

qu i c k

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Podcasting in learning
Liane Grant

What's in a name: towards the naming of a new information
technology learning domain
Margaret Lloyd

Students motivated and enthused about reading
Lauren Mulhall

Muddling with Moodle
Diane Mackenzie, Kathryn Duncan, Janet Grice

Mental software for teaching robotics: FIRST LEGO league,
playful investigations and robots as cognitive tools
Colin Baskin

ICT and footy enrich learning at Robina

Blogging 2 learn, learning 2 blog
Amanda Marrinan

Behind the 8 ball
Michael Hilkemeijer

The ICT Pedagogical Licence Advanced: continuing the
reflective journey
Wendy Fasso

Key elements, desirable factors: teachers with laptops, a
case study
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**Queensland Society for Information
Technology in Education**

ABN 79 302 323 186

Post Office Box 8 Red Hill Qld 4059

Phone: (07) 5429 5214

Fax: (07) 5429 5284

e-mail: secretary@qsite.edu.au

Web site: www.qsite.edu.au

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Contents

- 1 Editorial**
Jason Zagami
- 2 President's Report**
John Oxley
- 4 Podcasting in learning**
Liane Grant
- 7 What's in a name: towards the naming of a new information technology learning domain**
Margaret Lloyd
- 12 Students motivated and enthused about reading**
Lauren Mulhall
- 14 Muddling with Moodle**
Diane Mackenzie, Kathryn Duncan, Janet Grice
- 16 Mental software for teaching robotics: FIRST LEGO league, playful investigations and robots as cognitive tools**
Colin Baskin
- 20 ICT and footy enrich learning at Robina**
- 21 Blogging 2 learn, learning 2 blog**
Amanda Marrinan
- 24 Behind the 8 ball**
Michael Hilkemeijer
- 26 The ICT Pedagogical Licence Advanced: continuing the reflective journey**
Wendy Fasso
- 29 Key elements, desirable factors: teachers with laptops, a case study**
Sel Kerans

Editor@QSITE



Well the summer holidays are upon us and in looking back, it has been another busy year for QSITE. So relax, take a deep breath, and read on. This edition of QUICK provides you with an opportunity to reflect on your achievements as you read about the efforts of your colleagues to advance our profession. Think back over your successes this year, and the initiatives you will take into the new. What will they be, and how can your professional association help you to achieve these goals? If it can't then let us know, your voice is as important as any in shaping the future of QSITE. In return, how will you assist your colleagues in achieving their professional goals? Will you take on a position on the QSITE board, present at the State conference in Toowoomba, or the National conference in Canberra? Conduct a professional development session, or write an article for QUICK? Whatever your contribution, experience has shown that contributing provides rewards in numerous unforeseen ways. Your professional association is all about assisting you to be a professional, a far easier task when supported by like-minded colleagues, all working towards improving themselves and our profession as a whole.

Back to edition 105. John Oxley kicks

things off with a reflection on his own professional journey. In this, John details the achievements of QSITE over the past year for his Presidents Report. Liane Grant shares with us her explorations of the practical uses of podcasting and provides useful advice on how and why to use this popular technology. Margaret Lloyd tackles the complexity of our identity as IT/ICT/PITS/SPITS educators, exploring the linguistic heritage of the various names associated with our profession. Lauren Mulhall reports on an online literature festival and the role ICT played in making it a successful learning experience, while Diane Mackenzie, Kathryn Duncan, Janet Grice describe their use of Moodle to support learning in the senior school at Clairvaux MacKillop College.

In the area of early childhood education, Amanda Marrinan provides us with an in-depth look at how Blogging can be effectively used by year one students. In a similar vein, Colin Baskin provides an in depth exploration of the relationship between play and learning, exemplified by robotics and his experiences with the First Lego League.

Michael Hilkemeijer thoughtfully questions the future of technology and education in his article, Behind the 8 Ball and we learn of how the combination of

ICT and footy are enriching learning at Robina State High school. Wendy Fasso reflects on her ICT journey and the challenges of compiling and submitting an e-portfolio application for the EQ ICT Pedagogical Licence Advanced and Sel Kerans report on the adoption of laptops at Chancellor State College.

With so many thought provoking and inspirational tales from your fellow professionals in IT education, what will you take from this edition? Are you motivated to try out a new technology, contribute to an online discussion, or attend a conference or PD session? Remember that QSITE is here to help you, but likewise, perhaps you are able to write an article for QUICK sharing something you have learnt, conduct a PD session, or present at a conference? I wish you all a refreshing Christmas break, and an innovative and enriching new year,

Jason Zagami, Editor

‘It occurred to me that eating is the only form of professionalism most people ever attain.’

Don DeLillo

‘A profession is defined not by the business a person is in but by the way that person does his or her business’

Wong H.K.

President@QSITE



There is an oft repeated question that we who bear QSITE office hear; ‘Why should I become a QSITE member?’

Personally, my reasons for my 11 year QSITE membership have changed over time, depending on the challenges of my career over the years.

In the early stages, QSITE brought me the professional development I sought, then it was the networking opportunities that stood out and now I have recognised that QSITE supports me in my role as a professional.

Traditionally, for an occupation to be classified as a profession, it needed to take special training and be crucial to society’s function and wellbeing. On those criteria, doctors are professionals, lawyers are professions and yes of course, teachers are professionals too.

For me, being a part of QSITE addresses the need all professionals face when deciding to join their professional association. Belonging to a professional association reflects the knowledge that collaboration between a network of professionals benefits us individually, it benefits the skill levels of our profession, and so it benefits our society.

But that isn’t enough for everyone, of course! The question is, ‘Why should I become a QSITE member?’ Why indeed?

Now unless you have been living a hermit’s existence, you should have gleaned from numerous QSITE postings and missives that 2007 was the year of ‘giving back to our members.’

As a QSITE Board, we wanted to

provide some tangible benefits for the members of our professional association and we set ourselves a few goals for 2007. On Saturday 26 October, the Board met and checked our ‘score card’ for the year.

Professional Development

This area has become a cornerstone of the members’ benefits program in 2007. Not only have QSITE members been given the opportunity to attend PD sessions throughout the state at no or reduced costs, but for the first time in many years we have organised and run sessions on a variety of topics. These activities have occurred around Queensland via our energised regional chapters and have seen an ever-growing attendance throughout the year.

The Brisbane-based State Conference in July was a great event, attended by over 250 professionals. Opened by the Hon. Rod Welford MP, Minister for Education and the Arts, key note speakers were Dr Nan Barr and Tom March. Their insights, along with the 2 days of professional development and 20+ trade displays were positively received. And of course, this year we instituted our full-day seminar, with over 150 QSITE members in attendance.

Our members made their way to Moreton Bay College in Brisbane’s East to hear Dr Jamie McKenzie, Professor Michael Hough and Dan Ingvarson talk about ICT leadership and integration. The day was free for members and was voted a resounding success by attendants. As one QSITE member e-mailed:

‘I’d just like to congratulate the

QSITE team on the direction you are taking the organisation. This year’s conference and Friday’s sessions with Jamie McKenzie have given me confidence in what QSITE is and is sure to be as it evolves ... after reacquainting myself with the people and doings of QSITE in 2007...what appeals most is that you have identified strongly with the idea of ICT across the curriculum and not just for specialist IT teachers (indeed QSITE has always had this ideal at its core).

Networking

While QSITE events provide great opportunities for members to network with fellow ICT professionals our QSITE lists (Community, IPT, ITS, LAN etc) have further facilitated networking. An exciting function of our new website is that its Web 2.0 capabilities will enable individual member login. Members will be able to update their individual profiles and hence through a number of functions network with other members who share common interests.

Advocacy

In 2007 QSITE played a vital role as a member advocate at a state and national level. Already this year we have seen QSITE involvement in the QSA review of the Senior Phase of Learning and also with the QSA Essential Learnings. In the case of the former, QSITE intervention has secured ICT its own teaching domain within the curriculum. Similarly, QSITE’s involvement in Essential Learnings discussions,

has resulted in incorporating ICT skills (missing in draft 2) into the Essential Learnings document.

Publications

QSITE membership provides access to three publications: INSITE, our e-mail newsletter; the quarterly Quick journal; and the national journal Educational Computing. These are important avenues to keep up to date with our fellow professionals and the opportunities available to us. These publications have helped keep our members informed of numerous programmes and activities available for educational professionals incorporating ICTs into their schools and classrooms. They have also brought to light exciting new developments for education, from social networking applications to technological innovations and pedagogical advances.

Student participation programs

QSITE membership allows teachers to enter their students in the largest student web competition in the country, the QSITE Web Challenge. This year's

competition involved 57 teams. At present consideration is being given to expanding this competition to involve games development.

Affiliations

Membership of QSITE connects members to national initiatives through our parent body ACCE (Australian Council for Computers in Education) and its close relationship with the ACS (Australian Computer Society), NEF (National Education Foundation) and DETA. In a similar way QSITE links its members to the international scene by its affiliation with ISTE (International Society for Technology in Education).

Member recognition programs

QSITE members are eligible to be nominated for a number of ICT educational awards including; Educator of the Year, Emerging Leader of the Year and Outstanding Leader of the Year. QSITE award winners are automatically entered in the national ACCE awards and the international ISTE awards. Lindy McKeown was the QSITE, ACCE and

ISTE Outstanding Leader of the Year in 2006.

So how are we doing?

Yes, a lot has been happening, but how many of our services are you, as a member, using?

As we plan for 2008, we hope that you find even more reasons to connect with your fellow QSITE professionals. With the upcoming launch of our Web 2.0 site, you can connect with your colleagues even more easily. Even more professional development will be coming your way and if you don't see what you are looking for – let us know. Collaboration is one of those 'co' words, just like 'co'mmunicate. Let's make QSITE everything we want it to be – for you, for your profession and for your society.

And next time you get asked the question, 'Why should I become a QSITE member?' you might just have a pretty interesting answer.

John Oxley
President, QSITE

Podcasting in Learning

Listening



Reading



Recording

Podcasting in Learning

Liane Grant

St Bernardine's Primary School, Regents Park

This article is reprinted from Curriculum Matters Vol 6 No 4 October 2007 with kind permission of the writer and Brisbane Catholic Education.

Audio podcasts, enhanced podcasts and vodcasts have become more widely known over the past few years, especially since the rapid rise of iPods and mp3 players. So... what exactly is a podcast? How do we create them? What purpose do they serve in teaching and learning? How can teachers effectively use podcasts and podcasting to motivate and engage their students? How can teachers use podcasts to address and improve student learning outcomes, and how can teachers plan for podcasting success?

This article aims to answer these questions and inspire you to delve into the educational possibilities of podcasting.

What is a podcast?

Podcasts are audio and/or video files which users can subscribe to and download onto their computers and media devices (mp3 players or iPods). Users can then listen to podcast episodes at their convenience.

There are three types of podcasts: audio, enhanced and video. Audio podcasts are simply vocals with background music or sound effects. Enhanced podcasts are audio podcasts with pictures. You can even add PDF pages and web links if you choose. Video podcasts or vodcasts contain video and audio.

Currently there are thousands of ready to download podcasts on the internet. The best place to search for them is through the iTunes music store. If you don't have iTunes already, it is a free download (see Links at the end of this article for the website). Podcasts are

free and usually come with a content warning. My advice is to always listen to, or watch the podcasts before sharing with students. The following are some podcasts you can subscribe to in order to get started:-

- Absolutely Wild Visuals — Animal Olympians
- National Geographic — Wild Chronicles
- NASA — 'Ask an Astronomer' Videos
- KPE (New Zealand School Podcasts)

How do we create them?

You do not have to be an IT expert to create a podcast. In its simplest form,

without the fancy stuff, an audio podcast is a recording of your own voice. It is then saved and uploaded onto the internet via RSS feeds, allowing computer users to subscribe to it. It may sound complicated, but please do not be fooled as there are programs which make this process very easy.

Obviously, the two main platforms used in our schools are Windows and Mac. When creating podcasts on these platforms you may need to download or buy podcasting software. Some of this software is listed here with websites for information listed under Links — at the conclusion of this article



Garageband screen

Windows

- Audacity — Free download
- Pod Producer — Free download
- Tool Factory — Free 30 day trial, approx \$100 for one licence

Mac

- Garageband — part of the iLife 06 suite
- Garageband — part of the newly released iLife 08 suite

Note: This software is standard on all Macs.

I have used Audacity and Garageband, and personally find Garageband to be the easier of the two products. The beauty of Garageband is that it has a wizard specifically for creating audio, enhanced and video podcasts. My students have also found Garageband to be easy to use and it comes with copyright-free sound effects and musical jingles. The added bonus of Garageband is that you can automatically share the file to iTunes or to a website at the click of a button.

I have been a Mac user for the past one and a half years and have found that for my purpose the most simple way of podcasting is through using Garageband. You could of course try both platforms and discover what works best for you.

What purpose does podcasting serve in teaching and learning?

These days, children in our classrooms have grown up with technology. They use computers, mobile phones, digital cameras, portable game devices (PSP, Game Boy) and mp3 players without blinking an eyelid. Their world is very different to the world in which we, their teachers, grew up in. Marc Prensky (2001) commented that:

Our students have changed radically. Today's children are no longer the people our educational system was designed to teach.

