teacher professional learning: planning for change
strategic ICT advisory service
Acknowledgements

The development of this report has been a collaborative exercise. The main authors are Helen Galatis, and Andrew Williams. Greg Black and Garry Putland also contributed.

This report is part of the Strategic ICT Advisory Service, funded by the Australian Government’s Department of Education, Employment and Workplace Relations.

The views expressed in this report are those of the authors and do not necessarily reflect the views of the Australian Government.

Publishing details

© 2009 Education.au Limited

978-0-9758070-5-7 (electronic copy)

This work is published under the terms of the Creative Commons Attribution-Noncommercial 2.5 Australia Licence.

To view a copy of the licence visit: http://creativecommons.org/licenses/by-nc/2.5/au/

Education.au limited
182 Fullarton Road
Dulwich SA 5065
Australia
p: +61 8 8334 3210
f: +61 8 8334 3211
e: inform@educationau.edu.au
w: www.educationau.edu.au
Foreword

This paper is one of a series of investigative reports commissioned by the Australian Government’s Department of Education, Employment and Workplace Relations (DEEWR) as part of the Strategic Information and Communications Technology Advisory Service (SICTAS).

It focuses on the development of Australia’s school teachers to enable them to make best use of the infrastructure currently being rolled out in the Digital Education Revolution (DER). The capacity of Australia’s teachers to engage in the DER is critical to its success in bringing 21st century learning to Australia’s classrooms.

This report assembles and analyses information from relevant international and Australian sources, and from education administrators and educators at the chalkface regarding the way forward for ICT-related professional learning. On the basis of that analysis it makes three key recommendations for possible further examination and implementation by DEEWR. The recommendations are around the critical importance of student outcomes as the key to ICT-related professional learning, the role of the Australian Government in providing a national framework to guide state and territory education jurisdictions in managing professional learning, and the role of the Australian Government in providing access to resources to support it.

I am pleased to forward this report and look forward to presenting further work of the SICTAS project. I commend this report and its findings to the reader.

Greg Black
CEO Education.au
# Glossary

<table>
<thead>
<tr>
<th>Acronym</th>
<th>Full Form</th>
</tr>
</thead>
<tbody>
<tr>
<td>ACARA</td>
<td>Australian Curriculum, Assessment and Reporting Authority</td>
</tr>
<tr>
<td>AESOC</td>
<td>Australian Education Systems Officials Committee</td>
</tr>
<tr>
<td>AICTEC</td>
<td>Australian Information and Communications Technologies in Education Committee</td>
</tr>
<tr>
<td>ANTA</td>
<td>Australian National Training Authority</td>
</tr>
<tr>
<td>AVCC</td>
<td>Australian Vice-Chancellors’ Committee</td>
</tr>
<tr>
<td>COAG</td>
<td>The Council of Australian Governments</td>
</tr>
<tr>
<td>DEEWR</td>
<td>Department of Education, Employment and Workplace Relations</td>
</tr>
<tr>
<td>DER</td>
<td>Digital Education Revolution</td>
</tr>
<tr>
<td>FTTTP</td>
<td>fibre to the premises</td>
</tr>
<tr>
<td>Framework</td>
<td>Australian Flexible Learning Framework</td>
</tr>
<tr>
<td>ICT</td>
<td>Information and Communications Technology</td>
</tr>
<tr>
<td>ISTE</td>
<td>International Society for Technology in Education</td>
</tr>
<tr>
<td>KLA</td>
<td>Key learning area</td>
</tr>
<tr>
<td>MCEETYA</td>
<td>Ministerial Council on Education, Employment, Training and Youth Affairs</td>
</tr>
<tr>
<td>NETS</td>
<td>National Educational Technology Standards</td>
</tr>
<tr>
<td>NSW</td>
<td>New South Wales</td>
</tr>
<tr>
<td>OECD</td>
<td>Organisation for Economic Co-operation and Development</td>
</tr>
<tr>
<td>PISA</td>
<td>Programme for International Student Assessment</td>
</tr>
<tr>
<td>SICTAS</td>
<td>Strategic Information and Communications Technology Advisory Service</td>
</tr>
<tr>
<td>TIMSS</td>
<td>Trends in International Mathematics and Science Study</td>
</tr>
<tr>
<td>TLF</td>
<td>The Le@rning Federation</td>
</tr>
<tr>
<td>VET</td>
<td>Vocational Education and Training</td>
</tr>
</tbody>
</table>
2 Terminology

ICT
For the purposes of this report, ‘ICT’ is used to describe a range of technologies for gathering, storing, retrieving, processing, analysing and transmitting information. For example, software such as spreadsheets can perform mathematical calculations; a digital camera can capture images.

ICT standards
In this report ‘ICT standards’ refers to the documents that are often called curriculum statements or curriculum standards for specific subjects. The term ‘ICT continuum’ has also been used in other sources.

Professional learning
For the purposes of this report, the term ‘professional learning’ refers to the development both of teachers' personal ICT skills and their skills in integrating ICT into the curriculum. In this report the term ‘ICT integration’ refers to all of the following aspects of the integration of ICT into teaching and learning:
- curriculum frameworks
- pedagogy
- assessment
- learning resources
- reliable connectivity, hardware, and software.

Tankette
The word 'Tankette' has been used throughout the SICTAS project to describe a mini think tank. For this investigation the Tankette comprised a combination of synchronous and asynchronous online conversations involving experts in the fields investigated.
3 Executive summary

This investigation examines professional learning to enhance in-service teachers’ capability to integrate information and communication technologies (ICT) into teaching and learning. 21st century learning is characterised by the use of ICT which facilitates learning anywhere at any time, empowers the learner, and provides stimulating and engaging learning environments. ICT is enabling the transformation of education through the use of learner-centred pedagogies and therefore changing the role of the teachers and the teaching skills they require.

This report’s primary target audience is senior Department of Education, Employment and Workplace Relations (DEEWR) policy advisors. Its purpose is to provide them with recommendations for action based on an investigation into factors related to the capacity of Australia’s school teachers to fill their role in the Digital Education Revolution (DER) and integrate ICT into teaching and learning.

This investigation’s recommendations are based on:

- an examination of professional learning practices and programs
- a review of factors influencing teachers’ capability to apply ICT
- an analysis of barriers and challenges to teachers’ successful implementation of ICT in their teaching.

3.1 Professional learning practices

It is widely accepted that ICT will transform learning; however, the integration of ICT into the curriculum is proving to be challenging for education leaders and schools. An examination of professional learning practices in Australia reveals that significant progress has been achieved in the Vocational Education and Training (VET) sector through the Australian Flexible Learning Framework’s LearnScope1 program. This multi-faceted approached to professional learning, with a strong focus on the development of supportive online communities, has been successful in training teachers, trainers, middle managers and support staff to develop skills to apply technology in learning.

A wide range of programs is available to empower school teachers with the right skills for the 21st century, conducted by private providers, professional associations and state education jurisdictions. Nevertheless, research indicates that only 27% of teachers use ICT effectively in the classroom. Current challenges and barriers to professional learning include the frequency with which new technologies emerge, lack of time for professional learning, and negative teacher attitudes. These views are reinforced by the case studies undertaken for this investigation. Some teachers are still reluctant to use ICT in their teaching and need to be convinced of its benefits. Whether it’s fear of the unknown or lack of knowledge, supportive environments such as online communities where ideas are exchanged, information is shared and teachers can learn from each other can go some way towards alleviating negative attitudes towards the application ICT.

Research and cases studies undertaken for this investigation indicate that effective professional learning programs need to address both the development of appropriate pedagogies and skills in using ICT tools. Consideration needs to be given to the provision of ongoing, ‘just-in time’ support from trained ICT mentors who are available as required; accompanied by professional development time away from the classroom.
The investigation’s case studies reveal that professional learning teams provide the most effective method for professional learning; most effective learning takes place when learning is contextualised to local and classroom situations. While this investigation places heavy focus on the use of professional learning teams in achieving professional learning, this is not the only form of developmental activity that is needed. The effectiveness of these teams is enhanced by exposure to and interaction with other educators and experts as well as skills based workshops outside the school environment.

The case studies reveal the following about successful ICT-related professional development in schools:

- collaborative teams are based around key learning areas (KLAs)
- the focus is on pedagogies and ICT is viewed as the enabler
- design of new learning spaces fosters the use of new pedagogies
- a project based approach to learning is adopted
- mechanisms are in place to measure skill levels and continual improvements
- school strategic plans have a strong focus on ICT
- professional learning is ongoing and collaborative methods are used to solve problems
- individuals and teams evaluate their learning.

In addition, it was commonly observed in the case studies that more time and more funds are needed for professional learning.

A key finding of the report is that professional learning is an integral part of change management, not only for the systems but also for individual schools. A number of key elements are required for professional learning to be effective within schools. The following have been identified as essential:

- strong leadership to lead change and deliver innovative learning
- strategic plan and vision which is understood by the school community
- engagement of the school community and acceptance of its ICT direction
- pedagogy that is broadly understood
- established infrastructure and IT support
- multi-faceted professional learning approaches.

AICTEC’s *Teaching for the Digital Age Work Plan 2009-2012* is a substantial document outlining a comprehensive program with responsibilities and timelines. However, what is not evident is the time required away from teaching to engage in effective learning. School leadership teams must find more time to allocate to professional learning in order to achieve a critical mass in the use of ICT in education.

Additionally, a national repository of exemplars and planning guides, supported by an online community fostering discussion and trailing of new tools is essential to support teachers.

### 3.2 ICT standards for students

The incorporation of ICT into the curriculum has been accompanied by the development of ICT standards by a number of jurisdictions. There are a number of issues associated with the development of ICT standards, including the integration or separation from subject areas, the requirement for ongoing revision, distribution, and consistency in scope and language.
The Australian Government through the Australian Curriculum, Assessment and Reporting Authority (ACARA) must establish mechanisms for the development and maintenance of ICT standards. The standards should build on existing international, state and territory work to provide a common language and direction for the integration of ICT in education. There is a strong argument for the development of national ICT standards which take international descriptors into account. Justification for this approach includes:

- simplification – to foster national discussion using common language
- coverage – providing support to small systems and independent schools
- resource development – encouraging a national market for resources
- cost and currency – encouraging regular updating of guidance.

It is also important that assessment is aligned with the new national curriculum standards. New learning including high-level skills, knowledge and attitudes are required for students to realise many of the potential benefits of ICT, yet many of these are not adequately addressed in current assessment regimes. As Ruth Reynard points out, there needs to be a shift in the focus from content to process. We need to ask ‘how’ things can be done and ‘why’ they are done.

### 3.3 ICT standards for teachers

The Australian Government has given a strong indication that 21st century education will be standards driven. The establishment of ACARA, tasked to develop national curriculum, and Australia’s participation in the Assessment and Teaching of 21st Century Skills project need to be complemented with teacher ICT professional standards to ensure there is a national capacity to deliver curriculum designed for 21st century education.

Fragmentation exists in the methods and standards used to measure teachers’ ICT competencies. Surveys have been undertaken by states and systems which have attempted to gauge the level and competencies of Australia’s school teachers, while others use international standards such as International Society for Technology in Education (ISTE). A characteristic of these standards is the inclusion of levels of competencies which provide incentives for continual improvement. There are many issues and challenges around the development of teacher standards including responsibility, accreditation, registration, and accountability; these are well articulated in the Raising the Standards report.

The ultimate measure of quality teaching is student outcomes; however, what is advocated here is ICT competencies that are required to deliver the Digital Education Revolution. The slow progress in the uptake of ICT in education requires additional strategies and more accountability. National teacher standards are needed to match the new national curriculum and ensure that we achieve a critical mass in the incorporation of ICT in education in order to develop students well prepared to participate fully in the modern world of work.

### 3.4 Recommendations

The recommendations for this investigation are framed around the requirements of 21st century education by considering the impacts of the proposed national curriculum, assessment review and alignment and the implementation of the Digital Education Revolution.
4 Summary of recommendations

The recommendations of this investigation are based on research and case studies undertaken to inform of the most effective practices in professional learning. The recommendations align well with the Government’s initiatives and policies in implementing the Digital Education Revolution, the Melbourne Declaration on Educational Goals for Young Australians, the Ministerial Council on Education, Employment, Training and Youth Affairs (MCEETYA) Joint Ministerial Statement on Information and Communication Technologies in Australian Education and Training: 2008-2011, AICTEC’s Digital Education Revolution: Teaching for the Digital Age Work Plan 2009-2012, and with the National Curriculum.

4.1 Recommendation 1

That the Australian Government take a leadership role in collaboration with the jurisdictions to develop a national professional learning strategy for schools, based on sound research into good practice school improvement. That this strategy frames the Australian Government’s support for ICT-related professional learning.

Strategy: Establish mechanisms to ensure that professional learning is integral to overall school improvements and readiness for 21st century education.

Strategy: Establish mechanisms to encourage and foster the development of teacher learning teams where classroom practices are shared and professional learning takes place.

Strategy: Establish mechanisms to ensure that strong system and school level leadership is present to facilitate effective change management and ensure that the professional learning is integral to strategies in transforming education into the 21st century.

Strategy: Establish a process for the creation and aggregation of professional learning resources and exemplars of work in a national repository supported by social networking services to enable sharing and knowledge exchange.

Strategy: Encourage schools to develop strategic plans that make ICT central to professional learning and embedding in the curriculum, through the provision of additional funding which enables schools to increase the amount of time allocated to school-based professional learning.

Strategy: Provide professional learning which focuses on assessment of new skills acquired through the embedding of ICT in the curriculum; that is, assessment that focuses on the how and why.

A survey of professional learning programs indicate that there are many options available for teachers to acquire skills and knowledge to enable them to incorporate ICT in their classrooms, yet we find that 27% of teachers use ICT effectively in their classroom. This investigation concludes that a multi-faceted approach to professional learning is required where external and internal (school based) programs are available to teachers. It acknowledges that school based collaborative teacher teams are most effective in meeting teacher needs and providing just in time skills and knowledge that is contextualised to local environments.

The investigation also discovered that professional learning is an integral part of transforming schools to the digital age. The other key elements include strong leadership, strategic planning, infrastructure,
and a supporting community. The strategies identified above address professional learning in a holistic way by considering all aspects that impact on professional learning and the incorporation of ICT in learning.

4.2 Recommendation 2

That the Australian Government takes a leadership role, through the Australian Curriculum, Assessment and Reporting Authority (ACARA) and in collaboration with the states and territories, to develop and maintain ICT standards in schools. The standards should build on existing state, territory and other jurisdiction plans and provide a common language and direction for the integration of ICT in the school curriculum.

**Strategy:** Establish a national committee of experts with representation from all systems to develop national ICT statements and scope and sequence documents for all year levels.

**Strategy:** Provide access to the documents and supporting resources through a central point.

Across Australia the sizes of school education jurisdictions range from some of the world's largest school systems to individual independent schools. Larger jurisdictions have developed ICT standards. These standards exhibit diversity in style and approach, complicating nation-wide resource and support initiatives. There are a number of issues that need to be covered in regards to ICT standards for students; for example, some states have undertaken to develop separate, stand alone standards, and also integrate the ICT component in each subject area while other jurisdictions have opted only for the integrated approach.

To avoid duplication of effort and provide consistency across all states it makes sense to develop a national ICT standard that applies across all jurisdictions and systems. ACARA, in its recent paper, *The Shape of the Australian Curriculum,* in identifying the educational goals for young Australians, indicates that learners will be creative and productive ‘users of technology, especially ICT, as a foundation for success in all learning areas’17. As yet, it is not clear whether the Board will advocate the integration of ICT in each subject area or recommend the development of ICT standards. Some states have already developed ICT statements while others have simply incorporate ICT into subject areas. The strategies accompanying this recommendation facilitate the development of national ICT standards in a collaborative manner that supports the national curriculum.

