direction as to appropriate skills, knowledge and attitudes that should be mastered at key stages for every child.
- New Zealand MoE must seriously consider an injection of funding on a per pupil basis tagged to an appropriate ICT development plan. This amount needs to be significant to allow all schools to use this technology to enhance learning. It should not be contestable funding but schools do need to be specifically accountable for expenditure and outcomes.
- New Zealand teacher educators and advisory services need to build the capacity in schools of skilled teachers using ICT to enhance learning.
- Networks of schools and teachers need to be encouraged to share successful practice, locally and nationally.
- The effect on student learning of the professional development that has been undertaken by a large number of schools needs to be properly reviewed. These schools have had 3 years funding we should be able to see a significant positive effect on learning if this funding has been effectively utilised.
- There is a need for a proper study of ICT and its effects on learning, the findings and recommendations in this report are based on observations in a limited range of schools, some NZ schools stated that they really had little ICT to share with me and would prefer I didn't visit, overseas schools were selected after many hours of trawling through websites and the school being happy to entertain a visitor at what was really an inconvenient time of the year, hence I would recommend that the MoE undertake a full research project on this topic.

2. For Tokoroa Intermediate School

- Continue to develop the discrete ICT programme within the current Technology Arts programme.
- Build the capacity of integrated ICT in our classrooms by considering the following;
    a) purchasing a pod of laptops for each year level to enabling each room to be converted to a suite environment.
    b) All teaching staff to have access to a laptop for their own professional use, planning etc to be completed and shared electronically. Investigate the reduction of the

paper mountain by more electronic storage of notices, minutes etc.

c) Setting up a number of "Navigator Rooms" to build ICT integration into the curriculum. These rooms would be equipped with an interactive whiteboard, a data projector, 4-6 desktop computers, and a digital camera, plus other ICT hardware available on a shared basis. Teachers would be asked to apply and, on acceptance, be contracted to trial digital experiences to enhance learning, share resources and successes within the Navigator group and staff generally.
d) Long term, to look at full digital learning in an appropriate environment across all classes. This would be designed to enhance student learning.
e) Eventually every Tokoroa Intermediate classroom would be at least a Navigator room. Some rooms could consider a shared resource space for desktop computers by the development of the spaces currently occupied by toilet blocks between pairs of rooms.
f) Investigating joining an ICT cluster to encourage and enable staff professional development and wider sharing networks.
g) Look at other ICT equipment and consider its value in enhancing learning, remembering to beware of the gimmicks. This would also be appropriate as new technology becomes available.

Finally I will firstly refresh your memory of a Year 6 pupil's response to the question, "What would it be like in this classroom if we took all the computers, whiteboard etc away?"
He replied, "I would still get all my work done, it would be a lot harder though."
Also to quote Rachel Bolstad " Any decisions about the role of digital technologies in schools will need to be based on sound educational values and principles. While many of these are already familiar and accepted…some… are "new" in the sense that they reflect the new environments of the 21st century."

Acknowledgements

I would like to formally acknowledge the following parties who contributed in many ways to this sabbatical and the subsequent report.

UK Schools

Dorchester Middle School

Dorchester Middle is a school of 600+ catering for years 5,6,7 & 8. Students come from within the town and surrounding rural areas. They would be a

mixed group and appear to be from an equivalent mixed decile range NZ school.

Head- Gordon Redley
ICT leadteacher- Penny Ettling

Allenbourn Middle School

This school of approximately 600pupils aged from 9years to 13years (School years 5 -8) is situated in a small Dorset village. It was recently rewarded with an outstanding OFSTED report.

Headteacher – Mr Gordon MacRae
ICT Leader –Mr Chris Daw

Oakdale South Road Middle School

Headteacher – Mr Rob Sutcliffe
ICT Leader – Amanda Knowles

This school of 500+ pupils oozed enthusiasm, every staff member was keen to discuss similarities and differences with me. The school was a newly rebuilt school and on the day of my visit had a range of things happening including their expansive fields being used by one of their feeder schools.