So, with this in mind, we must experiment with new technologies as a way of keeping in touch with our students and the way they learn. Podcasting, as a teaching tool, allows for multifaceted learning experiences, which can address a variety of curriculum outcomes. It also provides teachers with an effective medium to motivate and engage students.

Using podcasts in teaching and learning

As a teaching tool, podcasts can be used:

- to motivate and engage students
- to introduce unit content
- as an assessment tool
- for teacher and student reflection
- as a way of keeping in touch with parents
- in the reporting process

The way you use podcasting in your teaching and learning is really only limited by your imagination.

During the past year and a half I have used podcasts in teaching and learning in a variety of ways. The following are some examples of how podcasts have been used in my classroom.

As part of a Year 6 Science unit, I subscribed to and used some episodes from Dr Carlson's Science to teach my class about Newton's Laws of Motion Theatre (refer to Links for the website). These short episodes were exciting and more interesting than some of the videos I found. I was surprised at the level of interest displayed by my class, as well as their understanding of the content.

This year I have used podcasting as part of the Literacy Block with my Year 3 class. Here are some examples of how I was able to use teacher-created and student-created podcasts to promote literacy skills

I have also used podcasting as a medium for advertising. Instead of creating posters, students made audio podcasts focusing on the things people can do, in their chosen state. These examples are still online, and the Queensland examples are very good. In this task the students focused on how they used their voice and the type of descriptive language they used (see Links for the website).

Using podcasts and podcasting to motivate and engage students

In each of our classrooms, we have students with a diverse range of needs. Some children naturally engage with teacher-directed lessons, but there are always those few who benefit from an alternative approach.

At one time I was struggling to keep a child on task in order to complete an information report. A significant amount of teacher time was spent scribing for this child and typing the material for a completed piece of work. The next time this type of task was undertaken, students were to present their report as a video podcast and I found this particular student to be motivated and engaged throughout the process, and able to independently complete the report. In fact the process motivated and engaged the whole class who impressed their teachers by their

Activity	Purpose	Created by	Type of podcast
Origami Box	Follow instructions to create a box	teacher	enhanced
Recipe Podcast	Practice writing a recipe and practising their speaking skills	student	audio
Dictation	Develop student's listening and spelling skills	teacher	audio
Listening Skills	Develop listening skills and correctly complete a task	teacher	audio
Reading	Students hear themselves read, which helps them develop fluency	student	audio

As part of the Literacy Block, podcasting would also be helpful in editing writing as students podcast their piece of writing and replay the podcast in order to revise or change their text.

effort in completing the research, note taking and completing the first draft on time.

I have found podcasting to be a useful method for children who have

had trouble completing tasks, and as a result have incorporated some of these aspects into my Literacy Block each week. By adding podcasting as part of my rotational activities, there has been less evidence of behaviour management issues. This is great, because now I am able to spend quality time with specific rotational activities, such as guided reading.

How can teachers use podcasts to address and improve student learning outcomes?

Podcasting allows teachers opportunities to assess and improve learning outcomes and is flexible to allow for a range of learning and teaching experiences. As an example, my teaching partner taught our class how to write ballads as part of a unit of work on Australia, covering English and SOSE outcomes.

To complement this, I organised for the students to create video podcasts of their ballads (see Links for the website). Below is a brief overview of the outcomes addressed as part of this video podcast.

Through podcasting students practice speaking skills and in the process develop fluency and confidence.

How do you plan for podcasting success?

When it comes to making a podcast, creating the final product is only one step in the podcasting journey. To create quality podcasts, it is important to

facilitate your students learning and scaffold their planning.

Likewise, it is important to provide quality examples as models and allow opportunities for students to practice using podcasting software before you expect them to complete a polished piece of work.

In the past I have given students a simple task, such as creating a nursery rhyme, which allows them the freedom to explore the program. I would give each group thirty minutes to create their masterpiece. Some children simply sang their nursery rhyme, some figured out how to add music tracks and create music, and some even overlapped vocal tracks. I still remember how excited the children were when they learnt something new.

Remember if you want to use podcasting in your classroom there are teachers that have used or are using podcasting in our schools. My advice is not to be afraid to ask these people for advice or assistance.

In Conclusion

Using podcasts in an educational setting is only limited by imagination. Remember not to get caught up in being the expert and never be afraid to learn with your students.

Links

Audacity — <http://audacity.sourceforge.net/>

Pod Producer — <http://www.podproducer.net/en/download.html>
 Tool Factory — <http://www.toolfactory.com/products/page?id=2121> (US site)
 Garageband — <http://www.apple.com/au/ilife/garageband/>
 iTunes — <http://www.apple.com/confirm/itunes/>

Dr Carlson's Science Theatre
<http://sciencetheater.blogspot.com/>
<http://web.ics.purdue.edu/~mjcarlso/ST/videos.html>

Ballads –
http://web.mac.com/miss_grant/iWeb/6WG/Our%20Ballads.html

Places to Go/Things to do –
http://web.mac.com/miss_grant/iWeb/6WG/Our%20Podcasts/Archive.html

References

Prensky, M. (2001). Digital natives, digital immigrants. *On the horizon*, 9 (5), 1–6. NCB University Press (<http://www.marcprensky.com/writing/>)

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English	Reading	Reading a range of Australian themed ballads and their own.
	Writing & Shaping	Students write ballads, following the appropriate structure.
	Speaking	Students use specific tone and expression for narration, voiceover and/or dialogue.
The Arts	Music	Students create a backing track for their ballad. Students wrote the music and recorded this track using Garageband.
	Drama	Students create a sequence of movements to complement their ballad.
	Media	Students : <ul style="list-style-type: none"> ■ define the purpose and audience ■ zoom, tilt, pan or track with a camera to match music or soundtrack ■ select or change sequence and order of shots (storyboarding and/or editing) ■ storyboard ■ combine props with facial expression, gesture, body stance and movement
	Visual Arts	Students create props and select and/or create costumes
	Dance	One group of students created a dance sequence as part of their video podcast.

What's in a name: towards the naming of a new information technology learning domain

Margaret Lloyd

While still awaiting official sanction, the Review of the Senior Phases of Learning in Queensland has developed a model of 12 learning domains. One of these discrete domains is tentatively called 'Information Technology'. Janice Chee, the QSA Senior Project Officer responsible for the Review, has publicly described the IT domain as being included to cover emerging and innovative practice. This paper will, without offering an alternative, provide background to the names currently being suggested for this domain. While some may think worrying about a name is trivial, it is, in fact, the first critical step to defining what we teach and how it is taught.

In the discussion paper he recently wrote and distributed to key email list communities, Kevin Savage offered that:

The first item to decide is the name the subject domain will be known under. This is important as the name should be readily identifiable, convincing and marketable. There have been many suggestions. Of these some carry too much negative baggage (e.g. Computer Science), some do not have sufficient authority (e.g. Computing), some are too narrow in scope (e.g. Computer Studies), while others are just plain silly (e.g. Cybernomics).

Kevin Savage had placed this text was under the subheading, 'What's in a name?' The question is famous. William Shakespeare (1591) had Juliet in the balcony famously asking Romeo, 'What's in a name? That which we call a rose/ By any other word would smell as sweet./ So Romeo would, were he not Romeo

called,/ Retain that dear perfection which he owes/ Without that title.' This passage implies that a name is not important and that what something 'is' cannot be changed by what it is called. This understanding can be discerned in a posting to the EdNA IPT Forum (Glen Washburn, August 8, 2007) which said:

I have worked in an industry that has gone from Computing to Informatics to Information Technology to ... [where] in my school, it is called Learning Technology. Interestingly enough I still work with hardware, software, clients. ... In thinking about the name of the domain, let's not get caught up in what it is, but what it can do.

A computer is a computer, but is it? Words have connotations and how we envisage or define something, like a computer, depends on who we are and when and where we live.

While such disassociation is logical and objective, it is worth noting that, earlier in the balcony scene, Shakespeare has Juliet saying 'Tis but thy name that is my enemy,' a statement which accords a real power to the name and suggests that it is both illogical and subjective. This paper will argue that a name does have power and that real care needs to be taken in naming and claiming the new learning space. Freire (1972) said that 'to exist, humanly, is to name the world. Once named, the world in its turn re-appears to the namers as a problem that requires of them a new naming.' (p.

61). By naming, we create and what is created in this instance needs to be, in Kevin Savage's terms, be 'readily identifiable, convincing and marketable.' An addendum to these criteria, perhaps within the notion of marketability, can be drawn from a posting to the EdNA IPT Forum (Fady Ibrahim, August 6, 2007) which said:

... the domain name needs to attract students of both genders, or at the very least not put off female students (as it currently does in my school)... I believe that the name Information Technology does have its own connotations, and for many females (students and parents) this can be fairly negative. Having worked in a

co-ed school for close to 10 years, it's amazing how people develop misconceptions about what courses like IPT (Information Processing Technology) and ITS (Information Technology Systems) are actually about. Perhaps it has something to do with the words Information and Technology.'

The meaning of a word, its denotation, is supposedly clear and unambiguous — a rose is a rose, usually meaning the flower of the shrub of the genus *Rosa*. A computer is a computer, but is it? Words have connotations and how we envisage or define something, like a

computer, depends on who we are and when and where we live. The first computer was a person who made calculations in an observatory. It later referred to the calculating machine or slide rule replicating the human processes it replaced.

By 1944, according to the Oxford English Dictionary, a computer had become the ‘brains of the machine,’ that is, the equivalent of the CPU (central processing unit). Many of the first digital computers were not called *computers* in their own times, they had names like Colossus and ENIAC (Electronic Numerical Integrator and Calculator). These were not brands or models, these were names — giving a presence, persona and power to the machine itself. It was not until the Second Generation of computing, after the UNIVAC (UNIVersal Automatic Computer) was commissioned in 1951, that the term ‘computer’ was commonly applied to the electronic digital calculating machine as a whole. Even Alan Turing, whose 1939 writings did much to make the idea of a digital computer feasible, referred to the computer as an ‘oracle machine.’

It is quite interesting how rarely, if at all, the word ‘computer’ appears in the Queensland senior computer studies syllabuses. In its place, we speak of the processes and devices of information technology (IT) or of information and communication(s) technology (ICT).

Let’s bring this notion of naming — denotation and connotation — into the realm of the Queensland computer studies curriculum. A senior secondary computer studies subject is a senior secondary computer studies subject. Or is it? In Queensland, we have three QSA (Queensland Studies Authority) syllabuses, Information Processing and Technology (IPT), Information Technology Systems (ITS), and Information Communications Technology Study Area Specification (ICT SAS). Further to this, but outside the discussion in this paper, we have the Information and Communication Technology Education Subject Area Syllabus (ICTE SAS)

designed for middle school and junior secondary levels. Senior (Year 11 and 12) classes might also be involved in the Gateway to Industry Initiative and a variety of external courses including CISCO, Microsoft Certificates and standalone VET courses.

Within the three QSA senior syllabuses, despite their common connection to information technology, there are different approaches and ways of teaching. In ITS, for instance, the selection of context that is, computer support, game design and development, multimedia, networking and Office applications software, makes for immediate and significant differences in what this subject is and how students experience it. While this is not necessarily an issue of naming, it is a cautionary note that what we loosely think of as secondary computer studies in Queensland is not of one piece. We cannot presume that we are talking about the same thing when we talk about senior computer studies subjects. The differences both within and between the subjects are increasing and there is clear evidence of this in the items posted to the respective EdNA Forums

for IPT and ITS. To bring these disparate understandings and aspects of current practice under one domain is the challenge we will face in the next few years. The design of the new domain could be a positive opportunity to undertake a broader review and reconceptualisation of where we are and where we want to go. It also allows us the opportunity to revise and update what we understand computer technology to be.

It is quite interesting how rarely, if at all, the word ‘computer’ appears in the Queensland senior computer studies syllabuses. In its place, we speak of the processes and devices of information technology (IT) or of information and

communication(s) technology (ICT). While the industry has kept the IT tag, in the broader research literature, and perhaps more pertinently, in state and national policies, we increasingly see the term ICT used. Kevin Savage, in his discussion paper, said that ‘there are two valid contenders [for the name of the domain], Information Technology (IT), and Information and Communications Technology (ICT). Both have been in general use for some time and adequately describe the domain.’ It becomes apparent that a consideration of naming needs to address itself quite purposefully to determine what, if any, are the substantive differences between the terms, IT and ICT. The following section draws upon published sources and the perceptions and interpretations of different groups of pre-service teachers as to what these terms really ‘mean’ and how they are used and understood in common parlance.

IT or information technology

Kevin Savage advocated the adoption of the name, ‘Information Technology’ by arguing that ‘not only is this accepted and widely recognised by the community as a whole, it is also the working name that has already been proposed.’ Richard Kelly, in a posting to the EdNA IPT Forum (July 30, 2007), endorsed this naming by offering that ‘it is simple and widely accepted as the name given to pretty much all things computing. Universities offer Bachelors of Information Technology so the name carries some consistency into tertiary education, and indeed into the Information Technology industry.’