4.3 Recommendation 3

That the Australian Government take a leadership role, in partnership with other education authorities and entities, in implementing and maintaining the ICT competency framework for teachers as described in the *Raising the Standards* report. A key component of the described framework is teacher standards. The Government should task AICTEC, through its advisory bodies, to develop teacher ICT standards for:

- pre-service teachers
- practicing teachers
- school leaders
- teacher educators.

**Strategy:** Establish a mechanism for the development of national ICT standards for teachers that are build on common language and ‘talk to the teacher.’
**Strategy:** Establish processes to ensure that there is consistency and appropriate coverage between the standards specified for the different groups of users.

**Strategy:** Establish a mechanism for future development and maintenance of the framework.

**Strategy:** Establish a strategy to promote the framework and appropriately fund professional learning to foster and increase the level of professional learning.

**Strategy:** Establish a mechanism for the development and use of e-portfolios for the collection and management of teacher artefacts that provide evidence of knowledge, competencies and professional learning courses undertaken and assessments completed.

To be effective in integrating ICT into the curriculum, Australia’s teachers need to have the skills required for 21st century education. A range of standards are currently being used by individual schools to gauge teacher skills and knowledge and plan professional learning accordingly. Teacher standards are needed across the sector to ensure that teachers have the skills to implement the national curriculum. The proposed framework, which entails the development of standards for the various groups of teachers, ensures there is consistency and appropriate coverage between the standards specified for the different groups of users.

The benefits of a national framework include agreed language, utilising commonly understood terms, and facilitation of effective information sharing about professional practices across jurisdictions. This provides the basis for national recognition of teaching quality and a basis for ongoing commitment by all governments to support teachers’ professional learning.
21st century learning is characterised by the use of ICT to empower the learner and provide engaging and stimulating environments. The Government’s strategies, policies and programs, in preparing the school sector for the 21st century, are articulated in the Digital Education Revolution (DER).

The ICT capabilities of Australia’s school teachers, a key component of the DER, are crucial to the successful integration of ICT into the education of Australia’s school students. This paper contributes to thinking around the implementation of the DER as it relates to the capacities of in-service teachers to integrate ICT into teaching and learning.

This investigation surveys professional learning for in-service teachers in both primary and secondary education to determine the effectiveness of existing professional learning activities and propose new, effective models. Based on previous Strategic ICT Advisory Service (SICTAS) investigations, this investigation also examines how current national and jurisdictional policies support skills development for in-service teachers in the use of ICT for teaching and learning. Discussion is focussed around teacher capabilities in using and applying ICT in learning as well as an analysis of the main barriers to the provision of effective professional learning in the use of ICT.

This paper’s primary target audience is senior DEEWR policy advisors, and its purpose is to provide them with recommendations for action based on an investigation into factors related to the capability of Australia’s in-service teachers to fulfil their role in the DER and integrate ICT to support teaching and learning.

5.1 Research questions

The following research questions are examined:

- What are the purposes of ICT-related professional learning for teachers?
- What are the major challenges and barriers to professional learning for ICT?
- What approaches and support for ICT professional learning, including collaborative methodologies, are proving most fruitful?

5.2 Links to other SICTAS reports

This report is linked to other reports from the SICTAS project. First, the earlier report on collaboration in teaching and learning20 highlighted the potential of some ICT to facilitate collaborative methods of teaching and learning with benefits for students and teachers. Teachers need skills in the use of these technologies and in integrating them into teaching and learning, and there is a clear need for professional learning in these areas.

Second, the situation analysis21 informs discussion of the jurisdictions’ stated purposes for the use of ICT in schools and the situation within jurisdictions regarding teacher ICT skills.

Third, a pending SICTAS report will investigate emerging technologies and their potential in teaching and learning. Effective professional learning is key to keeping pace with emerging technologies and to their successful integration into teaching and learning. Educators worldwide acknowledge the obvious; education has a fundamental role in preparing students to becoming productive social citizens in a fast changing technology driven world.
6 Methodology

This report’s finding are based on desktop research, case studies, a national symposium of education experts and practitioners, and Tankette online group conversations, undertaken with the aim of addressing the research questions outlined in the Introduction. The focus of the investigation is in-service teachers.

6.1 Desktop research

This consisted of a review of relevant literature. This component generated the majority of the information presented in this report.

6.2 Case studies

Four case studies, in a mixture of primary, secondary, government and private schools, were undertaken to inform the investigation of some current practices. Literature and research consulted for this investigation indicated that collaborative and team environments were effective methods for professional learning. The schools were selected subject to knowledge that team-based professional learning was conducted by these schools. Some may go as far as to say that these schools are regarded as leaders in their use of technology and establishment of programs that have embraced the use of ICT in the curriculum.

The set of questions for the case studies focused on three aspects:

- professional learning and programs
- relationship between professional learning and student outcomes
- success factors.

The interviews for the case studies were conducted by teleconference and face to face and involved individuals and groups of people from the schools. The participants interviewed were in leadership positions at their schools and included principals, IT directors and e-learning directors.

Case study questions are included in Appendix A. Case study results are included in Appendices B through E.

6.3 National symposium

Education.au hosted the National ICT in Learning Symposium: Planning for Change in Sydney on 1 May 2009. The aim of the symposium was to facilitate structured and open discussion around three key themes:

- learners and learning
- professional learning
- infrastructure policy and guidelines.

The outcomes of the professional learning sessions are used to support this investigation.
6.4 Tankette online group conversations

Edna Groups was used to document discussion amongst invited participants with experience and expertise at various levels of Australia’s education sector. The asynchronous conversation commenced on 29 September 2008 and continued until 8 November, covering a range of topics from take up of ICT in schools, to professional learning, assessment and student outcomes. Participants were provided with pre-reading material prior to the discussion and requested to:

- discuss it, modify it and add to it as they thought appropriate
- explore the nature of teaching with technology in the medium term (next five years) and long term (beyond five years)
- explore the needs of professional learning
- make recommendations and suggest areas for further investigation.

Wimba Live Classroom online conferencing software was used to support two synchronous online conversations. Participants for the tankette were the same group as were involved in the asynchronous conversation.

Fragments of the online conversation are cited where relevant in this report’s chapters. The pre-reading material, participant information, and a complete transcription are included in the Appendices.
7 Drivers for ICT professional learning

This chapter examines the main drivers for ICT professional learning which include national collaboration, government policies and programs around education for the 21st century, curriculum content and standards, assessment, and skilling students for the 21st century.

7.1 National collaboration

An impetus for professional learning was the work undertaken by the Australian Education Systems Officials Committee (AESOC) as early as 1999 with the development of *Learning in an Online World: School Education Action Plan for the Information Economy*. The report outlines a number of strategies to achieve the described objectives in embedding ICT in teaching and learning and one of those strategies is in the area of people: ‘improved learning outcomes for students, supported by educational leaders, teachers and administrative staff with the skills and commitment to use learning technologies effectively.’

Another key government driver to build teacher ICT capabilities is the *Melbourne Declaration on Educational Goals for Young Australians*. The *Melbourne Declaration*, made in 2008, is signed by all Australian Education Ministers. In relation to preparing students for the 21st century the Melbourne Declaration makes the following statements:

- Rapid and continuing advances in information and communication technologies (ICT) are changing the ways people share, use, develop and process information and technology. In this digital age, young people need to be highly skilled in the use of ICT. While schools already employ these technologies in learning, there is a need to increase their effectiveness significantly over the next decade.
- Excellent teachers have the capacity to transform the lives of students and to inspire and nurture their development as learners, individuals and citizens.
- School principals and other school leaders play a critical role in supporting and fostering quality teaching through coaching and mentoring teachers to find the best ways to facilitate learning, and by promoting a culture of high expectations in schools.

The focus of the *Melbourne Declaration* is on acknowledging that technological changes are placing new demands on Australia’s education systems.

7.2 21st century learning

The Digital Education Revolution, DEEWR’s strategic initiative for transforming education in the, is dependent on teacher ICT capabilities to take advantage of the equipment and the infrastructure being rolled out. The key elements of this program include:

- provision of computers for every upper secondary student
- fibre to the premises (FTTP) broadband connections
- ICT skills training for graduate teachers
- development of online curriculum resources
- conferencing facilities for those studying specialist subjects such as languages
- development of web portals to enable parents to participate in their child’s education.

ICT is seen to play several roles across school education, including:
• providing ‘closer links between schools, teachers, students and parents’
• helping to realise the ‘true potential of e-education’
• enabling learning across all subjects’
• being a driver of productivity and growth across all sectors of the economy'
• preparing students for ‘the jobs of tomorrow.’

Furthermore, the DER specifically mentions the need for ‘best trained teachers to integrate new technology into classroom lessons’ and specifies cooperation with the states and territories to ensure new teachers have the necessary ICT skills.

The SICTAS Situation Analysis report asserts that the DER provides a strong statement of the following:

• recognition of the imperative for student ICT training in response to the ubiquity of computer use in study, the workforce, society and the economy
• the shift of student ICT skill outcomes from being a component of broader school education outcomes to the centre of school education
• recognition of the need for teachers to have ICT skills.

7.3 Development of curriculum content

A collaborative initiative by the Australian and New Zealand governments, The Le@rning Federation (TLF), developed digital curriculum content for all Australian and New Zealand schools. Since 2001 high-quality, innovative content has seeded and supported schools’ move into 21st century education and has begun the digital education revolution. Alongside the development of resources, TLF’s collaborative networks provide advice and feedback on curriculum, pedagogy, learning technologies, distance education, technical standards, systems, and intellectual property.

Ongoing evaluation of the implementation of TLF’s online curriculum content initiative is undertaken to gauge the usefulness of the learning objects in supporting teaching and learning in specific curriculum domains, and about the effect of learning objects on students’ motivation, depth of learning, acquisition of higher-order concepts, collaboration with peers, thinking about new ideas and independence in learning.

7.4 National Curriculum

The recently established Australian Curriculum, Assessment and Reporting Authority (ACARA: previously known as the National Curriculum Board) is charged with the responsible of developing a single, world-class Australian curriculum for all students from Kindergarten to Year 12, starting with the learning areas of English, mathematics, the sciences and history. ACARA has published an overarching statement: The Shape of the Australian Curriculum. Key in the document is the recognition of what are termed ‘general capabilities’ that underpin flexible and analytical thinking, a capacity to work with others and an ability to move across subject disciplines to develop new expertise.’ The document further states that the curriculum will support students to develop employability skills that have application to the world of work such as planning and organising, the ability to think flexibly, to communicate well and to work in teams, as well as the capacity to think creatively, innovate, solve problems and engage with new disciplines. The top identified general capabilities are literacy, numeracy and information and communication technology. It is noteworthy that ACARA recognises the position of ICT within curriculum and the role it has to play in preparing students with social and employability skills. Aspects of ICT capabilities include information
management, use of technology, ability to evaluate the source, reliability, accuracy and validity of information that abounds in cyberspace.

New digital technologies are used in creative and artistic pursuits, and in civic and political activities. These opportunities for private and public expression, unimagined half a generation ago, will make up important elements of the national curriculum.\textsuperscript{37}

In reference to pedagogy, ACARA indicates that the classroom teachers are the people who will decide how best to organise learning for students.\textsuperscript{38} They will make decisions about the pedagogical approach that will give the best learning outcomes. Additionally, ACARA notes that successful learners will be productive users of technology; they will have the skills required for 21\textsuperscript{st} century jobs.\textsuperscript{39}
Australia will have technology enriched learning environments that enable students to achieve high quality learning outcomes and productively contribute to our society and economy. Educators will enhance 21st century student learning by effectively and ethically incorporating ICT into their teaching and learning programmes and methods and collaborating in the creation of flexible learning environments.

The Australian ICT in Education Committee (AICTEC) made the statements above in 2008, endorsed by MCEETYA, as part of the Joint Ministerial Statement on Information and Communications Technologies in Australian Education and Training: 2008-2011. The Statement articulates Australia’s intention in the use of ICT in teaching and learning to equip society for the 21st century. Although the focus of the Statement is on the establishment of a technical infrastructure, there is an implication that professional development and skilling of educators in the use of ICT is paramount. Support for profession learning has been well embedded in government policy.

In 2000, the Australian Government published its blueprint, Learning in a Knowledge Society: an Education and Training Action Plan for the Information Economy and associated action plans were developed by the schools, vocational education and training, and higher education sectors. These action plans were developed collaboratively by all Australian governments and the then leading agencies, the Australian National Training Authority (ANTA) and the Australian Vice-Chancellors’ Committee (AVCC). The Action Plan outlined five key areas:

- people
- infrastructure
- online content, applications and services
- policy and organisational framework
- regulatory framework.

The action statement for people focused on the provision of skills to drive the information economy (including professional learning for teachers, trainers, content developers, researchers and all workers in education and training).

Professional learning has been taking place around Australia through formal and informal activities. In some cases it has accompanied funding committed to the development of online content and this is particularly the case in The Le@rning Federation initiative and the Australian Flexible Learning Framework (Framework) initiative.

Since 2000 the Australian, state and territory governments have committed over $80 million to the Framework, with 41% of the funds going to the professional learning of teachers and trainers in the VET sector. For the VET sector, LearnScope has been a significant contributor to professional learning and introduction of ICT to VET practitioners. For eight years the LearnScope program assisted teachers, trainers, middle managers, student support staff, staff who support teachers and trainers working in public, private, enterprise and community sectors, to develop skills to apply technology in learning.

LearnScope’s multi-faceted approach to professional learning included seminars, workshops, mentoring at local level and supportive online communities and has been very successful in embedding ICT in learning and training in the VET sector.
Supported by The Australian Flexible Learning Community and facilitated by edna Groups, LearnScope’s virtual environment enabled discussion and information sharing among VET professionals. The initiative provided managers and practitioners with development funding to expand their skills and knowledge of flexible learning pedagogies, learning technologies and leadership capabilities needed to support organisations to implement collaborative learning methodologies.

In addition to that discussed above, private providers, professional association and state education departments conduct a range of professional learning activities and programs which include conference, seminars, workshops and webinars are conducted by. See Appendix F for a snapshot of such activities.

8.1 Barriers to professional learning

Most curriculum guides emphasise the centrality of pedagogical issues to effective use of ICT; however, over the last two decades it is probable that most of teacher time assigned to learning about ICT has been absorbed in learning to use the technology rather than how to apply it in the curriculum. This feature of ICT professional learning is exacerbated by the constant need to upgrade skills as new applications appear. As Mark Pesce indicates, new tools are introduced at rapid rates and are as quickly adopted by students. Educators are constantly ‘catching up’ when it comes to the usage of new technologies.

Such is the situation with emerging technologies that it is extremely difficult to keep abreast of the latest tools and their integration into educational practices. New and emerging technologies will find their place in education but educators must first master the application skills before applying the technology to teaching and learning. However, it should be acknowledged that educators do not need skills and knowledge of a wide range of technologies in order to effectively apply ICT to teaching and learning.

The separation of how to use the technology in education from why it should be used is a major issue. This assertion is supported by comments from conversation among the tankette group:

There is a clear sense that while there has been a great deal of effort to integrate ICT into the school curriculum, only a minority of teachers are currently using ICT to a significant degree in their teaching. Continuing the current path of professional learning is not sufficient if ICT is to be widely used to support a more relevant and appropriate curriculum.