Wheatfield School –Bristol

ICT leader – Jamie Woolford

This primary school of 420 students, reception to year 6 had again interactive white boards in every room, my experience was centered around the year 6 classroom of the ICT leader.

Bradley Stoke Community School

This community school is only two years old and currently has just under 400 year 7 & 8 pupils, At the start of next term it will have 3 cohorts (years 7, 8 & 9)

Headteacher – Mr Dave Baker

The Wirral Schools

Prenton Primary

Prenton would be in our language a lower decile, (probably 2 or 3) school undergoing huge changes, the original site was a middle school then 2 schools shared the site, these combined 2 years ago into Prenton Primary. Other schools in the district thought of Prenton as a leading ICT school.

Headteacher – Mrs Sheila Cairns

Rock Ferry High School

This large Wirral high school catered for students from Year 7 upwards. The school has a focus on the Performing Arts, the ICT leader has a responsibility in the ICT department and in providing ICT to meet the needs of all the other departments in the school.

ICT leader – Paul Spence
Teacher - Steve Ford

Rock Ferry Primary

This city primary school was working in a lower socio-economic area, the site was old but spaces had been adapted to meet needs, ICT particularly whiteboards were evident in rooms. A large space had been altered to cater for a suite of computers.

ICT lead teacher – Chris Scullion
Assisted by – Vivien Spencer

Wallesey High School

This year 7 -13 high school in a harder socio-economic environment was obviously celebrating a curriculum based on the basic core curriculum and particular emphasis on performance and the arts.

Deputy Principal Mr Dave Beach

Schools in Durham County – The Test BED Project

Hunwick Primary

This small rural primary school, roll 180 was one of a cluster of schools that was involved in a government project that injected huge amounts of money into ICT about 4 years ago. (The headteacher mentioned a figure of 240000 pounds)
Headteacher – Sue Smith
ICT leader – Damian Hassan

Willington C of E School

The community that this school served was formerly dominated by mining. The loss of employment opportunities were evident in the town but not in the school. Willendon was part of the Test-Bed cluster of schools.

Headteacher – Mr Bill Guymer

Ingleton Middle School – Yorkshire

This middle school of approximately 160 pupils in three year groups, Years 6,7 & 8, is in a pleasant rural environment. The school works on an Apple platform.

Headteacher – Mrs Mary Parker
ICT Leader – Mr Derrick Butcher

Rototuna Primary

Rototuna is a primary school slightly less than 5 years old. It has been set up with an infrastructure conducive to an ICT environment. It already has 600+ pupils and is in a high socio-economic area.

Principal – Mr Phil Cowie

St Andrews Middle School

St Andrews Middle School is a suburban school of 240 pupils catering for year 7 to 10 students.

Principal – Mr Keith Jackson

Lynmore School

School role 600+, this school has been working with Sitech, an independent computer/ICT supplier to develop educational use of hardware in schools in NZ.

Principal – Mr Rodger Dempster

St Columba's Parish School

This Catholic school is in a state of change and the newly appointed principal is making decisions regarding ICT and its future in the school.

Principal - Mr Mike Mokai

Also

Mr Jimmy Johnston – South Gloucester LEA

Philippa Casement – Teacher Wirral, formerly Tokoroa Central School

Tokoroa Intermediate Management Team – Brian Fisher, Jan Stobie et al

Tokoroa Intermediate ICT leader – Dave Knapman

Neville Butler – Educational consultant, Cambridge

Patsy Inder- School Support Services, Waikato

Jo Briscombe and Sue Morgan, ICT advisers, South Gloucester LEA

Mr Bill Noble – Fairfield Intermediate School

Readings

Test Bed Project evaluation – www.evaluation.icttestbed.org.uk

Zooming in on learning in the Digital Age, A Literature Review – Rachel Bolstad with Jane Gilbert. NZCER Press 2006