The current IPT and ITS syllabuses refer to information technology (IT) in their respective global aims. The aims which are shared (and with minimal contextualised editing) are:

- develop in students an awareness and understanding of the concepts, practices and effects of information technology /IT
 - encourage students to think critically and purposefully about the uses of information technology/IT
 - promote responsible, discriminating and competent use of information technology/IT in a safe environment
- Both syllabuses also offer definitions

of information technology (IT). The IPT syllabus (QSA, 2004) offers that ‘information technology refers to the creation, manipulation, storage, retrieval and communication of information and to the range of technological devices and systems used to perform these functions’ (p. 2). The ITS syllabus (QSA, 2006) advises that ‘IT involves the use of technologies by which people manipulate and share information in its various forms — text, graphics, sound and video — and the range of technological devices used to perform these functions’ (p. 1). Both attempt to describe the processes — both cognitive and technical — and refer to the devices and systems ‘used to perform these functions.’

The ITS definition attempts implicitly to categorise ‘information’ that is, as ‘text, graphics, sound and video,’ and while this may be one of the significant differences between the subjects, it may also be indicative of the changes in the technologies available in the marketplace. It is interesting to compare the list of processes offered by the respective subjects — and ask beguiling (but pedantic) questions such as ‘Don’t ITS students create?’ and ‘Don’t IPT students share?’

Published definitions of information technology, like those in the IPT and ITS syllabuses, seem to revolve around common themes of equipment and processes. A typical definition of IT is:

Any equipment or interconnected system or subsystem of equipment, that is used in the automatic acquisition, storage, manipulation, management, movement, control, display, switching, interchange, transmission, or reception of data or information. The term information technology includes computers, ancillary equipment, software, firmware and similar procedures, services (including support services), and related resources.

(NASA, 2001)

Some definitions are circular, that is, they use terms or concepts which are themselves not explained, for example, the Purdue University (n.d) definition explains that ‘information technology provides the ‘engine’ used to drive useful information systems.’ IT is frequently defined in terms of its devices and a Google search (define: information technology) revealed the following list

(here in alphabetical order):

Calculators; CD-ROM; computer-based tools used to work with information and support the information needs of an organization’ computers; database management; electronic cash tills; hardware; Internet/Intranet; office systems; other devices that integrate data, equipment, personnel, and problem-solving methods in planning and controlling

business activities; other information processing technologies used in computer-based information systems; other integrated circuits to process computer, audio, visual, and telecommunications technology; software, telecommunications; telephones, and video recorders.

The IT processes revealed in the same Google search (and extracted from the same set of definitions) were usually presented in phrases rather than isolated words. These were:

- acquisition, storage, manipulation, analysis, and display of information.
- automate and augment clerical, administrative, and management tasks in organizations, management, processing and dissemination of information.
- collecting, storing, encoding, processing, analysing.
- convert, store, protect, process, transmit, and retrieve information from anywhere, anytime.
- create, store, exchange, utilise information.
- operated to accomplish a Federal function.
- transmitting, receiving, and printing text, audio, or video information.

There were two interesting outlying definitions revealed in this search. These referred to IT as a body of knowledge. They were:

- Subjects taught at all levels from school to university concerned with all aspects of programming and operating computers or using data and systems generated by the use of computers for business or technical developments. www.ceresconsult.com

demon.co.uk/html/glossary_of_terms.html

- the branch of engineering that deals with the use of computers and telecommunications to retrieve and store and transmit information wordnet.princeton.edu/perl/webwn
- That IT is the term applied to University degrees and courses, and more generally to the industry itself is

That IT is the term applied to University degrees and courses, and more generally to the industry itself is both a blessing and a curse.

both a blessing and a curse. While it could be argued that this identifies the subject content and gives a clear path to a future outside school, it may similarly constrain the subject through this connotation. It may suggest to students that you might only engage with this learning domain if this longer road was the one you had chosen to travel. The reference to ‘engineering’ is important here as it acknowledges a computer as hardware, an electro-mechanical device reliant on electronics.

The key question here is to ask if these fuller descriptions of devices and processes really represent what it is we do in our senior computing subjects. Is this what we should be doing?

ICT or information communication(s) technology

The term which is now commonly used in relation to computing in education, particularly in cross-curricular contexts, is ICT. A clear example of the use of the term is in the National Statements of Learning (ICT) in which ICT, as a specific type or sub-group of current and emerging technologies, ‘broadly encompass[es] information and communication devices and the software that enables them to function. The devices usually have a central processor, and input and output components. Software supports the interaction between, and the operation of, these devices’ (MCEETYA, 2006, p. 2).

ICT can mean either Information Communication Technology, or, less frequently, Information Communications Technology. The latter term is the

name of the National Training Package in IT and subsequently the name of the senior SAS (Study Area Specification) which delivers this certification in Queensland. The pluralisation of ICT as ICTs is occasionally seen but is particularly common in Education Queensland documents and policies.

Repeating the Google search (here define: ICT) returned considerably fewer results with most being indistinguishable from definitions of IT in terms of the devices, for example, computers, Internet, databases, and the processes such as capture, store, retrieve, transfer, communicate, process and disseminate information. Interestingly, the 'top' return was from a Queensland government 'Smart State' site, where the proffered definition was:

... the catch-all phrase used to describe a range of technologies for gathering, storing, retrieving, processing, analysing and transmitting information. Advances in ICT have progressively reduced the costs of managing information, enabling individuals and organisations to undertake information-related tasks much more efficiently, and to introduce innovations in products, processes and organisational structures.

(Queensland Government, 2006)

A detailed and useful 'official' definition of ICT which appeared in a DEST (Department of Education,

ture, videoconferencing). What is most significant about ICT is the increasing convergence of computer-based, multimedia and communications technologies and the rapid rate of change that characterises both the technologies and their use.

(Toomey, 2001, para. 3)

When asked to critique this definition, a group of final year pre-service Computer Studies teachers made the following observations:

- This definition ... is probably one of the more accurate as it does not try to name specific technologies or pathways of use. The focus on the gain, adaptation and presentation of information through the use of ... hardware or software gives a good indication of the meaning behind ICT, while allowing for rapid technological advance in all areas. [Tanis Aldarin]
- The Toomey definition ... covers the technical side of ICT very well by not simply limiting the definition to computer systems, but including all technologies that can be used to communicate information. It doesn't cover the actual implementation and reflection side of ICT at all. This means that it could be seen much more as a definition for IT rather than ICT. This definition could be improved by including a statement such as ICT also includes regular evaluation and reflection on the best

information and the use of technologies over the processes and understanding needed to be effective in the production and use of the information. The need to understand that technology is evolving and development of a base of understanding how these technologies work is brought forward and is a key area for ICT.

[Stephen Smith]

The key question here is to ask if we can really discern differences between 'IT' and 'ICT'. The following section considers this in more detail.

IT or ICT?

'IT or ICT' sounds a little like 'to be or not to be.' The preceding text has shown differing definitions of the terms and attempts to distinguish between them. The Wikipedia definition, perhaps more sensibly, bundles them together simply suggesting that 'Information technology (IT) or information and communication technology (ICT) is the technology required for information processing. In particular the use of electronic computers and computer software to convert, store, protect, process, transmit, and retrieve information from anywhere, anytime.'

The distinctions are, to me, bound up with their times. IT was the original term applied to the discipline and which retains connotations of the industrial and military origin of what has become a diffused and commonplace technology. ICT gained its 'C' in response to the increased availability and use of networks and telecommunications. The terms effectively mean the same thing — but it is the connotations they bring to a new domain which is of immediate interest and concern. One of the previously cited students, Tanis Aldarin, suggested that:

Information Technology (IT) is a broad term which encompasses the entire range of technologies, available and developing, including knowledge of the underlying logic structures and processes which power them. This term has been replaced by the term Information & Communication Technology (ICT) within education policy because the educators are concerned with students learning to convey ideas and meaning through a set of given technol-

Information Technology (IT) is a broad term which encompasses the entire range of technologies, available and developing, including knowledge of the underlying logic structures and processes which power them.

Science and Training) review contended that ICT:

... generally relates to those technologies that are used for accessing, gathering, manipulating and presenting or communicating information. The technologies could include hardware (e.g. computers and other devices); software applications; and connectivity (e.g. access to the Internet, local networking infrastruc-

technologies used for communicating the information. This would help to demonstrate that ICT is more than just the technology, it is looking at when and where certain technologies should be used to best achieve the outcomes. [Josh Whitehouse]

- The definition is in a similar vein to that presented by the ACS (Australian Computer Society) in that the focus has been placed on the

ologies, those based in a communications medium, such as are utilised in an ever modernising society as well as being in a suitable form for measurement and standardisation of student's understanding and abilities.

The difference between the terms is about intent and use rather than fundamental or insurmountable differences in the technology. There is an argument that, because of this, that neither term be used and the naming of the new domain provides the opportunity to start over, to redefine who and what we are. Two suggestions, worth investigating further, were offered in the EdNA IPT forum. The first, proposed as 'a heretical spin' by David Nutchey (August 6, 2007) is the name, Knowledge Technology. The logic of replacing the term 'information' with 'knowledge' is drawn from the Knowledge Age understanding of Carl Bereiter that 'knowledge is a collection of objectified things that is more than what is in one's head.' The second suggestion, Creative Technologies, was made in a previously cited posting from Fady Ibrahim (August 6, 2007). He explained this as follows:

I like the way that QUT has their animation, games and internet design courses as part of the Creative Industries faculty. It doesn't sound like your stereotypical 'geeky' course and, as a result, they have many female students who enrol in these courses. Unfortunately, the same can't be said about ITS and IPT, as they tend to scare prospective female students away. I believe we need to promote the 'creative' aspects of both IPT and ITS so as to try and encourage those students with this 'creative' inclination to enrol in our courses.

It is probably cautionary to note that the term Technology is itself contested in educational terms, particularly in Queensland with the Technology KLA and the group of subjects which could be categorised as 'industrial' technology. Discussions along these lines have brought us perilously close to an umbrella Technologies domain which would include engineering and building and a host of other areas.

Conclusion

We have had a discussion about a subject's name once before. When

Practical Computer Methods disappeared and was replaced with the first of our non-OP computer subjects, differing names were mooted. Some may recall my irreverent paper on this, entitled *Modern Mythology*. There I argued (with diagrams) against the suggested name, Practical Information Technology Studies, because it gave us the dubious acronym, PITS. This was marginally better than Study of Practical Information Technology (SPIT). The subject eventually adopted the neutral term, Computer Studies.

The new IT domain should have a new name, its own name, and it needs to be one which meets Kevin Savage's criteria — readily identifiable, convincing and marketable — and which stands the test of time. The latter removes, I believe, from contention any e- or cyber- name. There will, similarly, be no disagreement in rejecting 'silly' names such as Cybernomics which Kevin Savage noted in his discussion paper. If you think that no such suggestion would be made, you need to be advised that the name 'Cyberology' was once seriously suggested for the QSA Subject Area Syllabus, ICTE.

There is another literary reference of relevance to this conversation — the little known allusion to Shakespeare's balcony scene from the Australian poet, C.J. Dennis, and the poem 'The Play' from *The Sentimental Bloke*. His verse reads as:

*Wot's in a name? -- she sez . . . An' then she sighs,
An' clasps 'er little 'ands, an' rolls 'er eyes.
'A rose,' she sez, 'be any other name
Would smell the same.
Oh, w'erefore art you Romeo, young sir?
Chuck yer ole pot, an' change yer moniker!*

Following Dennis's advice, we need to chuck the ole pot, change the moniker, and apart from what seems to be superficial changes, start to think seriously about who we are, what we do and what we want to continue doing with information technology as a standalone domain in the senior school. We need to think about what the problems are, particularly low female representation, falling IT enrolments in tertiary courses and a predicted skills shortage in the IT industry, and design a course which meets current challenges. Problems cannot be solved with the

same thinking that caused them.

I do not know what the new domain will be called. What I do know and what I have argued here is that we accept that a name is significant and that applying an old name to the new domain will do nothing to convince students or parents that we are doing anything except paying lip service to the expectation of 'emergent and innovative' practice in the senior phase of schooling. It will also indicate, for me, that we have missed a rare opportunity to reinvent ourselves and to continue a long tradition in Queensland of approaching the teaching of computer studies in quite unique and forward-looking ways.

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Students motivated and enthused about reading

Lauren Mulhall



Curious questions leapt from keyboards as 84 Australian authors, illustrators, songwriters and playwrights participated in online chats with excited primary and secondary school students.

More than 14,000 students were enthused and motivated about reading and writing after chatting online with authors during the 2007 Online Literature Festival.

Coordinated by the Learning Place, the festival aims to engage students from across Queensland, regardless of their geographical location, through online events with renowned Australian authors and illustrators.

Online Literature Festival coordinator Carolyn Keighley said that, rather than being a simple three-week event,

Madeleine Keighley, a student at Mt Crosby State School, enjoyed participating in the Online Literature Festival

the festival was a 'learning journey for everyone involved'.

'Our guests, teachers and students are fully supported through the whole process via our OLF website, a discussion list, trial chats and a variety of workshops run by Smart Classroom Mentors across the state,' she said.

This year's festival ran over three weeks in September and was hailed a great success by participating teachers and authors.

Students logged into chats asking the authors carefully

researched questions about their work and their career. They participated in online writing workshops and book raps and discovered the 'story behind the pictures' by exploring visual literacy.