Toni Downes et al report that the main barriers that prevent school leaders from effectively integrating ICT into their schools are the lack of perceived time for professional learning and the negative attitudes towards technology and change. This view was reinforced in the case studies, where it was reported some teachers needed to be convinced of the benefit of ICT in teaching and learning. Whether the issue is fear of the unknown or lack of knowledge, supportive environments such as online communities where ideas are exchanged, information is shared and educators can learn from each other can go some way in alleviating the negative attitudes towards the application of technologies. The reality is that teachers are forming such networks and online communities as evidenced by the edna Groups and online discussion lists such as oz-Teachernet.

Related to this is the issue of limited access most teachers have to ICT for their own learning and student learning. Teachers can find themselves tantalised by the potential of new technology but unable to bring this potential to fruition due to lack of access to the technology for themselves and their students. To address this issue and provide an overview of the range of teacher skills and understandings that are needed, a number of systems have developmental surveys for teachers. Examples of these are EdCap in South Australia and e-Potential in Victoria, which identify the learning that is appropriate for individual teachers.
Professional learning restricted to a few days a year does not offer adequate opportunities to master new tools for teaching and learning. Workshops, often external to the school because of the need to access reliable and appropriate equipment, are frequently delivered by IT experts who have a good understanding of how to use the software and/or hardware in question, but who may have less knowledge of the curriculum application of these tools. Despite their frequent use, there is widespread recognition that one-off workshops and similar activities have limited impact. An extensive study of literature conducted for the New Zealand Department of Education found that ‘... it is generally accepted that listening to inspiring speakers or attending one-off workshops rarely changes teacher practice sufficiently to impact on student outcomes.’\(^55\) One approach to address this is to implement mechanisms at the school level to reinforce learning that takes place at one-off-workshops. This is particularly exemplified by the case studies, where school based teams along with IT support are in place to reinforce the external learning.

It seems logical that teachers and leaders are first introduced to new technologies and subsequently integrate the technologies into their teaching. This sequence enables educators to understand the technologies’ capabilities prior to integration. This approach to professional learning for ICT has been widely used for several decades, both in large scale system wide digital literacy projects and in numerous school based staff development workshops and conferences. This approach, however, means that teachers learn about the technical aspects of an ICT solution separately from seeing the need in their teaching. Some teachers readily make the leap from discovery of an ICT capability to being able to integrate it in the classroom. Many others do not, as evidenced by the relatively slow integration of ICT into curriculum.\(^56\)

An alternative approach is for teachers to focus on curriculum outcomes and to learn about ICT applications that have the potential to directly support them. Relatively strong integration of ICT into some secondary subjects illustrates this point. In many senior secondary education, art, music and design classes, ICT is well integrated into programs. In each of these subjects, applications have been integrated as basic productivity tools that provide powerful enrichment to learning. Teachers are able to see how these tools contributed to student productivity and were motivated to undertake complex learning in order to gain the benefits in their teaching.

On a more modest scale the ubiquitous word processor has been mastered to at least some degree by nearly all teachers because of its obvious direct benefits to students’ writing as well as for teachers’ personal learning. Most of the learning about using word processing in teaching has been informal and is most effective when it is just-in-time learning. This might occur when, for example, a teacher discussing the need for students to review and revise their writing is shown by a colleague how to use the track-changes function in Microsoft Word. The teacher has a long standing interest in encouraging students to review and edit their work and to respond to feedback. The discovery of the track-change function is fortuitous for the teacher and likely to be enthusiastically embraced. Opposing this point of view are IT professionals who feel one has to receive proper training and acquire the proper skills in order to apply the tools correctly and have long skills.

8.2 Collaborative teacher learning teams

There are strong views held by educators that collaborative teacher teams provide the most effective method for professional learning. That is, most effective learning takes place when learning is contextualised to local and classroom situations. However, local teams need to be supported by exposure to other forms of professional learning such as online communities, workshops and experts through external seminars and conferences.

If teachers take control of their own learning agenda, a high degree of responsiveness to new developments in ICT is allowed. It means that teacher learning communities can rapidly experiment
with new ICT and quickly communicate their ideas to related teacher groups. In large systems this can result in a responsive approach to new opportunities. The system provides overall curriculum direction and guidance with teachers responding quickly in taking advantage of new developments.

The tankette group made the following statement which supports teacher learning teams as a sound paradigm for ICT-related professional learning:

Teacher learning teams are the most effective long term means of professional learning, but their success depends on an appropriate school culture that is supportive. Teacher learning teams require accountability.57

The case studies undertaken for this investigation reveal that, to be effective, professional learning needs to be multi-faceted. The common factor in the case studies was that these schools have adopted a model of professional learning that includes external and internal conferences/seminars as well as collaborative team learning supported by online services and communities of practice. It was also noted that learning at these schools was tied to learning outcomes. The primary purpose of professional learning was to improve learning, enhance and provide engaging environments for students. In addition professional learning was effective because it was embedded within a framework that included an explicit vision for the use of ICT in learning, strong leadership and mentoring processes, technical infrastructure to support learning with ICT and a community prepared to embrace change.

Systems also have a key role in providing resource support to learning teams. Systems must provide tools to facilitate the sharing of ideas, and infrastructure flexibility to enable schools to utilise new ICT tools. Government support, delivered through state and territory systems, is evident in AICTEC’s Teaching for the Digital Age Work Plan 2009-2012.58 The objectives and vision of the plan are discussed below.

8.3 Findings of case studies

The case studies undertaken for this investigation were conducted to gauge the practices and effectiveness of professional learning at local level. Common practices and processes were revealed across the schools involved in the case studies.

It emerged that a range of activities are available for professional learning, with the focus being on team learning and teaching. In particular, teachers at a Melbourne school, having participated in the Quality Schools program, have been skilled in the application of the new pedagogies that accompany the embedding of ICT into the curriculum. Having attained specialised skills, these teachers are then used as experts to provide mentoring and training sessions for the rest of the school’s teachers.

Learning teams are based on key learning areas (KLA) and work together to plan units of work and the application of the best pedagogies. Significantly, the focus of learning teams is on pedagogies that provide the most effective learning, and ICT is viewed as the enabler. In some schools new learning spaces, characterised by openness and flexibility in the arrangement of furniture, have enhanced learning by enabling teaching teams to work together and allowing teachers to observe teaching practices. This approach to teaching is to individualise learning, engage in deeper learning and empower the learner to take responsibility for their learning. In this situation the teacher is the facilitator in students’ learning and promoting the development of lifelong learners with a positive attitude to learning.

Time allocated to professional learning varied, from organised learning of few hours a week to once a week, complemented by informal learning sessions. Also of interest was the use of external experts to guide teachers in their understanding and application of new pedagogies.
The case studies also reveal the following:

- There is a general adoption of a project based approach to learning.
- Mechanisms are in place to measure skill levels and continual improvements in teachers.
- Schools have been involved in external research and pilot programs conducted by universities and technology companies.
- Strategic plans with a strong focus on ICT are in place.
- Decision making is based on evidence.
- Student and teacher feedback mechanisms are in place.
- Use of ICT in school is engaging for students and reflects what students are using outside the school.
- The focus is on student-centred learning.
- Professional learning is ongoing and collaborative methods are used to solve problems.
- New learning spaces are designed to foster the use of new pedagogies.
- There is shared ownership of professional learning and supportive learning communities.
- Learning is evaluated by the learners themselves and by learning teams.
- Motivation for improvement is student focused, to prepare students for the future and provide them with the skills for 21st century society.
- Leadership teams are developed.
- More time and more funding is needed for professional learning.

In sum, although there is still evidence of resistance to change and integration of ICT by some teachers, the described model of school-based professional learning has been effective in promoting and enabling the embedding of ICT in the curriculum and incorporating new pedagogies.

### 8.4 Important elements for successful professional learning and integration of ICT

Desktop research and case studies for this investigation illustrate the fact that numerous activities and options are available for teachers to build capabilities and effectively embed ICT in teaching and learning.

State and territory governments have provided rich technology programs for teachers to improve their skills and gain necessary knowledge to be able to transform current classroom practices to be effective and relevant in the 21st century. However, it is evident that professional learning is an integral part of change management not only for the systems but also for individual schools. The case studies undertaken for this investigation demonstrate that a number of key elements are required for professional learning to be effective within schools. The following have been identified as key:

- strong leadership
- strategic plan and vision which is understood by the school community
- engagement of the school community, primarily the teachers who need to be onboard and accept the ICT direction
- pedagogy is important and is understood
- infrastructure is in place and support is provided
- multi-faceted professional learning approaches that include external, internal workshops/conferences, online communities, school based teams.
This is further supported by AICTEC’s *Teaching for the Digital Age Work Plan 2009-2012* which states that 21st century schools require programs and educators capable of using 21st century resources and strategies for learning.59 The *Work Plan* states that there is a range of professional learning programs in place, offered by various organisations and jurisdictions; however, there is a need for more collaboration at the national level in sharing of programs as well as developing new programs. This work also emphasises that professional learning should be on changing how learning occurs, what is learned and how it is assessed.

AICTEC’s *Work Plan* outlines programs for leadership development, school planning and teacher capability (pre-service training and practising teacher professional learning). The following initiatives are outlines for practising teachers:

- access to online tutorials, including self help, facilitated and moderated is provided
- immersive, intensive, ongoing professional learning for teaching with ICT is accessible to teachers across Australia
- self evaluation tools are mapped against the national standards and are regularly used to identify professional learning priorities and review progress
- online professional networking sites are provided for teachers to connect with the collective professional experience, to collaboratively plan, share practice, strategies, resources and work samples and to reflect on practice
- support is provide to facilitate ICT peer coaching at a school level
- professional learning is provided to support the new national curriculum when it is implemented
- virtual environments to explore alternative approaches for professional learning are investigated and trialled
- agreed national standards are used for the incorporation of ICT in teaching and learning for practising teachers at critical stages.60

In short, this multi-faceted approach to professional learning provides the means for on-going support and mentoring. What is not evident is the time allocation away from actual teaching to engage in effective professional learning. Schools will need to accommodate for increased time allocated to professional learning in order to achieve a critical mass in the use of ICT in education.

### 8.5 Effective school leadership

A focus on professional learning and collaborative teacher teams does not diminish the importance of school leaders in supporting professional learning. In fact, it requires high levels of leadership skill in ensuring motivation, expectations and resources to support this learning as part of a teachers’ professional responsibility. A recent Organisation for Economic Co-operation and Development (OECD) report describes the wider responsibilities of school leaders to support the professional learning of their peers:

> [School leaders] must not only prepare all their students to participate successfully in the new global economy and society. They must take increasing responsibility for helping to develop other schools, their local communities and other public services. This means that school leaders must become system leaders.61

This report details a number of initiatives across OECD countries in which system leadership has been applied in a systematic manner and recommends that the Australian Government support the development of such a peer support system for school leaders. A system leadership program applies the same principles of learning that underlie teacher collaborative learning.
The National Partnership Agreement on Improving Teacher Quality\textsuperscript{62} includes clauses that focus on up-skilling principals and school leaders. The Agreement outputs include a framework to guide professional learning for principals, teachers and school leaders.

The AICTEC Teaching for the Digital Age Work Plan 2009-2012\textsuperscript{63} also acknowledges the important role school leadership teams and principals have in change management and transforming schools for the digital age. The Work Plan states that school principals and leadership teams need to be equipped with the skills to lead change and deliver innovative learning for students through planned processes; that is, the development of strategic plans for infrastructure, resource development and teacher capability.

In Leading a digital school,\textsuperscript{64} Mal Lee and Michael Gaffrey state that, along with quality teachers, principals able to lead are required to develop the digital schools. Lee and Gaffrey further state that:

\begin{quote}
...principles, as the key educational leaders in schools, need to not only understand the technology, but also take and maintain responsibility for that technology and its uses. …
Gone are the days when school principals could delegate major technology decisions to IT specialists. \textsuperscript{65}
\end{quote}

Lee and Gaffrey point out the importance of ongoing professional learning for principals and also other school leaders. They are responsible not only for teacher capability but also for system infrastructure, seamless connectivity, and strategic planning that reflect the vision of their school. They are the leaders in transforming paper-based schools into digital schools. The costs and consequences of poor decision making are too high for principles to be uninformed.

In summary, a number of initiatives have been identified and responsibilities with timelines assigned for the development and planning of frameworks for the incorporation of ICT. Jurisdictions have a key role in ensuring that strong school leadership is in placed and support is provided to facilitate the changes required to prepare schools for the digital age. Recently, the Australian Government\textsuperscript{66} committed $11.25 million, directed through state and territory governments, to professional development in information and communication technology. Additionally, the Government is providing funding of $10 million over three years to assist in developing support mechanisms at schools. It is assumed a great deal of this money will be directed to schools for leadership and teacher professional learning to undertake activities outlined in the AICTEC Work Plan.

\subsection*{8.6 Professional learning resources}

For effective professional learning, teachers need resources that support the embedding of ICT in the curriculum: exemplars, planning guides, curriculum guides, models and examples of student activities and products, assessment rubrics, and model teaching programs. Although such resources exist and are dispersed in various national and state based services, many are created and only available to individual schools. As our case studies indicated, teachers working in teams are planning and creating units of work which are for local use.

The growth of the internet has stimulated the concept of a society-wide learning-community where knowledge is readily built and distributed. These capabilities have been dramatically extended in the last decade by the growth of Web 2.0 and its community media. Sites such as Wikipedia and YouTube have had society-wide impact and are being utilised and emulated by many individuals and organisations to generate and share resources. There is now the capacity for systems, groups and individuals to cheaply generate and share multi-media resources.

These community media sites benefit from a large user base, user-generated content, user ratings and commentary, search capability that bypasses cataloguing, flexibility and responsiveness and...
multi-media capability. They suffer from a lack of traditional quality control and formal authority but this is the basis of their size, flexibility and responsiveness. There is potential to use a community media to provide a significant component of resources to support ICT professional learning.

The approach to professional learning outlined above has a strong focus on professional learning teams. These groups are essentially problem-based and require just-in-time resources. If, for example, a group of teachers is planning to enhance an English writing program by using online publishing, they will need access to examples, models and tuition in using blogs and wikis. Conventional web based resources can provide some of this support.

Although there are established services and repositories of educational and curriculum resources such as edna67 and The Learning Federation,68 the focus of those services is on the provision of resources and not the design or how those resources can be incorporated to teach a specific unit of work. A national repository of exemplars and planning guides, supported by an online community fostering discussion and trailering of new tools is essential in supporting professional learning.

8.7 Recommendation 1

That the Australian Government take a leadership role in collaboration with the jurisdictions to develop a national professional learning strategy for schools, based on sound research into good practice school improvement. That this strategy frames the Australian Government's support for ICT-related professional learning.

**Strategy:** Establish mechanisms to ensure that professional learning is integral to overall school improvements and readiness for 21st century education.

**Strategy:** Establish mechanisms to encourage and foster the development of teacher learning teams where classroom practices are shared and professional learning takes place.

**Strategy:** Establish mechanisms to ensure that strong system and school level leadership is present to facilitate effective change management and ensure that the professional learning is integral to strategies in transforming education into the 21st century.

**Strategy:** Establish a process for the creation and aggregation of professional learning resources and exemplars of work in a national repository supported by social networking services to enable sharing and knowledge exchange.

**Strategy:** Encourage schools to develop strategic plans that make ICT central to professional learning and embedding in the curriculum, through the provision of additional funding which enables schools to increase the amount of time allocated to school-based professional learning.