New events included the Online Readers' Cup, Portrait of Place and a series of book raps based on the Children's Book Council of Australia's short listed books.

Students were able to participate in online events with a playwright, the musician and songwriter Bobby Flynn (Australian Idol) and a partnership between Chinese ballet dancer Li Cunxin and illustrator Anne Spuvillas.

The festival was supported this year by the Ipswich Festival of Children's Literature, Brisbane Writers' Festival, State Library of Queensland and National Literacy and Numeracy Week.

To find out more visit <http://www.learningplace.com.au/sc/ipswich/olf>

Authors Louise Sachar (centre) and Simon Higgins (left) and the Learning Place's Rebekah Hermann participate in online chats with students



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Muddling with Moodle

Diane Mackenzie, Kathryn Duncan, Janet Grice
Clairvaux MacKillop College

Science teachers at Clairvaux MacKillop College have been experimenting with the use of ICLTs for the past few years. In Junior Science and Biology data loggers have become everyday tools in the classroom. Our most recent learning and teaching experiment has been exploring online learning.

We were searching for a way to make 'Mining and Resource Management' more relevant to teenage learners in Year 10. We decided to ask students to create a persuasive webpage focusing on recycling mobile phones. The students enjoyed this assignment; however, the processes of submission and assessment of projects raised some issues. We thought that there must be an easier way to collect and manage student work and it was in exploring our options that we discovered Moodle. This could solve our problems and provide even more opportunities that we had not yet imagined.

MOODLE is an acronym for Modular Object Oriented Dynamic Learning Environment. This open-source learning management system is available to teachers and students online both at school and at home. Moodle



gives access to resources from any computer linked to the internet and also allows teachers to view students' work and provide feedback at any time. The philosophy behind Moodle emphasises that learners (and not just teachers) can contribute to the educational experience in many ways. Moodle's features make this possible as students are able to comment on entries in a database, contribute entries themselves, work collaboratively in a wiki or interact in group work online.

Embedding ICLTs in learning can be challenging and teachers sometimes feel as if they need to know everything about a technology before using it with students. Learning is about taking risks, and accepting the reality that there are situations where students are more familiar and experienced with these technologies than the teacher.

At Clairvaux MacKillop College, we set up a trial of Moodle for Semester 2, 2007 for the ICT and Year 10 Science classes. We jumped in boots and all without any detailed knowledge or planning but the risk was worth it. Year 11 and 12 Physics, Chemistry, Biology and IPT courses were added within days. Our Moodle has grown faster than we expected and students are now requesting access in other subject areas.

Some unexpected incidents we have encountered:

- A student joining a Moodle course for a subject that she wasn't enrolled in and making valuable contributions to the discussion forum — a really positive experience for teachers.



- Having an unknown student named 'big fat parrot' in your class — an amusing situation?
- Teachers needing to learn urban slang and txtng language in order to understand how students communicate — OMG! LOL! This was frustrating until we cracked their code and crashed their party. WOOT!
- Enrolling students proved problematic with extra students on the system who had enrolled themselves in incorrect courses — a time wasting annoyance.

'People who aren't as socially skilled as others can go online and they feel more comfortable expressing themselves electronically rather than face-to-face.'

Emad Ahangari, Year 11

'It's just a place where we can get together with our classmates and we can help each other out with a subject.'

Emad Ahangari, Year 11

On Moodle, 'when people ask you questions for help you have to reassess what you've learnt and in doing so it consolidates what you know'

Yee Trinh, Year 11



- Students actively using the messaging component for socialising — disabled after 24 hours.
- The server used for the trial now being too small for our needs due to high levels of interest — new server coming soon.
- Parents showing enthusiasm for the constructive and safe online activities for their children — good news!!

In our adventures with Moodle so far we have incorporated wikis, forums, databases, quizzes, assignment submissions and feedback, and glossaries into our courses — a mix of resources and interactive activities. At Clairvaux MacKillop College students in Years 10, 11, and 12 are actively using Moodle. From the initial responses of staff and students it looks like this will expand across subjects and year levels in the future.

Through implementing this system we became aware that it enables learners to have control of their learning. The students like being able to see the work of other students. Peer support, peer interaction and social networking have become part of the courses available to students. This new environment allows for informal teacher-student and student-student relationships that can be less threatening than in traditional classrooms.

Some worthwhile considerations for other Moodle muddlers:

- Courses — What will constitute a course? Is this a subject offering, a semester unit, a two year senior unit? Is this for academic work only? Should sports teams have their own area? Should houses and students activity groups have access?
- Appearance — What is the site to look like? Logos? Colour schemes? Layout of blocks? Is there a need for consistency across the different courses? Should there be different themes for different subject areas, and different activities?

- Blocks — Which sticky blocks should we use? Where should they be placed?
- Enrolling users — What is an appropriate enrolment procedure for Moodle and its courses? Can we link in or export from our student database or existing network? What happens when there are new students or changes to subject enrolments?
- Time to learn — How can teachers learn about the potential? What time is provided for teacher learning? What kind of learning experiences will work in an online context?
- Mentors to help — Who can help us get started? Technically? Pedagogically? Who can we talk to that has already done this?

Having conquered the initial mechanics and having learned what the program can do, we can see more possibilities for enhancing student learning. Moodle gives us ways to connect with students beyond traditional teaching practices. We have been very fortunate to have the encouragement and support of Amanda Rablin in this venture. With our recently awarded BCE ICLT Innovations Grant, we plan to explore the use of GPS in Science, with Moodle playing a key role as a space for collaborative learning and interaction. So as life-long learners our adventure continues...



Mental software for teaching robotics: FIRST LEGO league, playful investigations and robots as cognitive tools

Colin Baskin from the School of Education at James Cook University tells us why it has never been easier for all teachers to take up the playful learning opportunities afforded by robotics...

The Synergy of 'Thwack'

Comedian Billy Connolly tells a wonderful anecdote about the incredible synergy of 'thwack' that wonderful adrenalin rush that stems from the perfect golf stroke, the perfect snooker strike, or in Billy's case the resounding thwack that comes from a perfectly placed punch to another's chin. The teaching equivalent of this is that sense of 'thwack' that accompanies the delivery of the perfect lesson. Teaching Robotics delivers plenty of these kinds of moments imagine the excitement in the classroom when you announce 'Today we are building robotic roller-coasters'. Another favorite of mine is the mobile intelligent cat, or its close relative the six-legged 'robotic' friend. For the middle school class, the robotic disc jockey is a huge hit; here the scanner of the robot is used to detect movement on the dance-floor and when no movement is detected, the robotic DJ instantly flips to a new song. You can even test-dance it! Or the robotic toilet bowl cleaner; this not only seems to capture the imagination of every year nine boy, but also engages him in the rich challenge of building and designing a rim-clinging robot capable of cleaning under the rim (be sure to have a freestanding porcelain bowl to bring into your classroom).



Figure 1: Robots — Crawling; Moon-dancing and Creeping pets.

Robots are models of living things with which children can experiment without adult interference or sanction. They are a particularly motivating technology; many of my favorite explorations (cited above) are concrete, complex, real-world issues that are related to deep human needs (toilet bowls included). Yet the problem with Robotics, or at least as far as I can see it, seems to be just this; it offers the learner proper student roles and concerns, but makes no similar accommodation for teachers.

The Teacher Problem with Robotics and the Learner Case for it

Robotics interactivity presents major challenges for teachers. These challenges include determining how we can best treat learning as both an explicit curriculum outcome and practice, in a medium in which students have collaborative agency in creating 'new' learning events and in changing the very symbols, representations and curricula that constitute known schooling practices. In short, without the students, there is no interaction, no game-play, and therefore no 'learning event'. Although robot simulations can be very realistic (with real-world applications), the pedagogic value of robots lies in making them work, by using or extending one's knowledge to diagnose and fix problems. For teachers, this creates a significant problem; how do I in my role as teacher describe, explain and justify a phenomenon that cannot exist without its players? In this light, robots are

socially mediating technological artifacts, capable of expressing and capturing shared socio-cultural interactions, but to date do this for only a small and dedicated part of the teaching and learning community. Salomon (1993, p.65) refers to this culture of shared cognition and artefactual knowledge as 'distributed intelligence mediated by design', which has its roots in Vygotsky's Activity Theory and which sees learning as knowledge construction derived from the effects of one's actions on the world.

This is a strongly Piagetian concept: Science is a social practice it is how we, as people, find our place in the world. In robotics, student learning (like the physical pieces of the robot) begins with the concrete rather than the abstract; learning is associated with phenomena that the learner locates, builds and creates through known parts and pieces. The learner tests, observes and interacts with the robot so that the abstractions they derive (or apply later) are grounded in concrete experience and therefore take on a personal relevance. The problem sets are open-ended, enabling a diversity of solutions and approaches. Hence, robotics affords opportunities for learning problem-solving techniques and processes, integrates a number of domains, exposes realistic constraints and issues, and leaves room for creativity. So why is it so hard to teach?

The world is changing

Castells (1996) coined the term the 'information technology revolution', and

pointed to how this would impact on (then) existing conceptions and experiences of time, space, relatedness, and what it is to know things. A small example will suffice: as much as I hate shopping, I can sometimes not escape it. Armed with my shopping list, I proceed to the least offensive supermarket in Cairns, to commence what I have christened the ‘waltz of the walking dead’. In order to make sure I have everything I need, using my mobile phone I send a digital photo image of the shopping list to my partner via her mobile phone, whereupon she opens it and audits my itemised list. A brief SMS message a few seconds later adds another 13 items to my list. She has played with time, space, our (task) relatedness, and my head (we have both mediated a new understanding of what our shopping needs really are). In short, most machines and systems are getting functionally smarter, and are enabling a smarter relatedness. As they do there emerges a diminishing marginal difference between these and the machines of science fiction. At the social level, we are all learning to become more comfortable with the Jetsons, and the notion of interacting robots and their role in our lives. At the epistemological level ... It is entirely a different story.

In the Classroom

New social practices such as these make it possible to admit distinctively new forms of curriculum pursuits into our classrooms. Understanding the importance of this, the extent to which it should be pursued in the name of ‘education’ and the consequences for teaching practice will call for a reculturing of our innate ability to share experience through language, ritual, play, and artifact. This is why teaching robotics poses such a classroom challenge...

Lankshear (2006) points out that new media education and its digital qualities are juxtaposed against existing and shared institutionalised conceptions and practices of learning. The latter he argues is shackled by book-space mentalities comprising epistemic, property and moral dimensions that place it on the ‘wrong side’ of history. Robotics here is a hard science with a Wittgensteinian resemblance to a

potpourri of artificial intelligence, computer programming, electronic engineering, mechatronics, new literacies and techno-scientific epistemologies. Teachers are not naturally attracted to the field of hard sciences; they prefer to dwell in the softer epistemological spaces we in Queensland call the essential learnings.

On the other hand, the digital natives populating our classrooms continue to migrate from Web 1.0 platforms (Ofoto, Britannica online, personal web sites, content management systems, and Netscape) to Web 2.0 participatory platforms (Flickr, Wikipedia, Blogging, YouTube, Face-book and Google). This transition brings with it new learner agency, new identity practices, new iconic worlds, and a new attention economy (Goldhaber, 1997) that continues to challenge the legitimacy of traditional classroom models of learning. This digital curriculum – of which robots are a key component – can emulate ‘mature’ versions of social practices in ways that the ‘book-space’ of traditional classrooms cannot. The reason, says Lyotard (1984, p.52) is that ‘imagination carries the day’. James Gee qualified this assertion with what he called ‘enactive projects’ (Gee et al., 1996) — that is imagination tied to those projects that make worlds in the image of visions.

Let’s pause here and reflect on Gee’s (1996) assertion: ‘projects that make worlds in the image of visions’. Does such a school-based project exist? What would such a vision entail? In a world preoccupied with environmental issues and global warming what would a ‘Power Puzzle’* of this kind look like? Welcome to the world of FIRST LEGO League. FIRST™ translated means ‘For Inspiration and Recognition of Science and Technology’ and comprises a global organization of over 33 countries and 110,000 school-aged participants.

Mental Software for Teachers...

Imagine a robotics project built on what we consider to be the softer sciences — art; cooperative learning; creativity; design; trial and error; leadership skills; organizational skills; presentation skills; problem-solving skills; teamwork skills; technical skills,

and creative visualization. Sprinkle this with authentic problem sets and add the vital ingredient of robotic game-play. How do our personal energy choices to do things like heat our homes, fuel our cars, charge our cell phones, and even power our I Pods impact the environment, the economy, and life around the



Figure 2: The FIRST Vision



Figure 3: The 2007 Power Puzzle Missions

globe? Which resources should we use and why?

In the words of James Gee et al (1996), this is a world made in the image of an ecological vision. FIRST LEGO League™ (FLL) recreates a microcosmic world in the form of a ‘local village’ (figure 3) complete with a flowing river, coast-line, power-plant, housing estates, farms and a host of ‘power choices’. Participants explore how energy creation and consumption choices affect the village, the planet and our quality of life today, tomorrow, and for generations to come.