**Strategy:** Provide professional learning which focuses on assessment of new skills acquired through the embedding of ICT in the curriculum; that is, assessment that focuses on the how and why.
9 Improving schools and learning

School infrastructure, leadership, culture, strategic directions are all factors student outcomes. One view of professional learning is that it serves to improve schools and thus student performance. This chapter focuses discussion on the challenges in using ICT, the effectiveness of school based teacher collaborative teams, assessment and ICT standards.

9.1 Challenges in using ICT in schools

The tankette group made the following observation which points to the essential nature of the use of ICT in schools:

A learning program that does not incorporate technology is bad by definition because it does not provide students with the best opportunities to learn and does not prepare them for contemporary society.\(^69\)

The consistent messages from the resources examined and experts consulted in the course of this investigation is that ICT is a significant element of a major restructure of how society functions and the role of the education sector in this transition is vital. However, progress on ICT in education is proving to be slow.

The integration of ICT into the curriculum is one of the most challenging tasks facing schools. It raises the following questions regarding the purposes of schooling and the nature of the curriculum:

- What should be in the curriculum?
- What new teaching methodologies are required?
- What new approaches to assessment are needed?

These questions are complex and related to the following issues:

- The rate of change in ICT is very fast, and is led by a society and an economy that are applying new technology more quickly than the education sector.
- ICT integration is often seen as a separate development activity, not connected closely to general curriculum implementation.
- Some of the potentially most beneficial attributes of using ICT in learning are difficult to measure, particularly when using traditional methods of assessment.

Technical and infrastructure issues are also central to successful integration of ICT. These are addressed in detail in other SICTAS investigations, including the national software infrastructure,\(^70\) site blocking,\(^71\) and e-portfolio\(^72\) papers, and the paper on collaboration in teaching and learning.\(^73\)

Many countries have recognised the use of ICT in learning as a key national priority and applied large scale resources to the issue. However, there is widespread recognition that the new technologies have penetrated into overall curriculum delivery only to a limited degree. Alison Elliott\(^74\) quotes a 2004 study by Findlay and Fitzgerald\(^75\) that states:

Efforts to ‘integrate’ information and communication technologies with pedagogy have achieved not much more than technical-level effects that mostly leave traditional approaches to teaching and learning unchanged.

In 2008 the Centre for Educational Multimedia at Monash University reported similar findings.
After nearly five decades of computers in education there is still confusion about the use of technology in classrooms and widespread reluctance to move beyond tokenistic use. There is not a universal, shared vision regarding the use of technology in the classroom and teachers are confronted with many theories and instructional designs and bombarded with confusing, even romantic, views of what the technology is capable of delivering. It is not possible to definitively establish a direct link between learning with technology and improved outcomes.76

This point regarding evidence of benefit is important and made regularly by researchers. It is a source of frustration for system leaders seeking to justify expenditure in ICT. Since the application of ICT into a learning situation is one of many factors involved in successful outcomes, it is often impossible to specifically attribute improved learning to the use of ICT. If researchers using controlled studies have great difficulty in establishing a causal link between use of ICT and improved learning, then individual teachers will have even greater difficulty.

The transparent benefits of ICT use are to support each student in their learning process by providing support and collaborative learning environments and by engaging in such environment learners develop skills that are not measurable in today’s curriculum. Ruth Reynard77 provides the example of a student perhaps failing a course of study based on conventional methods dependent on retention on knowledge while having developed great skills in research and team-building.

The Monash University report continues:

Our point of view is that educational research does not supply rules for action but hypotheses for intelligent problem solving. It can help us understand what worked in a particular situation but not what will work in future situations. The role of the educator is to use research findings to make one’s problem solving more intelligent. 78

This view reinforces a central message of this report; that is, the value of school-based learning communities which look at all the issues involved in learning, including the use of ICT, and test and measure their success with students.

A European Union progress report on innovative use of ICT in schools states the following:

A review of studies carried out for the Commission confirms broad positive benefits of ICT for learning modes such as cognitive processing, independent learning, critical thinking and teamwork and that ICT enhances a student-centered learning approach. However, while these benefits would lend themselves to new pedagogical approaches, the majority of teachers have not used ICT in such a way.

If ICT has a positive impact on learning, it has yet to revolutionise processes at schools. But the digital generation is learning by using ICT in everyday life. Teachers need to be part of this and education and training institutions need to take it fully on board.79

This is one example of high expectations around ICT’s potential to transform teaching and learning. This report continues by observing various issues that have resulted in the slow take-up by teachers, also noted in the quote above.

A recent paper by Gutterman et al advocating the benefits of ICT states:

ICT can improve the learning process through the provision of more interactive educational materials that increase learner motivation and facilitate the acquisition of basic skills… Twenty-first century education reform policy has been focused on a shift from the traditional -teacher-centered pedagogy to more learner-centered methods. Active, collaborative learning environments facilitated by ICT contribute to the creation of a knowledge-based student population.80
The Gutterman report focuses on the use of ICT in developing countries and goes on to point out that the ICT skills that come along with the shift in pedagogies are essential for students transitioning into today's market place. The development of a critical mass of knowledge workers will greatly improve economic opportunities and prosperities of a country's workforce.

### 9.2 Focus on teacher collaborative teams and pedagogy

Student outcomes include a broad range of intended learning, including some that is difficult to measure, and this is another issue for professional learning in ICT. As has been indicated much ICT-related professional learning has focussed on improving teachers' personal ICT skills in order that these will later be applied to good use in work with students. Such a gap, between immediate purpose (teacher ICT skills) and ultimate purpose (student outcomes), implies a lack of relevance in teacher ICT learning. A central thrust of the work of Fullan and Ellmore around school improvement is that teacher learning should be directly connected learning to improve student outcomes. This finding has particular relevance to learning how to apply ICT in the classroom.

The tankette group made the following statements, which support the assertion that teacher learning, should be directly connected to improvement of student outcomes:

- Student achievement should be the focus of professional learning and accountability. It is not, however, the only focus.
- Use of ICT is often focussed on low level skills that relate to the technology itself rather than learning about deeper principles such as skills and attitudes for problem solving and lifelong learning.
- In using ICT, there should be a focus on deeper student learning, including:
  - inquiry
  - collaboration
  - student responsibility for learning
  - acceptance of multiple sources of knowledge
  - using the power of technology to assist in all of the above.

This view was also shared by the participants in the case studies undertaken for this investigation. The school based collaborative teams often met formally and informally to discuss issues and learn from each other. This collaboration often resulted in the development of units of online work, and shared knowledge that was gained through attendance to external conferences and seminars, and provided a means for mentoring the less experienced teachers. A project based approach to learning was also being used, where students were self directed in their learning and time management skills.

### 9.3 Assessment

Since assessment is a primary driver of educational practice, it is also a critical element in any attempt to reform that practice. This was summarised recently at the Learning Technology World Forum 2009 where a major project was launched, _Transforming education: Assessing and teaching 21st Century skills_.

Assessment in education is one of the most powerful determinants of practice in the classroom, made more so by the standards and accountability reforms of the past decade. Many previous, well - meaning and well - resourced attempts to reform education have stumbled through an inability to demonstrate improvement on standardized tests designed for last century's education. More often than not, such efforts have assessed what was easiest to measure rather than what was most important to measure. Consequently, along
with changes in other areas of the educational system, educational assessment must be transformed to be more responsive to the social and economic needs of students and society as we face the challenges of the 21st century.

Existing models of assessment are typically at odds with the high-level skills, knowledge, attitudes and characteristics of self-directed and collaborative learning that are increasingly important for our global economy and fast changing world. New assessments are needed that engage students in the use of technology and digital resources and the application of a deep understanding of subject knowledge to solve complex, real world tasks and create new ideas, content, and knowledge.

This problem is particularly relevant to the integration of ICT because many of the potential benefits of using ICT require high-level skills, knowledge and attitudes. It can be considerably frustrating to innovative teachers who use ICT that their practices are let down and unmatched by the assessment systems. In addition, if the use of ICT is not reflected in assessment disengaged teachers have another reason to continue holding back from using it.

Transforming education: Assessing and teaching 21st Century skills, the project referred to above, is headed by Professor Barry McGaw, Chair of ACARA. ACARA will link its work to the Programme for International Student Assessment (PISA) and Trends in International Mathematics and Science Study (TIMSS) tests. This and other projects that focus on assessment are potentially important to the direction of professional learning for ICT. It is worth noting the importance of Barry McGaw’s role, as Chair of ACARA and as project leader of the newly announced Assessment and teaching of 21st Century Skills project. Australia is well placed to develop an education system of international standard. A media release by Education, Employment and Workplace Relations Minister, Julia Gillard states:

The findings of the project have the potential to inform the development of the new national curriculum. The development of new methodologies and assessment tools will also enhance our innovative national assessment program.

The Australian Government will work alongside other country representatives to explore the gap between the skills students are being provided with and what they require to participate fully in the modern world of work.

In line with the literature surveyed above, the tankette group stated that ‘There is a wealth of information available to measure student achievement and it should be used.’ In summary, appropriate assessment is critical to any attempt to improve educational practice and particularly to the integration of ICT within the curriculum.

ACARA has been tasked to undertake the development of a national curriculum. In its paper, The Shape of the Australian Curriculum, ACARA states:

A curriculum for the 21st century will reflect an understanding and acknowledgement of the changing nature of young people as learners and the challenges and demands that will continue to shape their learning in the future. Young people will need a wide and adaptive set of knowledge, skills and understandings to meet the changing expectations of society and to contribute to the creation of a more productive sustainable and just society.

ACARA, in identifying the educational goals for young Australians, indicates that learners will be creative and productive 'users of technology, especially ICT, as a foundation for success in all learning areas.' It is anticipated that changes in the curriculum statements will bring on corresponding changes in student assessments so that enhanced skills and knowledge gained through the use of ICT are measured.

In relation to assessment Ruth Reynard in a journal article, Technology’s impact on learning outcomes: Can it be measured makes the point that we need to move away from standardised
assessments to truly measure the kind of learning that is taking place in technology rich environments. She states that the focus should move from content-driven to be process-driven and focus on three characteristics:

- focus on how rather than what
- focus on why rather than when
- focus on future trends rather than current practices.  

Curriculum statements are being developed, of which ICT is an integral part, as indicated in ACARA’s preliminary papers. It follows that assessment practices will be redefined to meet the described curriculum outcomes.

9.4 School improvement strategy

A recent report, *How the best performing school systems come out on top*, reinforces the essential elements of this approach to school improvement. The report, prepared by McKinsey and Co in cooperation with the OECD and based in part on PISA results, examined a number of school systems, in particular Finland, Boston, Singapore, England and South Korea, and observed the following:

To improve instruction, these high-performing school systems consistently do three things well:

- They get the right people to become teachers (the quality of an education system cannot exceed the quality of its teachers).
- They develop these people into effective instructors (the only way to improve outcomes is to improve instruction).
- They put in place systems and targeted support to ensure that every child is able to benefit from excellent instruction (the only way for the system to reach the highest performance is to raise the standard of every student).

These unremarkable conclusions translate into quite a distinct culture within successful schools:

At the level of individual teachers, this implies getting three things to happen:

- Individual teachers need to become aware of specific weaknesses in their own practice. In most cases, this not only involves building an awareness of what they do but the mindset underlying it.
- Individual teachers need to gain understanding of specific best practices. In general, this can only be achieved through the demonstration of such practices in an authentic setting.
- Individual teachers need to be motivated to make the necessary improvements. In general, this requires a deeper change in motivation that cannot be achieved through changing material incentives. Such changes come about when teachers have high expectations, a shared sense of purpose, and above all, a collective belief in their common ability to make a difference to the education of the children they serve.

The three elements (openness to critical reflection, authentic classroom based demonstration, and motivation based on student outcomes) mirror Elmore’s findings regarding the central role of collaborative learning teams. The case studies for this investigation revealed that some Australian schools have adopted this approach to professional learning. Learning by observing and also presenting to colleagues with the view of obtaining feedback, reflecting, and adjusting is a practice in some of the case study schools. Although concerns and resistance was experienced early in the practice, staff soon became accepting and valued the benefits of this approach.
The McKinsey report also emphasises that well managed systems ensure consistently strong performance.\textsuperscript{99} The report found that high-performing systems consistently used external monitoring to measure the quality of teaching and learning, generally by examinations and school reviews, but that some top performing systems have largely dispensed with national examinations, conducting only periodic assessments of student performance.\textsuperscript{100}

The Victorian Department of Education and Early Childhood Development’s \textit{Seven Principles of Highly Effective Professional Learning}\textsuperscript{101} applies the philosophy discussed above; that is:

- The focus is on student outcomes, and teachers and schools are accountable for them.
- The professional learning is largely school-based, focussed on the day to day work of teaching.
- For the most part the professional learning revolves around collaborative learning teams and influencing the individual teacher’s practice.

The Victorian Department’s Seven Principles are as follows:

- Professional learning is focused on student outcomes \textit{(not just individual teacher needs)}.\textsuperscript{102}
- Professional learning is focused on and embedded in teacher practice \textit{(not disconnected from the school)}.\textsuperscript{103}
- Professional learning is informed by the best available research on effective learning and teaching \textit{(not just limited to what teachers already know)}.\textsuperscript{104}
- Professional learning is collaborative, involving reflection and feedback \textit{(not just individual inquiry)}.\textsuperscript{105}
- Professional learning is evidence based and data driven \textit{(not anecdotal)} to guide improvement and to measure impact.\textsuperscript{106}
- Professional learning is ongoing, supported and fully integrated into the culture and operations of the system – schools, networks, regions and the centre \textit{(not episodic and fragmented)}.\textsuperscript{107}
- Professional learning is an individual and collective responsibility at all levels of the system \textit{(not just the school level)} and it is not optional.\textsuperscript{108}

The adoption of a national approach to school improvement that focuses on student outcomes and teacher professional learning would provide a much needed concentration of energy in the integration of ICT within the curriculum and associated professional learning. The above discussion reinforces the fact that a number of elements need to be in place to achieve improvements across the board. As discussed above, a holistic approach is needed to have a transformative effect in education. This theme is also revisited in the next chapter. The holistic approach is one that incorporates all aspects such as teacher standards, ICT infrastructure, appropriate professional learning, engaging communities and strong leadership. Also, crucial to the above are student standards for ICT. There needs to be alignment of the student ICT standards with the teacher ICT competencies and proficiencies in using ICT tools.

\subsection*{9.5 ICT standards}

Australian school education jurisdictions range in size from some of the world’s largest school systems to individual independent schools. The larger jurisdictions have developed ICT standards. The purposes of these ICT standards are to:

- provide a common understanding and language that translates broad national goals into teaching guidelines
• locate the use of ICT within the national curriculum
• foster teacher learning-communities by specifically linking the use of ICT to wider student learning outcomes
• provide the basis for national initiatives in teacher training to support the use of ICT in the curriculum.

These ICT standards exhibit diversity in style and approach between the jurisdictions, complicating nation-wide resource and support initiatives. There are a number of issues that need to be covered in regards to the ICT standards for students. For example, some states have undertaken to develop separate, stand alone standards, and also integrate the ICT component in each subject area while other jurisdictions have opted only for the integrated approach.

Some states/territories have developed statements such as the Queensland Curriculum, Assessment and Reporting Framework\textsuperscript{109}, the South Australian Curriculum Standards and Accountability Framework,\textsuperscript{110} the Victorian Essential Learning Standards,\textsuperscript{111} the NSW Board of Studies,\textsuperscript{112} the Australian Capital Territory’s Every Chance to Learn,\textsuperscript{113} and the Tasmanian Curriculum Areas by Standards.\textsuperscript{114}

These high quality documents provide fundamentally similar guidance to schools and teachers, but they use different categorisations and language. For example, the Queensland Department of Education, Training and the Arts Information and Communication Technologies Assessment - Scope and Sequence Years 1-9\textsuperscript{115} is divided into five areas:

• inquiring with ICT
• creating with ICT
• communicating with ICT
• ethics, issues and ICT
• operating ICT.

Each area is summarised in a chart with categories and levels of schooling and, for example, the excerpt from ‘inquiring with ICT’ shows the level of guidance given to teachers. The Victorian Curriculum and Assessment Authority has developed the Victorian Essential Learning Standards which includes the Information and Communications Technology – Concepts and Skills Charts.\textsuperscript{116} These are divided into three sections:

• ICT for visualising thinking
• ICT for creating
• ICT for communicating.

These two examples serve to illustrate the inherent differences that exist in the development of similar documents.

A CISCO, paper entitled, *Equipping every learner for a 21st century*,\textsuperscript{117} states that curriculum frameworks must support 21\textsuperscript{st} century pedagogy where:

• the learner is at the centre
• teachers are able to draw on a repertoire of strategies and skills
• curriculum is often interdisciplinary and project based
• learning is authentic and engaging.
The Partnership for 21st Century Skills, a consortium organisation of private companies and the US Education Department, developed the 21st Century Learning Framework, which consists of the following elements:

- core subjects and 21st century themes
- learning and innovation skills
- information, media, and technology skills
- life and careers skills.

The International Society for Technology Education (ISTE), a non-profit organisation providing leadership and service to improve teaching, learning, and school leadership by advancing the effective use of technology in K–12, has developed a framework called the National Educational Technology Standards (NETS) and Performance Indicators for students. They include the following categories:

- creativity and innovation
- communication and collaboration
- research and information fluency
- critical thinking, problem solving, and decision making
- digital citizenship
- technology operations and concepts.

It is interesting to note that these examples are quite similar in the scope and understanding of coverage but, as the Australian examples differ in the levels of schooling, and style of presentation, they are simultaneously quite different in their categorisation.

Revision, distribution and staff training for such documents are expensive and time consuming. Smaller private sector education jurisdictions have comparatively limited resources to generate and maintain such guidelines. In addition, there are a large number of independent schools that rely totally on their own resources. There is a strong argument for the development of national ICT curriculum statements which take into account international descriptors. Justification for this approach includes:

- simplification – to foster national discussion using common language
- coverage – providing support to small systems and independent schools
- resource development – encouraging a national market for resources
- cost and currency – encouraging regular updating of guidance.

9.6 Recommendation 2

That the Australian Government takes a leadership role, through the Australian Curriculum, Assessment and Reporting Authority and in collaboration with the states and territories, to develop and maintain ICT standards in schools. The standards should build on existing state, territory and other jurisdiction plans and provide a common language and direction for the integration of ICT in the school curriculum.

Strategy: Establish a national committee of experts with representation from all systems to develop national ICT statements and scope and sequence documents for all year levels.

Strategy: Provide access to the documents and supporting resources through a central point.
In order to realise the ICT-related paradigm shift in education, and ensure that students are well prepared for an ever changing society, collaboration and consistency across all states is desirable. In addition, issues and challenges around the use of ICT, including infrastructure, professional learning, standards, resources and equity are similar across all sectors of education are similar.

A number of reports have covered the issue of ICT standards and competencies required to effectively incorporate ICT in learning environments. Surveys have also been undertaken by states and systems which have attempted to gauge the level and competencies of Australia’s school teachers.

A project funded by DEEWR, *Raising the Standards – A proposal for the development of an ICT competency framework for teachers*, involving participation from all sectors and education authorities, focussed on the development of a national framework for the description of teacher ICT competencies standards. The aim of the development of the framework was to assist teacher education institutions, teacher employers and professional association to develop ICT standards for their context. Discussion around key issues and challenges, associated with the framework is provided. Although the project report was published in 2002, the content and structure recommended for the development of a framework is relevant here. The elements described in the framework include:

- underlying premises and principles
- supporting capabilities
- dimensions of ICT use in teaching and learning
- standards
- exemplars of practice
- assessment and credentialing
- framework evaluation and review process.

A key component of the framework is the section covering standards, which are standards related to teacher ICT skills and competencies. At present there are a number of standards such as the ISTE that are being used as guides to gauge teacher competencies and consider the undertaking of professional learning. Issues around the development of teacher standards and who is responsible for it is canvassed in the *Raising the standards* report. Professional associations may see this activity as their responsibility; however, the report points to overseas examples where the UK Teacher Training Agency, the US Interstate New Teachers Assessment and Support Consortium and the US National Board for Professional Teaching Standards have been chosen to develop subject specific standards. The report also indicates that there is overwhelming evidence to support the development of teacher standards by the professional associations, this view being supported by both government and the profession. Furthermore, the report indicates that the development of standards should be taken as a partnership between employers and the profession that is teacher professional associations.

Other issues around the development of ICT standards include terminology and consistency in language, integration with subject curriculum or generic stand alone, and assessment. These issues are extensively covered in *Raising the Standards* and discussion here will be limited to assessment aspects.
It can be argued that professional learning which is standards compliant and meets assessment requirements is likely to be considered a pathway to professional advancements by some teachers. Consideration needs to be given to the collection of evidence that supports knowledge and the acquisition of skills. In the current technological environment, where learning takes place in a range of situations and artefacts are created online to support the acquisition of knowledge and skills, an online mechanism needs to be available to provide access and storage. E-portfolio applications have been used by a range of users to create, collect, publish and manage personal study or work related artefacts. These tools can be useful in the collection and management of artefacts, by teachers, that support professional learning.

Another justification for national standards is provided by Lawrence Ingvarson.128 He asserts that curriculum standards should be accompanied by standards for teaching and the result of such a merger would be of great benefit to Australian education. Ingvarson further states that the national curriculum statements will have significant implications for what teachers should know and be able to do and the successful implementation of the curriculum will depend on the capability of the teachers. Similarly to the evidence articulated above, Ingvarson suggests that involvement of professional associations, unions, government and other employers, led by a new national body for professional standards and certification is required. Ingvarson states:

This new agency could work alongside Australian Curriculum, Assessment and Reporting Authority (ACARA) to develop teaching standards in each of the specialist fields of teaching, and to provide a certification system for all teachers and school leaders who believe that they have met those standards. It would need to provide a credible assessment and certification system, ensuring it is responsive to, but independent from all stakeholders.129

The National Framework for Professional Standards for Teaching by the Teacher Quality and Educational Leadership Taskforce130 provides a framework within which both generic, specialist and subject specific professional standards can be developed. The National Framework outlines the importance of national approaches and acknowledges the local and national needs as well as the impacts of globalisation. Benefits of a national framework include agreed language, utilising commonly understood terms and facilitates effective information sharing about professional practices across jurisdictions, provides the basis for national recognition of the quality of teaching and a basis for ongoing commitment by all government to support teachers’ professional learning. The National Framework presents career dimensions: for graduates, competence, accomplishment and leadership while the professional elements include professional knowledge, professional practice, professional values and professional relationships.

Early this year (2009), The Council of Australian Governments (COAG) implemented the National Partnership Agreement on Improving Teacher Quality.131 The Agreement sets an objective of ‘raising overall attainment so that all Australian school students acquire the knowledge and skills to participate effectively in society’132 and lays out five high level outcomes as key to ‘boosting Australia’s participation and productivity.’133 The Agreement states that it will contribute to several outputs, including ‘A framework to guide professional learning for principals, teachers and school leaders.’134

Government direction over recent time points to a standards-based approach to the delivery of education. The establishment of ACARA, tasked to develop national curriculum, and Australia’s participation in the Assessment and teaching of 21st Century skills project need to be complemented with teacher ICT professional standards to ensure there is national capacity to deliver curriculum designed for 21st century education.
10.1 Recommendation 3

That the Australian Government take a leadership role, in partnership with other education authorities and entities, in implementing and maintaining the ICT competency framework for teachers as described in the *Raising the Standards* report. A key component of the described framework is teacher standards. The Government should task AICTEC, through its advisory bodies, to develop teacher ICT standards for:

- pre-service teachers
- practicing teachers
- school leaders
- teacher educators.

**Strategy:** Establish a mechanism for the development of national ICT standards for teachers that are built on common language and ‘talk to the teacher.’

**Strategy:** Establish processes to ensure that there is consistency and appropriate coverage between the standards specified for the different groups of users.

**Strategy:** Establish a mechanism for future development and maintenance of the framework.

**Strategy:** Establish a strategy to promote the framework and appropriately fund professional learning to foster and increase the level of professional learning.

**Strategy:** Establish a mechanism for the development and use of e-portfolios for the collection and management of teacher artefacts that provide evidence of knowledge, competencies and professional learning courses undertaken and assessments completed.
11 Appendix A: Case study questions

11.1 Professional learning in your school

- How is professional learning undertaken at your school?
- What programs do you have in place?
- How is professional learning supported/funded?
- Are there incentives linked to professional learning?
- Is every teacher required to undertake professional learning?
- What types of activities are undertaken that support the embedding of ICT into learning areas?

11.2 Relation between professional learning and student outcomes

- Have you undertaken an evaluation of professional learning at your school? Do you have evidence that indicate that professional learning and specifically the use of ICT in learning has had a positive impact on student outcomes?
- What were the results? For teachers? For students? For ICT admin? For school leadership?
- What is the motivation is integrating ICT in learning areas?

11.3 Success factors

- Where did you succeed?
- What would you do differently next time?
Methodist Ladies College (MLC) is a K-12 girls school. It became a Uniting Church of Australia school in 1977 when the Methodist Church was subsumed into the new union and the school Methodist Ladies College Burwood became known officially as MLC School.

There are about 1300 students attending the school. The school has approximately 160 fulltime teachers.

The school has a laptop program and every student from year 5 onwards has a personal laptop. Students from K-5 can borrow and use the school’s laptops.

The campus is completely wireless and laptops can be used at any location in the school. Students without laptops can borrow laptops and K-4 usage is through the schools wheel-in trolley system.

12.1 Professional learning

A mixture of external and internal professional learning opportunities is afforded to staff. Each school division has a budget for professional learning and budget submissions for funding are based on projected needs.

Every Wednesday afternoon is allocated for professional learning and activities include brainstorming sessions or presentations by staff or teams to work together. There are a number of teams that work together such as the pastoral, curriculum, and online teams and a variety of other teams throughout the school. The team environment provides not only learning but also leadership opportunities.

The school also runs formal sessions with external speakers.

External conference attendance is based on requests and approval is given on how the professional learning will make a difference to school learning. It is an expectation that conference attendees will come back and share their learning with other staff through the Wednesday afternoon sessions.

The school has a school wide induction program for new staff which is an initial half a day to a day with a number of tasks that need to be completed to ensure new teachers gain the required knowledge.

There are two fulltime people who support teachers with technology. Teachers can request assistance at any time and that can be for small classroom tasks or for small group sessions. The focus of the group sessions is on embedding ICT in the curriculum; however there is software application support as well.

Professional learning sessions are also hosted after school. Professional learning is based on existing standards but not on a particular standard; the school has developed its own standard which they use. From the IT perspective the focus is on basic usage of laptops, internet, wireless network, online learning system, how to create a unit of work and the pedagogy behind it.
The school also run their own professional development courses on demand. That is when people are struggling in certain areas or; for example, when developing an online unit and new features are introduced.

There is also informal peer mentoring, such as a ‘champions’ working with peers to show them how they can incorporate new technologies in curriculum or how they have taught a particular topic.

Staff meet on occasional Fridays to share topics of interest. Such sessions include significant achievements or new projects.

Staff also get together to lend support in an informal social environment.

The school has strong leadership and the principal strives to develop strong leaders within the school. Leadership opportunities are provided for staff and these positions are rotated annually. An implicit incentive for professional learning is leadership aspirations. Also leadership positions lead to professional progress. The situation is that other schools are targeting MLC staff because of their skills.

12.2 Online learning

The school has a blended program of face to face on online provision. The online system is also used for professional learning – for example the induction program, school strategy and many basic IT skills units are online and include movies and podcasts.

Skoolaborate, a virtual world project, run by the school is one of the biggest educational virtual world schools in the world. Forty schools from 10 countries are participating. This space provides opportunities for peer mentoring and learning by sharing information, and engaging in conversation with the purpose of running events.

This environment is educating people on how to use virtual worlds. There has been positive feedback from UK, Japan and NZ. Skoolaborate also has an associated blog to support it and provide information.

Virtual worlds is considered as one of the more innovative ways of teachers learning together, installing values and the focus of the discussion is about pedagogy.

Issues around the use of virtual worlds centre around time limitations -- having the time to participate.

Virtual worlds are gaining acceptance for its usefulness within the education sector. The Australian College of Educators leaders is planning on using it to support its face to face conference which, like most conferences, is experiencing a decrease in numbers.

The success of such services can be measured by their sustainability. How many get involved and continue to have a successful community.

This ‘action learning’ form of professional development is one of working together to solve education problems and improve learning. (e.g. at the moment MLC is looking at the teaching of languages across the globe)

Education for the 21st century is changing, teachers need to be open-minded and allow students to become self-directed learners. This is also an important aspect of leadership – leadership of students – students take responsibility for their own learning.
12.3 Incentives

At MLC it is an expectation that teachers undertake professional learning and they will constantly improve. If some teachers do not take the opportunity to get involved it is noticed and processes have been setup so one will participate.

The school runs projects that not only challenge the students but also the teachers as well. Both teachers and students are expected to undertake projects that incorporate technology and involve collaborative methods.

Embedding ICT in the curriculum included programs such as The Enlightenment program where many of the usual restrictions of a school are removed (set times, set learning areas) and Skoolaborate – which experiment with how to educate in the 21st century.

12.4 Access to the technologies

MLC has a policy of open access with the exception of pornography. Students have been taught how to use technology appropriately. The internet is part of the social fabric and it is important to educate people on how to use it wisely and appropriately rather than try and block it.

12.5 Evaluation – student outcomes

It is difficult to measure student outcomes. What is important is that technology is creating an independent learner; the other immeasurable things are confidence. What can be measured is that marks at the school have not dropped and what is produced is a stronger independent and more confident student.

What is also evident is how technology has empowered students. The school has a high Asian student population –30-35% of the student population is Asian. Typically these students are quite in class and are reluctant to participate in open discussion. However, with the use of technology in the curriculum they have been able to express their views and opinions where blogging is used in online units. They are loud in using technology and are able to express themselves in different media.

Evaluation measures at school include student surveys where students evaluate the performance of teachers. Survey results from surveys conducted to date have been been very positive. Students at MLC have a strong voice in the school and opportunities are provided for them to voice their views.

12.6 Motivation for the use of technology

There is an overarching school strategy that advocates the use of ICT. Curriculum is online and it is easy to change – there are benefits in streamlining changes to the curriculum. Furthermore teachers are able to share and work together to develop resources. In terms of student benefits, the online environment provides teachers with the tools to track students’ progress over time.

In developing online content, the 1st and 2nd years are the hardest in terms of time and effort required to develop the content. There after the teachers begin to experience the benefits.

In terms of sharing content, early on there was a sense of ownership and reluctance to share – however, slowly there has been a cultural change and teachers see the value of openness and sharing.
12.7 Importance of leadership role in change

MLC has a leader who believes in challenging people and taking risks. There are strategies in place to encourage growth, particularly in terms of leadership, for both teachers and students.