For the overwhelming majority of our cognitive evolution, literate societies and cultures have shared new information, knowledge, ideas and technological advancements through the medium of the artifact (Wilson and Keil, 1999). Inside the deeply intrinsic constructivist design culture of FLL, we can locate the robot as a medium or catalyst for learning. The cognitive artifacts and literacy practices embedded within the robot resonate from a global culture of technological progress, scientific knowledge and playful learning. An overview of the Robot Challenge Missions brings this ‘world into vision’ (Gee et al, 1996).



Solar energy sources are a feature of the challenge missions. The solar panel challenge involves moving the Roof Solar Panel ONTO the roof of the house by the sea for nominated points. This requires some understanding of the role of solar energy and its

contribution to the power puzzle.



Energy exchange is a key transaction underpinning each of the missions; all energy generation requires energy to be spent; hence there are 'good' and 'bad' energy sources. The personal vehicle choice mission highlights this, pitting the hydrogen car against the 'gas guzzler', and incorporating repurposing and recycling.



The *hydro-dam* mission requires participants to locate a dam for energy purposes, on the village playing mat. The referee will flood the river at the end of the mission to test the validity of the students' placement of the dam. Points, as well as houses, land and industry can be won and lost through the placement of the dam.



Wind turbines, like the wave turbine mission not pictured here, requires students to locate the wind turbines in safe community settings. This mission involves not only the 'science' of wind as an energy source, but also connects to the next mission – locating a viable power grid. Children learn and experience energy consequences.



On the playing mat, the village is divided into small boroughs, and each has distinct energy needs. Placing the wind turbines as energy sources can earn points, but if the wind turbines are located in a community that is connected by the energy grid, then more points are earned. Strategy is everything...



Coal continues to be an energy source and issue for all communities. The coal challenge requires the robot to manipulate a rail car full of coal, which is then distributed across other energy generators as part of the continuing game. This challenge builds on *the conundrum between 'good' and 'bad'*



energy choices. Similarly, the *oil drilling mission* requires the students to remove barrels of oil from the oil rig, which is located in the ocean. Again, good and bad energy choices prevail, with environmental management a key issue in terms of how the oil barrels are transported; dropping a barrel in the ocean incurs a huge



penalty. The solar panel satellite introduces a challenge mission that focuses on energy innovations, and the role alternative energies play in this field. The interesting aspect of this mission, is that it is a shared mission; it requires two competing teams to work together to launch the satellite, with a points bonus for the first team to complete the mission.



The remaining challenges involve the manipulation of *energy inputs and outputs* in relation to 'powering' the village power plant. Throughout any community it is possible to find a variety of energy sources. This micro-world is no exception.



It contains oil barrels, uranium rods, a corn harvest (in far North Queensland this would equate to sugarcane), coal resources, wind turbines, wave turbines and a vast array of timber energy resources. For example, all uranium must be moved from the farm in order to score clean energy points in the Uranium challenge.



Similarly, the corn must be harvested for processing into ethanol based fuels; this process, like the uranium process, attracts points for successful completion. There are red and white versions of each fuel source, which takes on additional significance to this community. Energy is needed in order to find and process fuels, and this often involves *undesirable effects and by-products*.



The red versions of the fuel models represent inefficiency and negative impacts, which need to be minimised. There must be no red fuel models IN the Power Plant area for this mission to count, and points to be maximised. The separation (processing) of red fuel models from others may be done by the robot anywhere on the playing mat ... complex indeed. *Figure 4: The Power Puzzle Challenge (www.firstlegoleague.org)*

The robot is the kinesthetic hook; the very act of constructing the robot as a cognitive artifact allows children in a K-12 environment access to this distributed and shared global intelligence through the technological medium itself. The learner in a K-12 setting is essentially communicating and collaborating directly with the designers in Denmark, who originally designed and built the robot. As the learner manipulates the cognitive artifact to their own design, they create their own shared intelligence, adding to distributed knowledge, artefactual systems, and understandings. This is communicated through globally connected discussion fora and Q & A sites involving thirty-three participating nations and several multinational companies. Participants distribute and share their cognition textually (via programming), verbally (through communications), or kinesthetically (by design, fabrication and interaction with the robot).

'Playful Learning' with 'Cognitive Artifacts'

Stahl (2006; p.228) suggests 'learning takes place in communities and is facilitated by artifacts, which in turn sustain the communities that generate them'. The study of robotics will allow the teacher to give students meaningful experiences that introduce or reinforce the following science, mathematics, technology, engineering and literacy concepts:

- Ratios; diameter, radius, and circumference;
- Friction;

- Measurement of distance, time, angles, and speed;
- Light and the electromagnetic spectrum,
- Basic electricity and circuits.
- New literacy languages, texts and connections.
- Iconic programming using conditional statements, loops, variables, timers, and wait states.
- Research and presentation software skills.
- Design activities based on ‘fair test’ problematics.
- Art; cooperative learning; creative visualisation.
- Leadership, teamwork and organizational skills.
- Problem-solving; technical skills, and resilience.

FLL requires teams to compete in 3 competition events — the robot challenge, the research project, and the team project. The robot challenge takes place in a simulated village setting; it involves the kinesthetic challenge of driving the robot through 14 simulated energy challenges within a 2 and ½ minute time period. The second event is a research project – this year a fairly sophisticated energy audit performed on a built environment, and requiring the investigators to solve the power puzzle for more efficient power options. This not only involves the audit process, but also requires reporting back to stakeholders. The third event is the team challenge – where members are assessed against their role in the team, and their ability to contribute to the collaborative outcomes of the team of 10 students.



Figure 5: the Robot Challenge; the Research Project; and the Team Award

Reminiscent of Wolfe’s (1979) novel ‘The Right Stuff’, despite setbacks, frustration, and the occasional tedium, the teams continue to manipulate the robot to best meet the requirements of the set challenge mission. The robot challenge contains 14 missions, conducted and scored over three rounds of

competition. It is this use of robot missions that leads to the construction of new knowledge frames in the learner. The most-frequently-cited driver in this process is ‘playful learning’ — the desire to build a better robot; a more robust and capable ‘object’ to drive harder and faster in the pursuit of rich problem-solving. The old adage, ‘there has got to be more’ could never be truer for the have-more generation. A ‘glitch’ becomes a challenge; a ‘bug’ an opportunity ... light is merely another ‘variable’ to be manipulated, and a more capable opponent simply feeds the ‘collective’ urge to go one level better.

For teachers, an important aspect of the robot challenge is the open-endedness of this pursuit. Teams can nominate for the robot, research and team challenges, or any combination of each. The team can master all 14 missions, or seek to master a number of their own choosing. In this way, the teacher as facilitator and coach occupies a special place at the competition table. If we adopt a Vygotskian view that these robots and the shared socio-cultural interactions (FLL challenge missions) open the way for learning, then the teacher is the person who lays the foundations. With 14 missions to accomplish, there is a lot of science to explore ... In keeping with the Piagetian view of the child as a scientist, there is no room here for solitary discovery. As Salomon (1993, p. 65) says, the child ‘is scaffolded in the achievement of activity either explicitly constraints of the artefacts with which the child is playing.’



Figure 6: A global community

than divides schools as technology-based communities of practice. In our own Far North Queensland region, remote teams PODcast their team

interviews, and VODcast the robot challenge and research project performances to a panel of judges based in Cairns. One technology provides a new context of use for the other.

In Australia alone, we have four major competitions currently under progress in very diverse communities – Cairns, Perth, Sydney and Outback Queensland. Interest hubs are strong in Brisbane, Melbourne and Tasmania – with our neighbors across the Tasman hoping to inspire the robotic equivalent of the ‘Tri-nations Cup’ with long time rivals South Africa. The uniformity of the challenge, its global relatedness, the global synchronicity and the access and availability of global teacher and learner resources means that FIRST LEGO League™ is easily translatable to cultures and communities worldwide.

Reculturing Learning

Robotics education raises two critical distinctions for ‘thinking’ about learning and teaching; The first is the distinction between contemporary schooling mindsets, that juxtapose institutional forms of learning practices against a form of learning mediated by digital affinities and architectural resources such as robotics. The former needs to be seen more critically by teachers for the ‘book-space’ world that it is, and the epistemic, property and moral dimensions that increasingly place it on the ‘wrong side’ of playful, and unforced student learning. A second contrast relates to a new set of social relations that have emerged around digital media space, and emerging new literacies. The new literacies embedded in cognitive artefacts such as robotics create a compelling case for educators and others interested in new learning media to be courageous, creative, subversive and even, where necessary, non-compliant in taking up the literacy challenge offered by new learning cultures. In the past, the ‘robotics fear factor’ held sway for teachers; as robotics has become normalised in our everyday frames, our epistemological focus is also beginning to shift. FIRST LEGO League provides a teacher friendly platform for bringing robotics squarely into the realm of playful learning

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ICT and footy enrich learning at Robina

A group of eager Robina State High School boys have enjoyed mixing rugby league, information and communications technology (ICT) and learning through an innovative Smart Classrooms Teacher ICT Pacesetters project.

The school received the funding earlier this year for Giant Steps, the initial phase of its League for Life program.

Applying a holistic approach to learning, League for Life engages male students from Years 9 to 12 through an integrated curriculum focusing on rugby league and ICT. Giant Steps also integrates English, Arts/Media and Maths, and includes a welfare component.

Head of the Arts Department at Robina State High School, Deb Derrick, is the designer, manager and driving force of the program.

Ms Derrick said the use of ICT was an integral part.

‘A major part of the students’ daily learning is formed through the Learning Place’s virtual classroom, wikis and blogs,’ she said.

‘Soon the students will use a range of ICT devices and software to produce a team logo, player profiles, a promotional DVD, multimedia drama, statistics, a fitness plan, personal fitness profiles, diet analyses and game analyses.’

Ms Derrick said the program aimed to keep the boys in regular and productive attendance at school by engaging them in curriculum that was meaningful and relevant to them.

Participating student Ryan Keys said he was enjoying the program’s focus on rugby league and ICT.

‘The program is great because I’m with my friends and the work is based on rugby league, we also get to do cool stuff on the computers,’ he said.

‘My marks have improved and I really want to go to school.’

Robina State High School recently

won the Service to the Community Award for League for Life at the Rugby League One Community Awards.

Due to its success, the program will expand next year to involve Nerang State High School and Elanora State High School on the Gold Coast, and Patrician Brothers in Sydney.

League for Life was developed in conjunction with the Gold Coast Titans, Australian Rugby League Development and Griffith University.

To find out more visit: http://robinashs.eq.edu.au/wcmss/league_for_life.html



Student Ryan Keys is enjoying the program’s focus on rugby league and ICT

Blogging 2 learn, learning 2 blog

Amanda Marrinan

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'I never teach my pupils; I only attempt to provide the conditions in which they can learn' Albert Einstein (cited in Prensky, 2006).

Amanda Marrinan is a year one teacher at Saint John Vianney Primary School Manly. She has been interested in the use of technology in the classroom for some years but has this year begun blogging as a means of negotiating curriculum in the Early Years. In this article she answers questions about how she got started, what the children are doing now and where they might be headed in the future.

Why did you start a blog with your class?

It all started with asking my Year 1 students 'Would you like to blog this year?' Their question 'What's a blog?' began this amazing learning journey into the world of blogging. I've always been intrigued by technology and interested in how I could embed it into my teaching and learning within an Early Years classroom. I attempt to utilise innovative teaching practices within my literacy blocks. A hands on approach that caters for a variety of learning styles has had a positive impact on the children's reading ability, however this was not as evident in their writing. The nature of the Early Years learner means that children are frustrated when they can't communicate effectively in written form. They love to be engaged in conversation, but the mechanics of writing can be 'all too much', especially for the boys. Social software like blogs,

affords us the means of connecting with one another as writers so the intent of blogging was to provide an avenue for students to be Effective Communicators; giving the students a purpose and audience for developing their reading and writing skills. They were writers from day one, year one.



Getting started

Whilst my intent was to start a blog, actually 'doing' it was quite scary.

'What will others think? What if I got it wrong? Who could I turn to for help and inspiration? Is it possible to do this Term 1, Year 1?' were just some of the questions that I asked myself. I expect my students to be risk takers so how could I expect any less of myself? After overcoming these initial fears, a basic blog was created using blogger.com. I explained to the children what a blog is and why people keep blogs. They made the connection between blogging and their journal writing. The children were very excited about the prospect of blogging and saw it as a way of sharing their learning — initially with their parents and each other. The concept of a blog and its purpose were discussed at the parent/teacher information night. Once parents understood the safeguards that had been put in place to keep our blog private, our class blog was officially launched.

What did you blog?

The next step was deciding what to blog. The students saw that it was important to communicate what was happening in the classroom on a daily basis. As it was the start of the school year and routines were being established, the children began a conversation with their parents about the new systems that operated in year one eg. how to change homework readers, how to borrow from the library, before school routines, transitions in the classroom and so on. Then they wanted to blog about what they had learned and it wasn't long before everything we did got the response of 'we have to blog that' ... the children were in control! In the words of Barbara Ganley:

'The deeper into blogging I got, the more I couldn't disentangle the pedagogy from the blogging — to talk about blogs means to talk about student centred learning, collaborative knowledge spaces

and constructivist pedagogy. Teaching with blogs the way I do — which means not applying them piecemeal but integrating them fully in all their messy, flexible, fluid promise — means that you have to let go of control of the classroom, give up the stage and create opportunities for learning magic to occur. The trick is to weave the learning and the tool so seamlessly together that the blog is the class and the class finds the blog indispensable' (2005: Para 2).