12.7.1 Strategic plan

Provides an opportunity for teachers to contribute to planned changes and it is a vehicle through which change is made. For example one of the strategies in the current plan is to embrace virtual worlds.

12.8 Success factors

- professional learning cannot be examined in isolation of learning. MLC have developed 400 online units in every aspect including what teachers and students want.
- pedagogy matches the vision
- Skoolaborate – whole world on board

12.9 What would you do differently?

- work at getting teachers on board
- move at a slower pace and engage with more at their meetings etc, - try to separate professional learning from IT issues so as to not get people offside. However, resentment and fear cannot be avoided – this is a change and people are reluctant to change.

Factors for success

- strategic vision is understood by all
- community is on board – work in getting people on board
- pedagogy is important and is understood – e.g. senior school use understanding by design.
- Need to have the infrastructure to support it
- need multi-faceted model of professional learning – external, internal, online, leadership opportunities
- success depends on strong leadership.
13 Appendix C: Mordialloc College case study

13.1 Background

Mordialloc College is a coeducational College located in Melbourne’s Southern metropolitan region with an enrolment of 730 students from year 7 – year 12. The school is based in what may be regarded a working class area.

The school employs 65 teachers, 10 of which work part time. There are also 16 education support staff (ESS) who work with years 7, 8, and 9. They help with looking after the facilities, resource integration, assisting teachers in preparing content and participate in workshops.

The school has established a Quality Learning Centre for Year 7 and 8 students. This was achieved through funds received from the Blueprint for Schools initiative - the Leading Schools Fund.

ICT is integrated into leaning and the focus is on quality learning. The school prepares students for: tertiary entry, TAFE and to go straight into the workforce.

13.2 Professional learning and programs in place

New teachers undertake an intensive induction program. This will include 2 to 3 days of induction followed by participation in a new teachers’ learning team.

School staff have undertake professional learning based on the school’s enrolment in the Quality in Schools program. Through this program the school has been able to send 40 teachers to 3 day professional learning programs.

The school has established a ‘team’ teaching and learning approach with every staff member required to join a team.

There are staff workshops every Tuesday for 2 hours. The first hour is taken for professional learning across all staff and may include a presentation by one of the teachers on a project they have been working on while the second hour is devoted to team learning and working with ones team. For example year 10 teachers will meet together and work out what the students will be doing next and one teacher will lead the session.

Every teacher has to undertake 4 days of training at school holidays.

There is a project approach to learning were teams develop projects for students to undertake and research.

New teacher teams meet weekly to work on whole school pedagogy and build up their understanding of the school’s approach to learning – which includes constantly upgrading teacher skills, classroom student management and empowering student learning.

Through the Quality Schools program funding the school established a flexible learning centre for years 7, 8 and 9. Funding through this project has also enabled the development of teacher skills, where teachers for 3 years have been working with Quality Schools facilitator Rob Palmer to develop teaching strategies.
The benefits of the learning team are that they work together and teach in the same space so they unintentionally and intentionally learn from one another. Teams have support and mentors and teaching has become open and transparent. Feedback from those involved in team teaching is positive and they are happy in working together.

The school also runs professional learning sessions after school which are well received by external people. These sessions are run by expert staff that have been part of the Quality Schools program.

Staff also have training in the use of interactive whiteboards with beginner, intermediate and advanced sessions available.

ICT is fully integrated at 7,8 and 9 year levels with laptops, projector screens, and interactive whiteboards in all centres.

Workshop opportunities are available to all staff – both for participating and also for presenting. These focus on improving skills.

External professional learning opportunities – these are based on individual applications and it's a requirement that the knowledge gained is shared with the other teachers.

Teachers also have opportunities to visit other schools and they are encouraged to visit other innovative schools and gain knowledge in the application of innovative practices.

### 13.3 Funding

Professional learning has been budgeted for and each year 5-6 staff attend Quality in Schools programs. So far over 40 teachers have been trained.

All staff attend the weekly restorative practice program which entails eternal and external presentations.

Staff also attend the David Langford’s Master workshop each year.

### 13.4 Incentives

Most is intrinsic, no financial gains. People know the more they learn the better they are in the classroom environment, build better relationships with their students, use better pedagogies and individual students learn better.

Leadership has been developed and opportunities are provided for stuff development through special programs - such as the state teachers’ leadership program, e.g. the Aspiring Leaders program, Masters program and the Eleanor Davis program.

The use, of the openness, of the Quality Learning Centre has enabled other teachers to be mentored and supported in their use of the new pedagogies.

Every teacher undertakes professional learning for 2 hrs every week together – this is incentive to learn and improve.
13.5 Evaluation

Feedback is obtained using quality processes, workshops and surveys.

There is still evidence of resistance to the use of ICT and teachers need to be convinced of the benefits.

Currently the school is working on developing student/parent/teacher surveys to provide targeted data.

All teachers use laptops in class and it’s a normal practice at the school.

The ICT Coordinator surveyed staff capacity to target needs and feedback from teachers is that they want to know about podcasting and wikis – which is a move away from the early skills of how to use word or spreadsheets. This has begun in the senior school and forms the basis of a number of staff professional development review process project.

ICT has been integrated in the classroom with more whiteboards in all learning areas and centres. And currently the school is planning for the federal laptops program.

There is an annual performance development review of staff, where staff identify an opportunity for improvement based on collected data and work through the PDSA -- a plan, do, study, and act.

Podcast are used for professional learning reviews.

The school is a participant in the CISCO innovation program -- facilitates the development of collaborative online communities.

Working on individual professional development plans to assist teachers in identified areas.

Professional learning is an integral component of teaching at Mordialloc, with extensive programs in teaching practices to enable the paradigm shift needed for 21st century education.

13.6 Student outcomes

Students are using computers and are driving their own learning and are taking greater responsibility for their learning.

ICT tests on computers for year 7 and 8.

Students have access to computers for their own learning in years 7, 8 and 9.

There has been an increase in tools to resource the curriculum and they have not been used as tools but for teaching outcomes.

Kids connect to other kids and teachers as a process of learning not to use a piece of technology. Learning is about the process not the production – it’s about the journey of learning.

All students have digital portfolios.
13.7  Success factors

ICT is fully integrated in years 7, 8, and 9 – it is natural and organic, it is part of the learning process.

Years 10, 11, 12 – different system and cannot be integrated. The physical space and other elements such as curriculum and assessment requirements as well as staff preferences have been barriers.

To succeed you need:
- need a strong vision to succeed
- leadership
- all teachers working together.

13.8  What would you do differently?

- induction program could be improved
- internet access at every part of the school
- better infrastructure at school – there is no student LMS.
14 Appendix D: Cerdon College case study

14.1 Background

Cerdon College is a Catholic secondary school for girls, established by and educating in the tradition of the Marist Sisters, located in Sydney. The school is a girls school from year 7-12. There are over 1000 girls attending the school. The school is from the lower end of the socio-economic scale and over 70% of students are from a multicultural background. The majority of students is from second or third generation migrant families and can speak a language other than English. The school has:

- 75 fulltime teachers and 19 ancillary staff
- 190 desktops
- 260 laptops setup in specialist facilities and general learning areas.

Visual arts and music subjects have extensively embedded ICT. The school has a wireless network.

14.2 The school strategic plan

The 2007-2009 Strategic Plan expresses a vision for the future direction of Cerdon College that is genuinely shared by the school community. Six key domains were identified:

- The Spiritual Life of the College
- The Pastoral Life of the School
- Teaching and Learning
- Leadership and Growth
- The Organisational Life of Our School
- Information and Communication Technologies.

Cerdon College’s Strategic Plan is published and in relation to the ICT component the following are included:

14.2.1 Examine ways of increasing ICT resources within the College
- develop an equitable system for the purchase, booking, use and access to ICT facilities and resources
- develop an effective system for the maintenance and upgrading of ICT facilities and resources.

14.2.2 Continue to develop the role of the Technology Committee within the College.
- work towards a technology master plan
- provide increased opportunities for students to interact with ICT
- provide greater opportunities to incorporate the effective use of ICT within KLA programs and assessments
- strengthen student competencies as proactive, resilient, independent and ethical ICT learners
- formally recognise students’ ICT skills and promote student mentoring.
14.2.3 Recognise, respond to and be aware of the ICT professional development needs of staff.

- strengthen staff competencies as proactive, resilient, independent and ethical ICT educators
- challenge staff to grow in their confidence and competence of ICT through ongoing, targeted PD which is offered in a variety of modes
- formally recognise staff ICT skills and promote staff mentoring.

14.3 Professional learning

There are formal and informal programs and teachers attend professional associations’ professional learning conferences.

- the concept of professional learning communities is encouraged
- teachers who attend conferences are required to come back and work with other teachers to teach them what they have learnt
- KLAs have formal programs where they share knowledge in KLA specific groupings
- the school has formal and informal leadership roles for staff and students
- the school has leadership teams for professional learning, literacy, numeracy, and learning technologies.

Professional needs are also addressed through the annual staff and student surveys. Data from Higher School Certificate (HSC), School Certificate (SC) and National Assessment Program – Literacy and Numeracy (NAPLAN) analysis also informs learning conversations. All decisions undertaken are underpinned by data. Data is collected from surveys. Staff have an opportunity to indicate where the school has been successful and where they feel they have needs.

For example, the 2008 survey included 2 aspects:

- how to feed back information to students
- how to embed technology that is already utilised within the school in classroom teaching.

14.4 Funding

The College pays for professional learning on an as needs basis. Professional learning is targeted at personal level. For example, if a professional association is conducting a course in visual arts then the appropriate people are encouraged to go.

The school is also involved in system programs like the NSW Quality Teaching Framework Program.

The whole school is involved in building leadership density.

The focus in 2009 is on the technology team and pedagogy, through undertaking workshops, establishing a mentor process and visiting classrooms.

A key area in the strategic plan is professional learning and up-skilling teachers.

Achievements so far include

- wireless network completed
- replaced hardware
- integrated technology into rooms
- upgraded rooms with data projectors for both general learning areas and specialist classrooms.

14.5 Incentives

School pays for professional learning. Some courses are accredited and a record is kept of all professional learning undertaken and is acknowledged in peoples CV.

Needs based survey helps match teacher with professional learning and also help to meet the individual needs.

Every teacher is required to have competencies and one is measured on a number of levels.

The school has the OHS training online.

CENet is used as a significant curriculum tool and the college is working at finding new ways of using CENet in the future.

Decision making at the school is driven by data and alignment with the strategic plan. For example they look at computer skills and see where the need is and map to the whole plan for the future.

Student technology needs are mapped to curriculum.

Staff development day - early adopters are used as resources and share their knowledge and experiences. The school teachers undertake a problem based approach at looking at KLAs.

Teachers at all levels share best practice approaches to learning at KLA meetings. There are opportunities for all staff to facilitate at workshops, mentoring of staff and classroom demonstration through the QT frameworks.

The schools holds 3 staff development days and time for professional learning is allocated at weekly meetings which relate to the different interest groups.

There are regular meetings for leadership teams and other team meetings. For example the KLA meeting will be looking at improvements and knowledge sharing.

14.6 Evaluation

Surveys are used to evaluate and measure progress. Students also provide feedback on teachers’ performance.

There is also a year 12 student exit survey where feedback is sought on a number of areas including technology.

The upgrading of the infrastructure is an indication that teaching and learning is supported at the school. Considerable cost and time is devoted to infrastructure.

There are also opportunities to learn new skills and for teachers to try what they have learnt outside school.
The system supports web 2.0 technologies. However, teachers are warned to be vigilant about inappropriate content and usage but do not block web 2.0 technologies. Teachers are inserviced regularly on the Catholic Education Office’s Acceptable Use of Technology Policy.

The school is also investigating the use of technologies that monitor student usage. Students sign agreements of accepted use of technology.

14.7 Motivation for use of ICT

- student engagement, many students are using technologies at home
- concept of collaboration moving away from teacher centred to individual centred learning
- make sure teachers become the best educated and are able to develop their skills and ability to use technology tools to enhance their learning
- students enjoy success.

14.8 Success

- upgrade of hardware, has been a 3-4 year program
- design of learning spaces to accommodate new technologies
- model of professional learning is ongoing – concept of learning together in professional learning communities
- collaborate to solve problems together that are school based
- provide staff opportunities to improve teaching capabilities across all areas
- build on personal level of skills
- professional level of satisfaction – teachers model best practice in teaching with technology
- professional learning days provide opportunities to highlight best practice and also apply new technologies for communication purposes; eg twitter was recently used
- professional learning is taking place continuously, people are often collaborating and meeting informally
- teachers are also encouraged to read professional journals and there is a school blog and they are encouraged to reflect on their learning
- try to remove some administrative tasks so there is more time for professional learning
- changes to staff room are being planned so that teachers can sit together in KLA groups and are able to share and exchange knowledge. Desks for staff will all have power connections, wireless internet, and network ports installed.
- move away from the perception that learning happens outside the school
- changing mindset that professional learning happens in course of teaching in classroom
- opportunities to observe other teachers in classrooms. This particularly so of the music and art subjects. The new open learning spaces make it possible for a number of teachers to observe the activities.

14.9 Could do better

Upgrade of network which supports teaching and learning, issues of merging from one to the other could have been done better.
15 Appendix E: Case study: Lockleys North Primary School

15.1 Background

Lockleys Primary Schools is what might be considered a middle size primary school. There are 480 students attending the school and 40% are from non-English background – however they are not new arrivals but second of third generation. It is classes as zone 7 school and attracts the highest grant on socio-economic basis.

Twenty percent of students come from outside its zone. There are 27 fulltime teachers. The school has an ICT statement that is aligned to teaching and learning for the 21st century and uses language that is understood by the community; ie the vision statement uses the terms ‘tech savvy.’

The school has a strong community focus and the community is consulted and invited to input in its strategic plan.

15.2 Technology

The school has a computer lab with 29 computers, and there are bands of computers, and trolleys where laptops are wheeled into classrooms. Each classroom has 3 computers.

- The school has a laptop program for upper primary.
- Twenty laptops are shared across classrooms.
- Two buildings are wireless capable.
- All teachers have laptops.
- Fourteen whiteboards are used across the school and are allocated based on ability to use them effectively and not just as a tool for simple tasks.
- The school is networked.
- A technician is employed for 15 hours per week to maintain and upgrade the system.

15.3 Professional Learning

Professional learning is based around 21st century learning, and the school is working on a 3-4 year plan. The plan outlines how to use technology and aims to ensure everyone has the same expertise.

Professional learning takes the form of external activities and school based collaborative learning by working together. For example, when staff attend external conferences or other professional development sessions it is an expectation that what is learnt is also passed on to the other staff. Staff will come back and mentor other teachers. Normally 4 -5 teachers go to listen to experts and on their return they act as sponsored champions.

Staff normally would attend 3-4 external conferences based around improving teaching and learning.

Invited experts also present to staff at school; eg Mark Treadwell.
There is a notion of shared ownership of professional communities and an attitude of how teachers can support each other. For example, in the inquiry learning unit they worked in teams to scope and sequence.

Teachers work together to plan and review some units.

Teachers team cross year levels and work as partners or part of a team.

Professional learning is based on technology and also pedagogy.

Self assessment of learning – The school adopted a practice where teachers rate themselves and interview in pairs. The school accepts that additional time outside school hours is required for effective adoption, and has a concept of cooperative planning and teaching.