Managing the blog

Students decided the content of the blog including the images but I was the typist. Parent volunteers helped students up to four mornings a week to read the posts and type the comments that children wanted to leave on a post. Without this support the blog would have been unmanageable in the early stages. We could have scaled back the number of posts but the sheer enthusiasm of the students and the richness of the conversation kept me going. Working with twenty first century learners meant that I had to remain one step ahead; hence I learned to embed code and to utilise social software like bubbleshare, glitter text, animated graphics and teacher tube videos to keep the blog engaging. The children's idea of a sign on sheet was invaluable in managing who posted and when. Students quickly came to understand that the blog was not something that just occurred during school hours. The nature of the post changed to include questions or challenges to keep the discussion and sharing going 24/7. Some children started bringing photos from home in response to the questions posed in the posts. They were frustrated in not being able to share their responses instantly and so we set up a class email account. Parents began emailing photos that reflected the learning taking place in the classroom such as patterns using vegetables and cutlery from the dinner table. My evenings disappeared as I

checked emails that included the words and images students wanted me to post on their behalf. Blogging had become such a way of life for the children that it continued over the holidays.

What learning was happening?

It was not only the children that were learning. I became the perfect example of a long life learner as everyday (through the use of the data projector) the children watched as I made mistakes or hesitated about how something should be done as we were posting. They celebrated when I got it right and were frustrated when I didn't know how to do what they wanted me to do, for example, adding audio to the blog. As the children became more familiar with the process of blogging they led me through the steps of what to do next. The children learned the language of blogging and it soon became part of their regular



vocabulary. They developed the confidence to work with other adults who were unfamiliar to blogging yet could help them by typing their posts. The children showed the adults how to format and upload the posts. The children became the teachers!

How does an Early Years philosophy support blogging?

An Early Years philosophy is influenced by constructivist pedagogy that means:

- Learning should take place in authentic and real-world environments
- Learning should involve social negotiation and mediation
- Content and skills should be made relevant to the learner
- Content and skills should be understood within the framework of the learner's prior knowledge
- Students should be assessed formatively, serving to inform future learning experiences

- Students should be encouraged to become self-regulatory, self-mediated, and self-aware
- Teachers serve primarily as guides and facilitators of learning, not instructors
- Teachers should provide for and encourage multiple perspectives and representations of content (Doolittle, 1999: Para 3).

In my classroom this means that context is negotiated on a daily basis so the content of the blog is constantly changing and can rarely be predicted.

Just when I was thinking the blog was working nicely as a conversation between children and their families, I discovered that it was not so private after all. I had linked to an educational website that focused on alphabet games and was amazed to find that the creator of that site left a comment on our blog. This concerned me at first — being new to the whole blogging process, I did not realise that when you make a link to other sites your blog becomes more visible. I researched the author of the alphabet site and decided to let her comments through. This led to an ongoing relationship with this writer/illustrator who works with Early Years classrooms in New York. She kept an eye on our blog and her comments led to new opportunities for learning. The



students were writing poems and composing illustrations and titles for poems on her site. Initially we communicated via posts, comments on her blog and email. Eventually we learned to Skype so that we could talk with our new friend face to face. My focus on the students' writing skills continued but the context for that focus, changed on a daily basis. In line with the children's interests and motivations, we found ourselves writing for many different purposes — sometimes poetry or perhaps providing descriptions about our environment and our culture to



someone in another country. At the end of the term the children realised that we had shared ‘everything’ that we could about our classroom, our routines and our learning at that time. Together we realised that we didn’t need to blog about everything and we became more critical about what conversations we chose to start.



What’s happening now?

My philosophy is to provide an environment in which students can learn. The discoveries I have made alongside the children, with them in the role of apprentices, have challenged me to further explore the nature of teaching and learning in the twenty first century. David Warlick (2006) discusses the need for a different kind of classroom that he calls a ‘flat classroom’. Students in a flat classroom exhibit the following characteristics:

- Curiosity
 - Are Self Directed Learners
 - Have an intrinsic need to communicate
 - Have an intrinsic need to influence
 - Are Future Oriented
- They communicate more, construct original content more, and more often

collaborate virtually with other people. This project aimed to engage students in a ‘conversation...from within the classroom to a wider audience...then brought back into the classroom for further discussion’ (Utecht, 2007: Para 8). It is through students’ conversations and those with the wider audience that

24/7 learning environment audience
blog2learn collaboration communication
conversation
creativity digital futures
discussion empowerment
engagement excitement extended
walls of the classroom interaction
literacy motivation ownership
participation refelction
sharing voice write2learn

the teacher gains true insights into the students’ learning and in turn, plans the future learning that needs to take place. The 21st century learner learns from many sources and collaboratively makes meaning through communication with not only the classroom teacher but with others wherever they may be.

The children in my classroom are now managing the posts on our class blog by themselves and with the support of a buddy class have created and are maintaining their own digital portfolio using a blog. Some children are still experiencing frustration in communicating via the written form so I am undertaking a project to explore podcasting as another medium through which the children can continue a conversation about their learning. My students no longer see me as the only expert in the room — they seek out the expertise of others such as their peers or their buddies to assist them as the need arises. Some students are in such high demand to share their skills that they are posing the possibility of creating ‘movies’ to instruct others in the finer points of blogging. The sky is the limit

for these twenty first century learners and for their teacher too!

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Behind the 8 ball

Michael Hilkemeijer

Have you ever watched those science fiction movies? You know the ones that have spaceships flying around in the sky, aliens communicating with people and displaying a world filled with technological wonder! Well as unrealistic as some of that may sound, it may just happen. Maybe not the part where we are talking one-on-one with aliens, but for certain, we will be living in a very changed world in the future.

Since the day that man was put on earth, we have always looked for ways to make our lives better. This is the very essence of technology and is something that will always be in our blood till the end of time. Cave men created tools and clothing out of their environment, the Industrial Revolution was a major turning point in technological developments, and now we have entered the era of the Information and what some of us might call the Knowledge Revolution. We now live in an age where technology is rapidly advancing in so many areas of society that it is moulding the minds of our younger generation much like the hands of a potter shaping their clay to a design envisaged in their minds.

The very building blocks of society in the future will come from these young minds. And this leads to the question, just how far will technology take the human race in the future? No one really knows as it is impossible to predict the changes that will take place. However, it is not hard to comprehend that it will be different. Society itself will lay its foundations in the technological

developments of the time. It is also not difficult to understand that with the way society is transforming today, in relation to technology, there will no doubt be numerous other questions that will arise. For example, will technological development lead to the destruction of the human race? If technology is created to make our lives better, are we neglecting the long term side effects? Just look at what technology has given us so far. We no longer have to walk up stairs if we wish as we now have lifts and escalators, therefore we are exerting far less energy.

With the continual advances on technology in society and the minds of students being moulded with techno-putty, teachers will always be faced with the prospect of being one or more steps behind their pupils.'

The creation of such technology has led to the development of new technologies such as stair machines in gyms. Let us not forget about the positive effects of technology such as medicine. Will technology prolong our lives? Perhaps we could ask: do we want to live till the age of 150? There is nothing wrong with trying to improve the health of people, but will we allow technology to make those decisions for us? What will the young minds of the future be like? It is pretty safe to say that they will be substantially different to today.

Evidence of this is no clearer than it is in the education system. As teachers, particularly those dealing with ICT

(Information and Communication Technology), we get to witness this evolution first hand. Students these days are exposed to so much technology such as the Internet, mobile phones, and iPods etc. To older generations, there were things that ten to fifteen years ago would not have appeared possible. It is commonplace for most households to have a computer and be connected to the Internet making information more readily available than previous generations could possibly contemplate. For those of us who are teaching ICT,

technology advancements are rapidly leaving us behind — behind the eight ball.

With continual advances in technology, in society and with the minds of students being moulded with techno-putty, teachers will always be faced with the prospect of being one or more steps behind their pupils. It is a constant struggle to be able to keep up to date with the students we teach. Younger minds are more adaptive to change than older generations and this enables them to understand technology at a faster rate. What this means is that as technology advances in different directions for each incoming generation, the exposure to

this technology adds on another dimension to their young minds. The result being that each generation will seek to either better or improve their predecessor's techno wonders.

So what does mean to the teachers of the future? It means that there is a long road ahead for them in terms of their professional development. As mentioned earlier, it will be a struggle for them to try and keep up with their students as young minds absorb the wrath of society's technologies. However, it doesn't have to be a meaningless one for them. As technology continually changes, so must our attitude towards the skills and knowledge that we must possess in order to do our job as educators, especially ICT educators, both effectively and efficiently.

For ICT teachers, their lives could be even more fulfilling as they are pre-

With such changes occurring in education, professional development of teachers will always play a significant role in this game of 'cat and mouse'

sented with such a vast range of technological developments to explore. For example, multimedia is taking a large place in many schools these days. ICT teachers can invest some of their own time and money to purchase programs such as 'Stopmotion Pro', a program for animating, and do a couple of animations themselves to get motivated and learn more about the industry themselves. Or perhaps they could spend time making small games on the school's computers using software such as 'GameMaker'. The simple rule of thumb is, if we can't beat them, then we do our best to encourage them.

ICT educators, as they are already doing, are moving from the role of the teacher to more of the facilitator. It is not uncommon today for students to show their teachers new things to do with technology. So now the door swings both ways for both teacher and pupil. For many this creates a harmonious environment to work in as both teacher and student learn from each other. Such a paradigm will inevitably continue well into the future of education, and more

specifically in ICT education. Therefore, it is best to take the time in classes to listen and learn from your students.

With such changes occurring in education, professional development of teachers will always play a significant role in this game of 'cat and mouse'. Therefore teachers need to be aware of the benefits of it to their role. Professional development courses also need to focus on future trends and take advantage of the new technologies available to ensure that not only the needs of the teachers are fulfilled but also and more importantly, their students. So it is regarded as ideal for teachers to attend such courses on offer, but to also keep in mind the demographics of their students so that expectations are not out of reach. An example of this would be to not necessarily attend and provide work for students who are of less fortunate background.

Researching into new and improved technologies will also be able to keep up to speed with your students as they hear most news about this from their peers, so as teachers discover it on the Internet.

For ICT educators, the rise of technology opens up a whole new area of exploration for themselves both personally and professionally. They can get involved in the ICT industry if they wish and practice many new and exciting technologies. The implications of such self professional development for education can assist the ICT educator immensely. Self learning can lead to self motivation and one can see how this can be beneficial in lessons. There are also many new courses coming out on new and different technologies and programs which if given the time can be most beneficial to invest in.

There is no doubt that education in the future will be significantly different to today. Educators of the present are already bearing witness to the many transformations within the education realm. What needs to be remembered is that educational institutions always have

to constantly research for new technologies that arises and thus take full advantage of them to enhance educational learning. The digital divide well and truly among us all, and it is the role of the educators of today and also the future, to try and narrow this gap.

Another implication of these changes in society is whether or not ICT and ICT-related classes should become compulsory for students at school. After all, let's face the fact that the world in the future will be one that could possibly be dominated by technology. Should more students be doing these subjects to help prepare them for the future?

Teacher training in the area of ICT is swiftly becoming a key issue. For experienced teachers, finding the time and the resources is a problem. Can this problem be overcome with adequate teacher training through university teacher courses? The next generation of teachers will certainly need to be able to demonstrate how to integrate ICT more efficiently and effectively in the curriculum.

This digital divide that society has created has generated many issues and concerns for educators. However, we should not be discouraged in our attempts to keep up to speed with our pupils. It will be an endless game that we play, but it will not be one where either player loses. Both student and teacher will continually learn from each other and benefit from different experiences with technologies. The inclusion of ICT into education will inevitably help technology mould the minds of our students in a very positive and exciting manner.

The future of the world lies within the hands of our students. ICT is the key to a wealth of knowledge, opportunities, and dreams. After all, dreams are what make many things possible.

Michael Hilkeijer has been teaching ICT for six years and is a keen advocate of ICT in education. He is a board member of QSITE and a member of Australian Computer Society. He is currently completing his Masters of Education (ICT) through Monash University. mhilkeijer@columba.qld.edu.au

The ICT Pedagogical Licence Advanced: continuing the reflective journey

Wendy Fasso

Introduction

In 2006 I completed my Masters degree (Educational Technology), submitted my ICT Pedagogical Licence portfolio as an independent, and completed the Mentoring Online courses to become an accredited online facilitator of the Pedagogical Licence. In 2007 I commenced facilitation of the Licence, and submitted my portfolio for the Pedagogical Licence Advanced. All of this occurred in a life as a full-time teacher with a family. My situation is not unique; I am a member of a group of teachers with the same commitment and workload. Thus, the questions are asked: 'What was involved in gaining the Pedagogical Licence Advanced?' and 'What are the benefits in doing it?'

This essay is my personal reflection on my journey.

Why did I undertake an Advanced Licence?

In discussing the value of e-Portfolios (figure 1), Morris and Peck (2005), create the impression of a linear process of development through continuous reflection and renewal in a steadily moving, but single direction.

Whilst the model made sense to me, on reflection I thought it was simplistic. Whilst the text (rather than the diagram) indicated a continuous reflection and renewal process, I wondered why my evenings, weekends and days are spent in trying to cope with ever-diversifying activities, as a teacher, as a learner, as a teacher-facilitator.

In discussions about the Transformative nature of learning, Jack Mezirow (1997) describes the discomfort involved in accepting new ways of thinking, with polarised results – either inertia and resistance to change, or significant effort and transformation in perspective. When this is considered in relation to the theory of Connectivism and the networked nature of knowledge (Siemens, 2004), I have begun to consider that in fact a transformative approach to the very nature of change in education has to occur, and that the multi-directional (and thanks to ICT, instant) inputs we receive as teachers from QCAR, Federal Education authorities, Education Queensland, the research literature, the Learning Place, QSA, School leaders, behaviour management strategies, the community, and of course

the students themselves will always result in a Connectivist approach to our own practice. Hence, the diversification has to be accepted and dealt with as a factor contributing to (rather than an impeding) changing practice in the classroom. Transformation cannot occur without significant and meaningful reflection. As a reflective tool, the Advanced Licence was a way to evaluate my own practice in an increasingly diverse area of personal passion – ICT in teaching and learning. Thus, the motivation was intrinsic, the commitment was personal. In addition, I hoped that it would be a tool with which the multiple inputs could be reconciled and integrated (as far as possible)

Jun et al (2007) identified numerous benefits in maintaining e-portfolios. Having completed my Pedagogical Licence portfolio as a practitioner, I could only see further benefit in examining my own practice from a new perspective, this time as a leader.

However, I still wonder now, as I did at that stage about the lack of tangible direction for Advanced Licence holders, as Roberts et al (2005) state: 'As staff will have developed institutional and professional survival strategies under pressure of multiple demands on their attention e-portfolios for them must also have tangible rewards.'

The Nature of my Portfolio – my thoughts on its construction

Roberts et al (2005) show the relevance of Kolb's learning cycle in the context of a Portfolio (Fig 2). It is a useful frame-

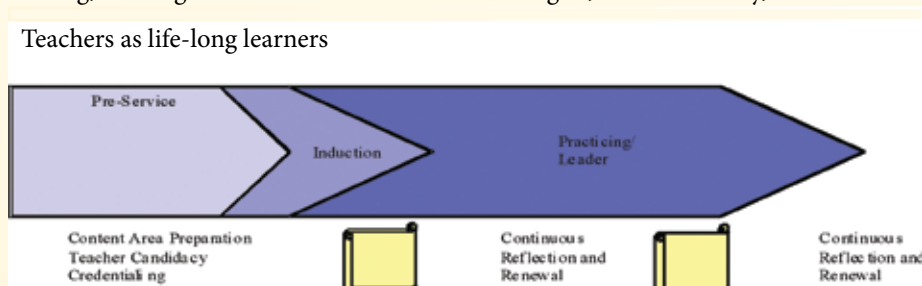


Figure 1: Teachers as Life-Long Learners (Morris and Peck, 2005)

work within which to discuss my own journey.

be over-emphasised; professional sharing in our Community should be

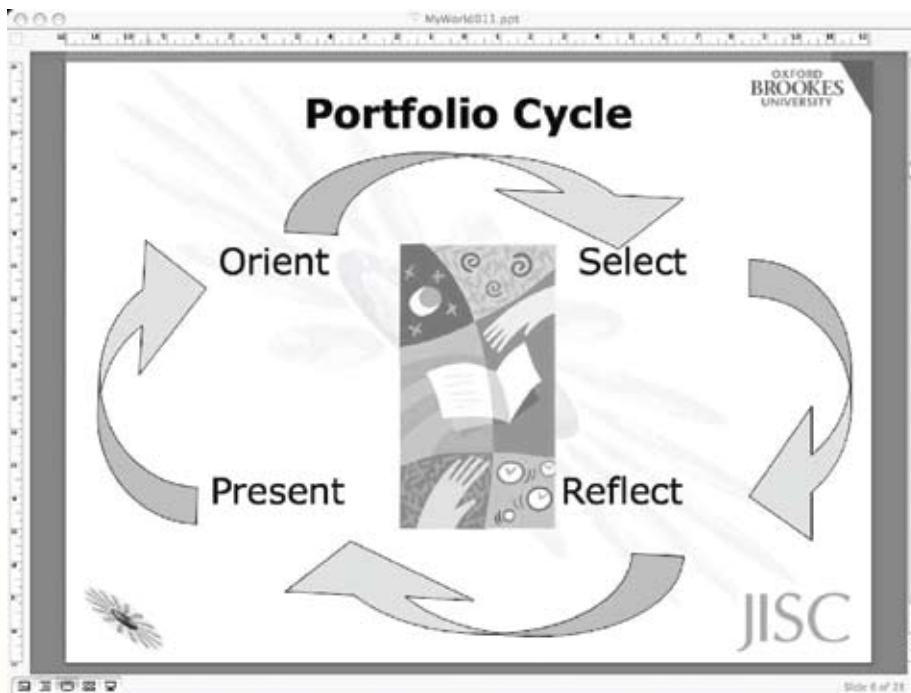


Figure 2: The Portfolio Cycle (Roberts, et al, 2005)

Orientation

I believe that without continual updating of the theoretical developments in learning theory and practice, we are negating our professional responsibilities. Undoubtedly, there are limitations on the value of this updating to early practitioners, and one of the responsibilities of an advanced practitioner is to ensure that they themselves are up to date, and that the information is disseminated. Hence, I was committed to keeping a theoretical/research component to my portfolio, and used this research as the basis for the Orienting phase of my journey.

One of the key factors in the next stage was to understand clearly the wording and intent of the Portfolio indicators. The Wiki established in our Community in Blackboard reinforced this approach in suggesting a dissection of the indicators. This was an extremely valuable approach, leading to extended hours of thinking about the indicators and their meaning, without which further action would have been impossible. On reflection, the value of collaboration and community-building in the development of shared understandings of the Advanced Licence level can never

the most effective way of easing the journey of each individual.

Selecting

Within the framework that I had constructed, the next step was to identify in my own practice activities and work that reflected clearly the intent of the Indicators. This approach is supported by Roberts et al (2005), who outline the importance of orientation in portfolio construction in determining 'the selection of artefacts to be included in the portfolio'. It was at this stage that I doubted the value of some of my evidence. With a longer time frame, I would have re-implemented a number of activities, and initiated a range of new initiatives. The feedback received from the Moderation panel was excellent, concurring with my own self-evaluation, and establishing a new reflection cycle which I am currently putting into place and implementing.

Roberts et al (2005) identified 'the tension between eportfolios establishing a person's identity through reflection, and the pre-determined factors of success', in our case the Licence Indicators. As stated, this leads to 'tensions between a process-focussed approach

and a product-focussed approach'. In conversations I have had with a number of other Advanced Licence applicants, this is a key issue – there is some concern in the degree of flexibility in meeting the Licence Indicators and demonstrating one's own expertise in a more autonomous environment.

Reflection

This was, of course, the most challenging part of the Portfolio. The task of valuing research, theory, sound pedagogy within a discussion of my own practice was daunting, particularly at a leadership level. Undoubtedly, this is where many applicants would lose momentum. I challenged my own practice, and sadly found it lacking in many areas. Again, the feedback from the Moderation panel reflected this, however in both cases, mine and theirs, the value was the identification of areas for improvement. It is part of the transformative process to feel discouraged, be uncomfortable, and then formulate plans for improvement. As Kenneth Wolf (cited in NCPS, nd) states:

Reflection is what allows us to learn from our experiences: it is an assessment of where we have been and where we want to go next.

In fact, NCPS (nd) in Figure 3 add a final, and most important stage to the Portfolio process, which supports these views, that of transformation. They state that 'This step holds the greatest opportunity for growth as you use the insights gained from reflection in improving and transforming your practice.' Richards (2005) elaborate on this transformative process, highlighting a threshold of transformation to a dialogical transformative phase in which the practitioner moves beyond the phase of temporary frustration to a more innovative phase.

Conclusion

For me, the value of this Portfolio process is undoubted. It has allowed me to reflect upon my own learning, both personally, and from the perspectives of the Moderating panel. As well as reflect upon my past and present practice, it has stimulated the identification of future learning goals. The portfolio itself has changed since submission – it undergoes

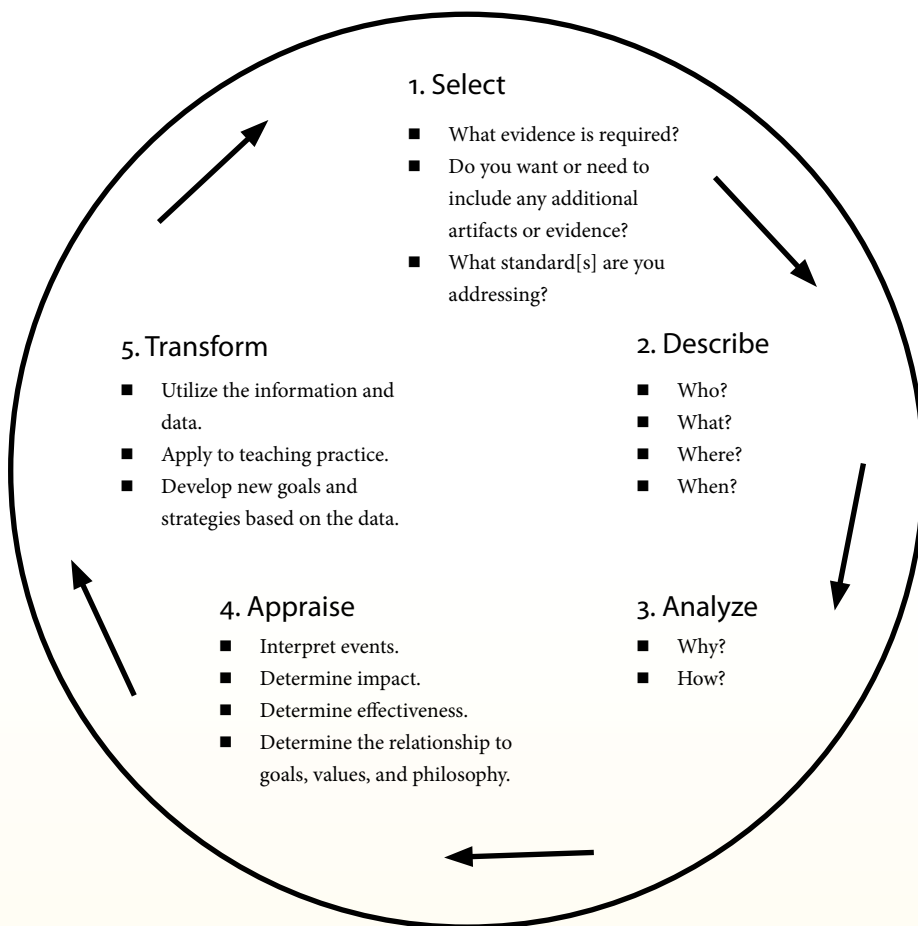


Figure 3: The Reflection Cycle (NCPS, nd)

periodic reviews as my perspectives change and my practice improves, hence the process has led to a permanent change in my own practice.

Some confounding issues arose as I was constructing my Portfolio.

The first was the lack of a functional Advanced Licence Community. Applicants who have contacted me since I was awarded the Licence appear to have common problems, all of which could be publicly addressed for the benefit of all on the Community, or a negotiated solution found. It would be advantageous to all participants to suggest stronger participation in the community.

The second issue was the tension between my need for personal ownership of my portfolio, and the Indicator requirements – does the lack of one indicator result in a Portfolio that is not sufficient to demonstrate an Advanced level? Again, conversations indicate that individuals refrain from submitting their portfolio because of lack of evidence in

one specific area (eg ePortfolios, or Global Communication).

Finally I, and a number of other trial participants, remain with the question: ‘So what?’ It may help to more clearly address the questions surrounding the purpose of the Advanced Licence, apart from the benchmarking of schools with the ICT Index. If the personal and professional journey is to continue, then what is next? Is there a clearly defined role for Advanced licensees, or just an award?

But overall, in summary, this achievement allows me to feel more confident in my leadership role in ICT and Pedagogy, identifies areas for future growth, gives ICT in my professional environment a much higher profile thus enhancing my role in staff development and enables me to see that others concur with my own ideas of my practice using ICT in the classroom and beyond. It also allows substantive arguments to be formulated surrounding questions about the professionalism of teachers, and gives greater credence to our

claims that teaching is a profession rather than an occupation.

Finally, to finish with a question: ‘What comes next?’

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Key elements, desirable factors: teachers with laptops, a case study

A discussion around the conditions that make a teacher laptop program successful, based on one school's experiences in the 2006 Education Queensland Trial.