15.4 Funding

The focus of the budget is on PD and ICT. $30,000 is allocated for professional learning. Additional funds are also available through participation in special projects which is used for professional learning. The ICT budget should include 25-20% for professional learning.

Leadership is a strong component at Lockleys and a number of strategies have been used to encourage and engage all staff in professional development and the adoption of ICT in their teaching. There is planned up-skilling and development of leadership.

Participation in Learning technologies Research Project, a program for sustainable and reputable professional learning. Teachers work together in teams in their classrooms.

15.5 Incentives

There are no incentives as such. It is an expectation that teachers need to learn and work in teams. The incentive is the motivation to improve. Some teachers will take longer than others to come along or try new things, but this is a long process and an ongoing program.

15.6 Evaluations

The school uses the EdCap (DECS’ chart for skills) and most teachers at the school are in the 2-3 bands and some in the 4th, the highest. This is not a requirement and is only undertaken as an indicator of progress. This evaluation is undertaken once a year.

In terms of EdCap, there are implications for DECS in that it needs to be maintained and updated as technologies change.

The school uses ISTE standards for student competencies.

There is evidence of resistance by some teachers to the use of ICT.

15.7 Use of technologies

Blogging is used for upper primary. Two classes have created individual blogs through edublogger. Use of a generic gmail email address is the way teachers monitor student blogging activity. The
teacher is alerted every time something is posted to one of the blogs. The blog is used for discussions around curriculum areas and topics of interest.

Students are taught about cyber safety and online behaviour.

Agreements have been made and cited in relation to setting up blogs.

Netbooks are being purchased for junior primary. ICT uptake is a bit slower in the junior primary.

Technology is used in assemblies and children are used to it and find it more engaging.

**15.8 Impact of ICT**

The overarching aim is to prepare students for the future.

We cannot measure the impact of technology; the evidence is that students are confident.

Teachers have high expectations and set high expectations. There is an attitude you don’t want to be the one left behind. Through collaboration and involvement some get pulled along.

Workload is an issue. Learning needs to be reinforced outside school and it’s the ones that put in the effort outside school that achieve greater progress and have embraced the technologies.

The school’s IT professional (working part time) has assisted and developed the network.

Communication is online and plans are in place to develop an intranet.

ICT and e-learning committee is in place which provides the means to try new technologies.

**15.9 Success**

- curriculum leadership developed
- distributed leadership capacity of staff is outstanding
- scope and sequence plans in place
- leadership is strong and there is ICT leadership to assist and mentor.

**15.10 Keys to success**

- strong leadership
- school vision
- culture.

**15.11 What would you do differently?**

- role of ICT leadership – a rethink about empowering teachers to do things for themselves
- ICT uptake has been slow over period of time
- being clear about focus and not distracted
- know what the school priorities are.
16 Appendix F: State/Territory Professional Learning Activities

16.1 Australian Capital Territory

Professional Learning

Provides course information and enrolment, the Centre for Teaching and Learning (CTL), Professional learning consultancy services, as well as programs coordinated by the CTL including Leadership and Management Framework, Performance Management and Quality Teaching Program. The Events and Professional Learning Calendar includes workshops on embedding learning technologies such as how to use podcasts within the curriculum.

16.2 New South Wales

Professional Teachers’ Council NSW

Provides access to professional development opportunities; however a small number focus on the use of ICT and collaborative methodologies.

Teachers in the Loop
http://www.teachersintheloop.com/

A free website for teachers in NSW. Primary and Secondary teachers can connect directly to businesses and organisations that provide relevant educational services across all key learning areas.

16.2.1 Professional Learning and Leadership Development

This site provides policy frameworks and resources for supporting teacher learning, leadership learning, and school administrative staff learning. However there doesn’t appear to be a focus on the use of ICT.

16.3 Northern Territory

Leadership of Learning

Focusing on leadership as a strategy for improving learning environments. Their statements articulate collaborative learning, individual commitment to learning and community building.
16.3.1 Queensland

The Learning Place


The Learning Place is Education Queensland's eLearning environment featuring four areas:

- Online learning
- Online communication
- Communities
- Curriculum exchange

It’s a safe space for teachers to use new tools and communicate with peers and share information.

Smart classroom


The Smart Classrooms Professional Development Framework supports teachers to realise a key aspect of the Smart Classrooms’ vision for 21st century teaching and learning: digital pedagogies.

Digital pedagogies move the focus from adding ICT tools on to teaching and learning strategies, to a way of working in a digital world. The Smart Classrooms Professional Development Framework is a guide for planning professional learning with ICT.

16.4 South Australia

Professional learning courses and programs for teachers


The objectives of the Learning Technologies Professional Learning programs is for teachers to become competent users of ICT and to apply these learning technologies to improving student learning. There are a range of courses for teachers from preschool to senior secondary delivered at sites across the state or online.

16.5 Tasmania

Online learning professional learning 2009


The Online Learning Network is the proposed title of a new organisational unit in the Department of Education formed from an amalgamation of the eCentre for Teachers, Centre for Extended Learning Opportunities (CELO) online extension programs and the DoE Online Campus. The unit coordinates the delivery of a range of online programs to students around Tasmania as one aspect of the Personalised Learning strategy, and provides support services for teachers and students working online.

16.6 Victoria


ICT in education

ICT in Education Victoria is the pre-eminent Victorian professional association that provides support and leadership to all educators in the use of ICT in teaching and learning. ICTEV promotes ICT within all levels of education and advocates the positive role ICT plays in enhancing teaching and learning.

Professional Learning

There is a range of professional learning programs and resources available for teachers, including awards, fellowships, and curriculum-focused professional learning. These are underpinned by the Seven Principles of Highly Effective Professional Learning which call for professional learning that is collaborative, embedded in teacher practice and aimed at bridging the gap between what students are capable of doing and actual student performance.

16.7 Western Australia

Online Professional Learning System (OPL)

The Online Professional Learning System (OPL) is the Department of Education and Training’s platform for delivering and managing online professional learning opportunities for staff.

Teachers Have Class!
http://www.det.wa.edu.au/education/curriculumict/pl/tchrs_have_class.htm

What is Teachers have Class is a free online professional learning program: using SchoolKiT’s pdPoint to improve your skills with Microsoft Office and the Internet that leads teachers through ICT integration ideas for the classroom with a wide choice of workshops to suit teachers of years 1-12.

edna collections on professional learning

edna’s theme page provides a collection of resources related to ICT professional learning in each state and territory of Australia. It includes links to ICT teacher assessment tools, tutorials and related training opportunities in each state.
Appendix G: Tankettes

Tankette conversations were held on the 8th and 29th of October, 2008. The first day’s conversation was mostly around setting up with a little preliminary discussion. The main body of the conversation, documented in the Appendix, took place on the 29th.

Consensus statements and statements from individual Tankette participants are cited where relevant within the Discussion. Participant information and transcriptions of relevant sections of the Tankette are available in Appendix G.

The views expressed in the Tankette are those of the participants and not of the jurisdictions they work in. The opinions and views expressed provide useful anecdotal information but do not represent statistically significant findings.

The following educators contributed to the online conversations.

### 17.1 Tankette participants

<table>
<thead>
<tr>
<th>Name</th>
<th>Role</th>
</tr>
</thead>
<tbody>
<tr>
<td>Susan Boucher</td>
<td>CEO, Principals Australia</td>
</tr>
<tr>
<td>Frankie Forsyth - Facilitator</td>
<td>Director, Pelion Consulting</td>
</tr>
<tr>
<td>Kerry Johnson - Facilitator</td>
<td>Education Officer and Multimedia Producer, Education.au.</td>
</tr>
<tr>
<td>Debbie Kember</td>
<td>Manager, Smart Classrooms Discovery and Development Program, Department of Education and Training, Queensland</td>
</tr>
<tr>
<td></td>
<td>President, Queensland Society for Information Technology in Education</td>
</tr>
<tr>
<td>Margaret Meijers</td>
<td>Teacher and Manager of ICT Learning at Taroona High School, Tasmania.</td>
</tr>
<tr>
<td></td>
<td>2006 – one of four teachers from around the world who were recognised in the Microsoft Innovative Teachers Awards, winner of the Teaching Australia award, Best National Achievement by a Teacher.</td>
</tr>
<tr>
<td>Cecilie Murray</td>
<td>Director of Delphian eLearning, specialising in learning innovations and strategic planning for ICT.</td>
</tr>
<tr>
<td></td>
<td>Previously senior manager of eLearning at the Department of</td>
</tr>
</tbody>
</table>
### 17.2 Summary statements from the tankettes

There is a clear sense that while there has been a great deal of effort to integrate ICT into the school curriculum, only a minority of teachers are currently using ICT to a significant degree in their teaching. Continuing the current path of professional learning is not sufficient if ICT is to be widely used to support a more relevant and appropriate curriculum.

In using ICT, there should be a focus on deeper student learning, including:

- inquiry
- collaboration
- student responsibility for learning
- acceptance of multiple sources of knowledge
- using the power of technology to assist in all the above.

Use of ICT is often focussed on low level skills that relate to the technology itself rather than learning about deeper principles such as skills and attitudes for problem solving and lifelong learning.
A learning program that does not incorporate technology is bad by definition because it does not provide students with the best opportunities to learn and does not prepare them for contemporary society.

Student achievement should be the focus of professional learning and accountability. It is not, however, the only focus.

There is a wealth of information available to measure student achievement and it should be used.

Teacher learning teams are the most effective long term means of professional learning, but their success depends on an appropriate school culture that is supportive. Teacher learning teams require accountability.

17.3 Conversation 1: Take up of ICT in schools

17.3.1 Pre-reading material

There are strong social, educational and economic pressures to use ICT in schools. There is large scale take-up of ICT in schools. Most schools have networks with computer:student ratios of around 1:5.

While there has been major expenditure and innovation in using ICT, there are significant barriers to successful use in schools:

- teachers' skills and understanding
- size of the task and constant change in the nature of ICT
- overlap and confusion between need for personal skills and new pedagogy
- lack of access to equipment and bandwidth for teachers and for students.

These difficulties result in a significant proportion of teachers not being strongly engaged in using ICT in their teaching.

17.3.2 Asynchronous conversation: Is this what it is like?

Mike:
All of these problems restate what has been obvious to many for some time, but I don’t see teachers in universities of schools making a great deal of progress on these issues. I also don’t see a lot of concern being expressed in the corridors that such progress is not occurring.

Greg:
There is such a lack of understanding about the nature of the tools that we can use in schooling today. If ever there was a tool that defines the convergence of ICT capabilities, it has to be the mobile phone.

John:
The discussion starter suggests that there are significant problems in implementing the digital revolution. Is this what it is like? Are there issues that need more attention?

Mike:
I’ve made it to this page after some rebuffs from the program so I’m feeling capable of solving some problems that arise as I engage with the digital world.
In fact I've been communicating digitally for much of today, using word processor, spreadsheet, email, browsers, and search engines. I've used my mobile phone too, though it doesn't have a camera and I don't access the web or email on the phone.

What impact will this digital knowledge and skill have on my teaching next week?

Well one of the rooms I will be in has no projector/computer system, so if I want to use that equipment I will need to book it and collect it. There is no connection to the web in that room so I won't be able to go live to the web.

In another room there is an integrated multimedia system - computer, display system, video unit, DVD player. I haven't been in that room for a month or two and last time I couldn't get the video to work once I switched from the computer display, and that messed up part of the session.

Of course I can get someone to take me through the system prior to my class. A well prepared teacher would do that and if I have time I will probably do that if I can get him at a time when I'm free.

Working this equipment isn't second nature to me yet and it will be very easy for me to update my notes from last year's classes, use the overheads I had then. I've also got a short section of the transcript of the video that could suffice if I put it in an OHT.

If I put my notes on Powerpoint will this qualify me as being in the digital revolution?

Frankie:

Hi Mike

Thank you for responding to our discussion starter.

Your experience in accessing this space and in your own teaching demonstrates that the barriers outlined in the discussion starter; ie 'teachers' skills and understanding' and 'a lack of access to equipment,' are still alive and well. I suspect too that your experience is a common one. Do others agree or disagree?

I'm also wondering if you've raised another barrier that hasn't been made explicit; that is, the need for teachers to see a reason or 'what's in it for me' before committing to the use of technology. You've said yourself that it would be easy for you to continue to do it the old way; is there any incentive to become more digitally oriented? What would make the difference for you? I know that you already have a high level of digital skill but what would help to make it 'second nature' to you?

And, chuckle, as for the notes in PP? Maybe if they were in PP and downloadable from the net?

Mike:

With regard to uptake of ICT by teachers and the challenges involved in increasing the level of that.

There are some practical issues that are relevant for my teaching environment and for school environments that I am in on a regular basis, so I shall talk about those situations. Recently I have been spending most lessons in one learning area with a group of Year 9 science students in high school.

In both these situations I see that for some teachers use of ICT hasn't reached 'grab it' status. By this I mean that if you consider that rare occasion when a teacher hasn't had time to plan a lesson there are some teaching and learning technologies that are easily available; e.g. book, worksheet, OHT.
In many cases ICT isn't as easily available. Some preparation will usually be needed to ensure that you can use ICT in the classroom.

In the Year 9 class there is an ICT trolley in the block of classrooms, but there are no computers in the lab where the students have all their science lessons.

Two issues here:

1. having access to the equipment and ICT-based teaching materials
2. having facility with these materials so that they move more toward a ‘grab it’ state.

In both my part of the university and the school teachers face both issues.

We need to have the equipment and more importantly the teaching and learning materials.

We need to know a lot more about the materials so that they can be used effectively so that the technology becomes ‘teachnology.’

We need to be able to exert effective control over the equipment. We can handle the book but for many teachers if the computer has a hiccup the retrieval procedures aren’t known.

All of this restates what has been obvious to many for some time. But I don’t see teachers in the university or the school making a great deal of progress on these issues.

I also don’t see a lot of concern being expressed in the corridors that such progress is not occurring. Perhaps this has to do with perspectives or beliefs that many teachers have that the effort needed to make changes to embed ICT will not be rewarded. Not just rewarded in say recognition for the teacher, but also not rewarded by better learning outcomes for students.

These beliefs about the effects of embedding ICT in teaching and learning might be further important issue

**John:**
I think you are right Mike about those two issues that crop up again and again: access and ability to move to the ‘grab it,’ ‘wow,’ or ‘that’s a game-changer’ moment.

The problem is that the two need to occur in very quick sequence. Often, teachers at whatever level get access and introduction and basic facility with an application and don’t quite get to the great student learning experience moment, when they can see a real curriculum benefit that justifies all the work. I think teacher learning almost needs to start with the ‘wow’ moment that is inspiring and then the learning of basics has motivation and the promise of reward.

That’s why I don’t like the basics first and fulfilment last approach to teacher learning.

**Margaret:**
I agree that teachers need to see a strong purpose for using ICT, otherwise it just becomes another thing to add to their already unmanageable workload. But I think the purpose for using it can ultimately lead to confusion about where we are going with ICT in education.

Teachers will use ICT if they can see that it will fairly easily make an existing practice easier and more efficient. For example, it is not hard to convince teachers to put some of their teaching resources online, so that they can be accessed easily anywhere and then modified for reuse ‘next year’ (especially if they have access to an efficient photocopier that will scan to PDF!). They will also
willingly let students use it for word processing, and similar tasks. These teachers want to use ICT to streamline existing practice and are unwilling to make fundamental pedagogical change.