Sel Kerans

Regional Technology Manager, Sunshine Coast, Department of Education, Training and the Arts

Focus Questions

- *What are the elements that, when brought together, deliver success in terms of teacher engagement with ICT for learning and professional endeavours?*
- *Can we realise success with a limited number of these, or should we expect that we must have the whole range of what would be considered 'wishes'?*
- *Along with the considered elements of Computers for Teachers, a structured Professional Development and support program, what other desirable factors should also be there?*

Background

Now that the 2006 Computers for Teachers trial has proven to be highly successful and the Department of Education, Training and the Arts (DETA) has begun deploying laptops in schools, it's timely to revisit and update a success story to articulate for schools the elements, in a local sense, that deliver the desirable outcomes we regard as important — teachers becoming professionally and pedagogically productive in accordance with the requirements of teaching in the digital age.

The experience at Chancellor State College has given us much to draw from in answering such essential questions. The teachers have collectively shown the way through their involvement in the Computers for Teachers trial during 2006 and onward to the present day. What do we have to learn? We'll look at this from several angles, introducing each element in isolation, in terms of its

intention and contribution to the success achieved. Further, we'll try to assess in our own minds the relative importance of each and consider other factors that have proved to be crucial to success. There may be no surprises for some, yet it is a story worth telling if it reinforces what we may have already come to understand from our own experiences, from professional readings or discussions with our peers.

Chancellor State College is a P-12 Facility, situated in the Sunshine Coast Region, across multiple campuses, in close proximity to the Sunshine Coast University at Sippy Downs. The college has junior, middle and senior campuses across two major locations. The student population has grown dramatically in a short time and the college has experienced, like all new facilities, the pains associated with rapid growth — such as maintaining its ICT resources whilst also dramatically increasing them.

An excerpt of an overview of the trial follows, as captured from a presentation:

Education Queensland Computers for Teachers Trial — 2006

(informed by findings from other projects and experiences in other states were taken into consideration)

What's the trial about?

- Key aim? To help make ICT integral to teaching, learning and managing the curriculum
- How? Ensure each participating teacher has access to a laptop computer 24 hours/day, seven days/week.

- Why? To improve the quality of education that students receive.

A snapshot of the trial

- Up to 1500 teachers involved in 61 state schools
- 1523 laptop computers (44 Apple), 611 in high schools, 855 in primary schools, 57 in special schools
- Teacher types: 61 principals, 59 deputy principals, 22 guidance officers, 14 AVTs, 34 music teachers, 24 LOTE teachers, 46 PE teachers,

A sense of community

- C4T Trial online community — our comprehensive repository of information and advice
- Features — Our laptop learning journeys, Profiles of computer use, Professional development, Help me out, School Service Desk, Our own Learning Place Mentor, Atomic Learning, FAQs, Troubleshooting, Cyber Café, In the spotlight, Latest news, C4T Trial blogs and forums, E-newsletters, Downloads Store



Key features ... access

- Each user has local Admin rights to their laptop — when networked, this reverts to the profile rights
- Networking — modifications to rectify small issues with the SOE, Scripts developed and MOE modified by IMS to help deploy the laptops
- Key features ... access — Internet through Wireless, Network, Dialup/broadband — VPN via External concentrator using MIS credentials, Apples use Firefox

C4T Trial support

- Levels of technical support and self help or peer support
- Atomic Learning repository of thousands of tutorials / learning objects (QuickTime movies)
- All Microsoft software (PC and Mac)
- Adobe software, Macromedia software, Apple software, Multimedia software
- Wireless — 3Com WX Wireless controller, to manage access points, Curriculum and Administration VLAN, one access device per teaching area, supporting 12 concurrent connections, best practice, seamless roaming between access points

Discussion Point # 1

Once an education system, having learned from experiences elsewhere, adopts such a trial with the support outlined, does it follow that:

- teachers will develop greater skill and knowledge levels?
- there will be a follow-on effect in classroom pedagogy?
- each participating school's culture will be significantly changed?

How would we assess success? What else might we need to factor in?

Chancellor State College Professional Development Program

Of course, in anticipation of involvement in a project like this, there ought to be both some excitement and trepidation at the school level. Pressure is there for success, especially in a trial situation and school managers may be wondering at the technical and professional development logistics for success. Schools are already very busy places! If the factors

from Discussion Point #1 are to be well addressed, there will clearly need to be some energy and enthusiasm at the school level. Here is an overview of how the experience has been at Chancellor.

Chancellor's Strategies Framework is based upon a P-12, Futures Focus Curriculum, with the governing school culture of support based on Partnerships within a Professional Learning Community. The way the college has embraced the C4T Trial within this framework has been admirable, responding to the challenge given at the state level more than capably, and showing the way for any such program to be a success. The process for success will be outlined briefly below, through summary points of a school presentation:

Professional Learning

- All on top of normal College Meeting Cycle
- Mandated Term 1 — Basics and Teacher Productivity
- Mandated Term 2 — Software Products to raise awareness
- Optional Term 3 — Classroom projects / Student outcomes
- Term 4 — Pedagogical. Licence; Professional learning monitoring through ePortfolio

Staff Management

- Key Teachers have been given time to help manage the program
- Great Technical Support
- Huge level of interest by vast majority of teachers
- Variety of skills by teachers willing to be facilitators / mentors
- 'Reward' system for mentors — use of 0.25 days TRS or purchasing peripherals for their class / session taken
- Online evaluation of Terms 1 and 2

Keys to Success

- Staff willingness — all teachers, except 1 of our of 100 are actively using their laptops
- Group of teachers willing to be

mentors

- New school mentality — let's get the job done well / self improvement
- Admin support. ICT is the way of doing things
- Funding from Smart Classrooms for PDT requirements / help desk / repair turnover time
- Support from John Hunt — full of ideas / submission assistance
- Tips of the Week, especially in term 1-2, sometimes became Tips of the Day
- Fun — Geek of the Week
- Teacher Champion (Stephanie Kihlstrom)
- BLOG at Learning Place

State of Play

- Most teachers need / use the laptop for everyday work — cannot imagine life without their laptop
- Requests for assistance have really slowed down — in Term 1, there was a huge demand for personal assistance with internet / email / software
- Innovation Focus Team — planning major ICT phases for college:
 - Early Phase — Digital Classrooms
 - Middle Phase — Connected Classrooms
 - Senior Phase — 1:1 Mobile Learning

Summary

- Expectation — if you have the tool, the engagement in Professional Development is a must
- Teachers as Leaders — Professional Development driven by Innovation Focus team in consultation with Admin and C4T — owned by staff



- Focus on Pedagogy to develop need for skills
- Peripheral Devices

Discussion Point # 2

Once a school takes part in such a trial with enthusiasm and the support of an education system, and demonstrates great success so it follows that we believe:

- teachers have developed greater skill and knowledge levels
- there has been a follow-on effect in classroom pedagogy
- the participating school's culture will be significantly changed

How would we assess success? How would we benchmark progress and recognise success?

Smart Classrooms Professional Development Framework

Timely, the introduction of the Smart Classrooms Professional Development Framework, to supersede the former ICT for Learning Continua, which teachers in Education Queensland had been using as a benchmark for their Learning and Development surrounding ICT and professional and classroom practice.

The Professional Development Framework has four key areas:

- Professional Knowledge
- Professional Practice
- Professional Values
- Professional Relationships

Within these, descriptors are defined for each of the following levels:

- Pedagogical Licence — Advanced
- Pedagogical Licence
- ICT Certificate

There has been a trial already undertaken by Education Queensland in each of the regions, to train facilitators and accredit teachers at the Pedagogical Licence level. This has also proved highly successful, with ongoing programs now to support accreditation of teachers at each of the levels. Schools and teachers are taking to the opportunities in greater numbers and conducting in-house, structured programs with the clear aim of taking large numbers of teachers through workshops and a process of accreditation. From the momentum and success realised, drawing on the use of the Smart

Classrooms Professional Development Framework project resources, teachers at Chancellor College have been able to add value, greater authenticity and a Smart Classrooms accreditation to their program.

Discussion Point # 3

Assuming a school engages teachers in processes guided by a Professional Development Framework based around pedagogy and adopts such a computers for teachers trial with the support outlined by an education system, and demonstrates great success so it follows that we believe:

- teachers have developed greater skill and knowledge levels
- there has been a follow-on effect in classroom pedagogy
- the participating school's culture will be significantly changed

How would we determine the key factors at play? Which are the most essential? Could we do without some for a school to be most successful at its own level of potential?

Key Elements, Desirable Factors

From the Chancellor experience, could we wonder that success can be achieved without a laptop program?

Perhaps in Chancellor's case — no. The introduction of laptops has been a catalyst for much to happen. The laptops are seen as showing value for teachers — recognition for their role and then essential tools for the teacher of today. This value along with systemic support and opportunities provided by the school and the greater organisation are making a difference.

- Factor 1 — provision of laptops — valuing the role of teachers and recognising their needs, to help realise the success aspired to by the overarching education system.

So, teachers respond to the value demonstrated in them and the

opportunity, all taking off together in the same direction, with all the understandings and common thought / planning required?

From Chancellor's experience, it appears there is invaluable benefit in having local champions — teachers that are able to drive the engagement level and professional development of other teachers. Teacher leaders.

- Factor 2 — teacher 'champions' to guide the school program on its journey from a 'continual professional learning into classroom learning' perspective.

So, the catalyst is there, teacher enthusiasm rises and programs of Professional Development begin to flourish — more and more teachers become knowledgeable and in turn more confident and dynamic in ICT-supported learning environments. Can this be achieved with limited commitment and by reliance on 1-2 teachers?

The answer would appear to be, from the Chancellor experience — no. The reach of professional development and involvement needs to be taking in more and more teachers as peer tutors in a true sense of collegiality in accordance with a school culture to support the longevity and sustainability of the program.

- Factor 3 — willingness, commitment of teachers to be continually involved in professional development independently and with peers as both a learner and mentor.

Now, all things considered, the necessary conditions may be there for each school to realise success. Yet, we may or may not realise success in all



schools — there may be other factors involved?

In Chancellor's case the school leadership can be accredited with much of the success. The school leadership team have been whole-heartedly and enthusiastically behind the Computers for Teachers trial being a success. The critical sense of mission and ICT Leadership needs to be a large part — a sense of purpose which has proved to be highly important and may even be argued to be the second most important factor in importance here. This would appear to correlate with the research from around the world that the level of success that a school realises with ICT is in direct correlation with the level of ICT Leadership — 'technology-savvy school leaders' if we want coin a phrase.

Aside from that, there is perhaps as mentioned previously, the pressure to have results for staff and students — with all the other conditions being favourable and now a tool in the hands of teachers, what will that mean for the operation of the school in the day to day process around administration and learning, to really capture teachers in the role of a 21st Century educator? There would be no excuses left!

- Factor 4 — high level of ICT Operational and Pedagogical leadership and the effective management of ICT resources.

ICT Leaders

DETA currently has a Guiding Coalition of ICT Leaders initiative and is aligning itself to be more supportive of school leaders in the future through Smart Classrooms projects. There are 150 ICT Leaders across the state — the Principals chosen to steer the leading edge of school and organisational culture change.

The Principal of Chancellor College, John Lockhart, is one of the 15 Leaders in the Sunshine Coast Region and committed to effective leadership and change management.

One of the charters for the Guiding Coalition is to pilot many of the change processes in school operations, such as the Managed Operating Environment

and One School. The One School package will underpin school practice and provide alignment in new local management and systemic organisational processes, streamlined access to information and the notion of a single point of truth among other aims, so movement of teachers and students between schools is well catered for into the future.

Chancellor College is now one of a small number of pilot schools for the One School package. Interesting to study here, the dependency model: the laptops and the 24/7 availability of One School from anywhere, for teachers to be able to keep student and learning management records up to date and accurate. Yet another catalyst for change; the dynamic of teachers becoming empowered to be professionally aligned with practice in the digital age.

Discussion Point # 4

Assuming all above — we have endeavoured at the school level to do really well with a program with great success so it follows that we believe:

- teachers have developed greater skill and knowledge levels
 - there has been a follow-on effect in classroom pedagogy
 - the participating school's culture will be significantly changed
- What other factors may help?

Connectivity and Online Tools / Resources — more Desirable Factors?

- Wireless connectivity across the college has proved invaluable at Chancellor. Teachers may often be seen carrying a laptop around, 'active' between wireless access points in their daily duties. DETA has provided wireless networking facilities in its trial schools.
- The Chancellor Blog and access to the exemplary online tools and resources of The Learning Place were invaluable to the whole experience and the notion of self-help, sharing and peer support — not just within the school, but with the wider organisation and the approximately 1500 teachers involved in the trial.

Conclusion

Much can be learned from the day to day experiences on the ground at schools by observation, analysis and reflection. Surveys may be useful to guide progress in a whole school professional development program and determine some of the more 'measurable' outcomes at certain points. However, the real value is in seeing the change in the school itself as part of a team of educators, progressive and enthusiastic for their future — to see the growth in individual teachers and the change in school culture. This can't be measured but experienced and 'felt'. It is this that should ideally help determine any go ahead or not by state education systems to embark on a computers for teachers trial — and the support of the key elements and desirable factors, before and during the entire process which would ultimately determine the consistency of success across the state. What an investment in the workforce of tomorrow!

Further References / Links

Smart Classrooms

<http://education.qld.gov.au/smartclassrooms/>

Computers for Teachers Community

<http://www.learningplace.com.au/ea/c4t>

Switched on Teachers

<http://www.learningplace.com.au/ea/sot>





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