Other teachers will adapt to include ICT use that has a ‘wow’ factor, but that also doesn’t require a steep learning curve. Once again, usually something that will solve an existing classroom problem; eg help kids understand a particular concept more easily, make doing drill and practice exercises more engaging. As soon as there is a steep learning curve involved, teachers become concerned that the use of ICT will get in the way of what the students are ‘meant’ to be learning in their classes. An example of this might be getting students to use ICT to create their own models and simulations for a science class. While all teachers would agree that it is a valuable learning activity, they see that it would take too much time from their ‘science teaching time’ to teach the students how to use it.

Very few teachers or schools are prepared to explore the possibilities of using ICT as the powerful tool that it is to fundamentally shift the foundations of schooling as we have known it for the last century. ICT offers enormous potential for supporting a complete restructuring of schools and learning, yet we are still mainly directing our energies to trying to overlay it onto our existing models and practices. Should we be working on a new model?

**John:**
Mike and Margaret make a similar point that is rather sobering:

‘Mike: ‘[teachers fear that] the effort needed to make changes to embed ICT will not be rewarded, not just rewarded in say recognition for the teacher, but also not rewarded by better learning outcomes for students.’

Margaret: ‘Very few teachers or schools are prepared to explore the possibilities of using ICT as the powerful tool that it is to fundamentally shift the foundations of schooling as we have known it for the last century. ICT offers enormous potential for supporting a complete restructuring of schools and learning, yet we are still mainly directing our energies to trying to overlay it onto our existing models and practices. Should we be working on a new model?’

This suggests that a more radical approach is needed to bring about necessary changes.

**Greg:**
I agree totally with your comments regarding uptake of ICT. There is such a lack of understanding about the nature of the tools that we can use in schooling today. For me, it is typified by the reluctance to even allow students to use mobile phones in classrooms. If ever there was a tool that defines the convergence of ICT capabilities, it has to be mobile phones. Students use it to communicate, organise, personalise, control, connect and publish. It bridges the physical barriers. It’s a powerful learning tool yet they are banned from schools through fear of inappropriate use. We think nothing of allowing a 16 year old to take control of a two tonne piece of metal hurtling down a road with other similar chunks of metal. We accept that the rules we insist they learn and the sanctions we place on them breaking those rules will allow for appropriate use. I think the same should apply to the use of mobile technologies.

The situation we face with ICT is that we have finally reached a stage where we have changed the paradigm. In previous years, the device controlled the learning. Today, learning controls the device not the other way around. That is why these tools are so popular and powerful.

We need to put these sorts of technologies into the hands of good teachers and to encourage them to use them creatively. It means opening up our networks, increase our capacity on the networks and to showcase innovation. Good teachers have always used good tools to enhance their practice.
When young people access new technologies, they don’t set aside extra time in the day to learn how to use it. They learn by doing it. They use trial and error; they share and collaborate, peer to peer learning. It happens in situ and in context. The same approach should apply to teachers.

We are in our early days of robust infrastructure but wireless is becoming increasingly pervasive. Some schools are moving from a concept of one to one access to one to many as we have ubiquitous wireless networks and mobility becomes the defining factor.

17.3.3 Synchronous conversation: Is there a need for a radical change of approach?

John:
Yes. It would be radical to focus on what we can do rather than the problems.

It seems we are all saying that things need to be significantly reoriented in regard to professional learning for teachers around ICT. More of the same is not satisfactory.

In my experience, there is any number of passionate, angry and excited advocates for major change around the use of ICT but these voices are not getting through to principals. We need major incentives for principals to engage with the issue.

Incremental change is always blocked by excuses and barriers. If we accept that there is no option but to use ICT in learning, then significant change is the logical outcome.

Greg:
No. It is a journey and a process that needs sophisticated and detailed planning. The priority has to be on teacher understanding, not the size of the pipes or the device used.

We need a relevant model of schooling for today’s world to stop student disengagement from learning. Teachers make the difference, so supporting teachers is critical. Collaborative professional learning from other teachers is the way to go, but it must be based on student achievement data. Let’s share what works.

Cecilie:
No. Not a radical change. The professional programs are in place and strategies for embedding ICT are well known. The issue is of time and funding for professional learning for every teacher in Australia. Effective professional learning documentation and research is out there in many systems, but resources are not up to it.

Susan:
Yes. The capacity and capability of teachers and school principals seems to be the main issue. We need to work with pre-service teachers as well as provide ongoing professional learning and leadership should show the way.

Margaret:
Yes. There is a general fear of creative uses of ICT; for example, mobile phones, but it is combined with many teachers’ lack of desire for change. We have had access to a range of technologies and reasonable bandwidth for quite a while, but change is only happening in small pockets.

It relates to teacher attitude. If a teacher is willing to try to overcome the hurdles they can do it, but if they are reluctant to go the extra mile when starting out with ICT then nothing happens. There is a lot of poorly utilised ICT resources at the moment.

It depends a lot on school leadership.
17.3.4 Issues to be investigated further

Susan:
- professional learning across the school leadership
- teachers, students, parents working together
- technical support (particularly in primary schools – novice teachers greatly frustrated when technology falls over)
- re-engaging disengaged students by ensuring they are central to this work and learning

Cecilie:
- models for professional learning that embed the technologies in teaching and learning
- funding commitment for every teacher in Australia
- teacher accountability through capability audits
- collaborative models for sharing and learning together
- time allocated in school day for professional learning

17.4 Conversation 2: ICT and student learning outcomes

17.4.1 Pre-reading material

Many system policy statements point to major changes in learning as a result of the use of ICT. Some statements are vague about how and why this is to be achieved. At the same time, many systems are under strong pressure to measure school outcomes which has resulted in testing of basic literacy and mathematics skills. Schools are therefore under simultaneous pressure to improve both basic and high level learning outcomes.

17.4.2 Asynchronous conversation: ICT and student learning outcomes

Cecilie:
Many system policies point to major changes in learning as a result of ICT. All the while we have pressure to improve literacy and numeracy skills while focussing on high level thinking skills.

How does ICT support improved learning outcomes?

Frankie:
Hi Cec

I thought the group might be interested in a couple of examples where ICT enabled improvement in my own daughter's literacy skills and the class in general in numeracy skills.

The school has a laptop program and so each child from yr 5 on has her own laptop. As part of the curriculum time for maths (or when there's any downtime) the kids are encouraged to 'play' on Mathletics (http://www.mathletics.com.au/), and in my daughter's case, Spelladrome. While the kids are playing (ie practicing their times tables with other kids around the world) the teacher then has time to work with individual students and assist with concepts that some find difficult. The Mathletics program provides results for individual students and has a range of levels.

The kids enjoy it so much that they use it at break times and weekends! As I type this some 1650 kids are using it.
Contrast that with my own experience on a Monday morning of the dreaded mental arithmetic and woe betide anyone who didn't have their tables off by heart. Those were the days of strapping and lines.

If this example is typical of what ICT in schools can achieve then I'd be very happy.

I'd be interested to learn of other examples you have of ICT supporting improved learning outcomes, either anecdotal or research based.

Cheers

Frankie

Margaret:
I agree Frankie that ICT can and should be used for the sorts of ‘drill and practice’ learning that you describe, especially for younger students with basics like spelling and basic maths facts. These are things that a machine can do far more effectively than a teacher, freeing up a teacher’s time to work on higher order tasks with students.

I am, however, concerned that often their use becomes restricted to only that sort of thing and publishing activities, when the kids have in their hands an exceptionally powerful tool to enhance learning and understanding of complex concepts. Examples of this would be use of free software such as Squeak EToys to explore concepts of gravity, velocity, acceleration etc, or Starlogo TNG to simulate and explore ideas students may have about complex real world systems, or Scratch to understand the concept of variables in mathematics. These types of tools enable students to use computers to explore ideas in ways that would not be otherwise possible.

The other area that I am passionate about is computer gaming. ‘Serious’ games, such as World of Warcraft, Civilisation, Spore etc support incredibly complex learning outcomes like visual selective attention, strategic lateral thinking, a range of management skills, collaboration skills and much more. Unfortunately very few, if any, of these learning outcomes are measured or tested for in school, and so, although most people would agree they are worthwhile leaning for the modern world, they are not particularly valued in schools.

So it really comes down to which learning outcomes we want to see improvement in, and whether they are the learning outcomes that we traditionally are measuring in schools.

Cecilie:
Margaret

I couldn’t agree more. I believe a new model is required. In the past couple of years I’ve been doing research on mobile devices in schools and what we’ve been finding is that they have the capacity to change the way teachers teach and students learn.

A range of teachers from traditional to innovative found that the kids took up the challenge really quickly and were working in teams, particularly including the socially isolated kids in their team as mentors in how to manage some tasks. What the teachers have noticed in two separate projects is that the power is taken from them by the students who direct the learning. The teacher then has time to support and provide insight around the edges.

All noticed change to their pedagogy and were able to reflect on what had happened and why. One very traditional teacher indicated that it was a realisation, making comments like: the kids just picked up the gear when they came in and went to work, they were so engaged with the tasks. What were they doing?
• creating podcasts of their science experiments
• reflecting on the concept of family in English
• composing music
• measuring the trajectory of their stroke in cricket
• developing skits in German
• a whole host of activities.

When interviewed the kids all indicated that they had learned more from working with peers, their test scores were well up in Maths, their writing, drafting, presenting and articulating has improved in English and so on. They could learn when and where they wanted with their handheld device and they were able to succinctly say ‘I could have put in more effort to the team’, and these were Year 8s in a low socio-economic area who were previously totally disengaged.

The teachers learned together in groups, sharing great ideas but also solving major issues together, including ICT skills, but the discussions were driven by pedagogy and ended with comments such as ‘it has changed the way I think about my teaching.’


17.4.3 Synchronous conversation: Do we need to aim for higher level learning?

Margaret:
Yes. Deeper, wider, higher learning.

Susan:
Yes, as long as we are talking about depth.

Cecilie:
Support for teachers to work in teams with students in inquiry or project based learning means that the students assist the teachers with the technologies in the classroom. They take the lead in their teams and in understanding and use of technology in the classroom, taking the pressure off teachers to know everything about the technologies.

John:
The focus that many people have on adding a pretty layer is not satisfying for teachers. They are motivated by their students’ high level learning.

Greg:
The issue is deeper learning. The concept of a hierarchy of skills is counter to the concept of a network of intersecting and interrelated skills which broaden and deepen learning.

17.4.4 Issues to be investigated further

John:
The learning outcomes need to be defined in actionable ways.

Margaret:
Focus on testing reinforces low level learning. Teachers who teach to the test can appear to be successful, so this reinforces traditional practice. There is little incentive for those teachers to take the step to other approaches that may not be rewarded by higher test scores.
Cecilie:
There is a need to embed ICT and elearning in the basic teaching and learning principles of good pedagogy and practices. It’s about understanding where the students are coming from, what their work is like, what technologies they are using and then engaging them in wanting to learn.

We need to develop a model for ICT professional learning that is consistent with good teaching and learning principles.

Greg:
- more student engagement
- students taking greater responsibility for their learning
- students sharing learning
- students using technology in learning

Susan:
- professional learning
- technical support
- change the roles of students and teachers
- collaborative networks for teachers and leaders
- not blocking social networking sites (Work with students around appropriate use instead.)
- system expectations need to be backed up by resources

17.5 Conversation 3: Professional learning and accountability

Pre-reading material

There is increasing interest in encouraging teacher professional development by rewarding superior performance. There is a complementary interest in specifying more clearly what constitutes good practice in teaching, and a growing rejection of the notion that teachers can base their teaching practices on personal preferences rather than evidence-based practice.

There have been many efforts by systems to define ICT skills and understandings. Many of these lists focus on low level competencies.

Asynchronous conversation: Professional accountability

Greg:
Drawing from the collective research of Elmore, Fullan, Robinson, Eddy, Hargreaves and Timperley, we know that:
- good teachers improve student learning
- good teachers improve through ongoing professional learning
- teacher learning is a collaborative process that requires time, trust, support and resources
- the focus for collaboration is not the individual theory base of a teacher but the evidence around student achievement
- collaboration must be monitored and measured for its effectiveness

(Marzano 2007)
The central question for professional accountability must be around ‘what does the research/data tell us about good learning and teaching?’

The broad issue is how we access, capture, share, evaluate and act on this evidence as a profession. It's accountability for continuous improvement.

**John:**
Greg's list of 'knowns' looks like a very useful sequence to base our thinking on regarding professional learning for teachers.

The fourth point is very interesting. I take it to mean that learning should be tested by measuring what the students can do, not the teacher's theory that is being applied. So this means being clear about what is to be learnt, and measuring teacher learning against this. Measuring success by what the students do rather than what the teacher can do. That would be refreshing.

The trap that we sometimes fall into is to specify low level outcomes for students rather than high level ones. If we put outcomes like, investigating, discriminating and synthesising up front we will be on the right track.

**Greg:**
John, that's exactly what I meant in point four and I agree wholeheartedly with your last comment. I think for too long, we focussed on minimal standards and low-level skills because they seem to be easy to quantify, a trademark of the industrial model. It's also led to a lack of understanding about what students are actually learning.

Our understanding of contemporary learning is that any effective improvement in the work we've done must be focussed on what students can and can't do not teachers' personal perceptions or worldviews.

This requires a lot more discussion and rigour. I think we can see that discussion and rigour happening as we move towards de-privatising practice and recognising teachers as co-learners in this environment.

I think this is where we need to focus our attention: how teachers are teaching and are they making a difference to learning outcomes.

An accountability framework could be structured around the following questions:

- Does teacher X contribute to systematic improvement of all learning in the school?
- Does teacher X work with other teachers to critique their own and colleagues practice?
- Does teacher X have a set of professional goals they are working to achieve in a defined period?

It seems these take the focus away from how many courses attended in a year or how many degrees a teacher holds.

In the same way, we're looking at the evidence of student improvement as data for decision making. We should look for evidence of teacher learning in much the same way.

**Cecilie:**
I came up with a model, a matrix actually, years ago for VIC Dept which has become ePotential, ICT Teachers Capability Resource, an online tool that assesses teachers' capabilities against a matrix or continuum. See the Continuum: [http://epotential.education.vic.gov.au/continuum.php](http://epotential.education.vic.gov.au/continuum.php)
The online survey is locked down but the showcase examples of good practice are useful for teachers. We originally designed it across 3 States (VIC, SA and NT) which then customised it for their individual needs: [http://epotential.education.vic.gov.au](http://epotential.education.vic.gov.au)

NT and SA have similar matrices for their teachers but I'm not sure how much they've developed theirs into tools.

It makes a good start when speaking about accountability.

**Greg:**
I think the matrix is a good starting point and have been used to make judgments on teacher competence using ICT. However, I think we are seeing other approaches emerging.

The work of Timperley and Robinson in NZ (Best Evidence Synthesis) looks to evidence of student achievement and learning outcomes through good practice. This is more integrated and a richer way of evaluating teacher performance and accountability.

Because of the way data on student achievement has been used in the US and UK in the form of raw scores and league tables, teachers have become suspicious (quite naturally) of such approaches to evaluation. We need to involve teachers in the discussion around how to best use data to inform their practice. Accountability is how teachers respond to the data not by taking a reductionist approach to schooling via league tables etc.


**John:**
I was interested by Greg's comment, ‘as we move towards de-privatising practice.’ This is an important point that Elmore mentions, that school practice is 'atomised' with each teacher doing their own thing without the expectation or opportunity to compare and test against whether the practices actually work with students.

Greg also mentioned 'rigour' in discussion between teachers. If the rigour is about comparing techniques for students to do high level learning, like communicating in powerful ways, then I am sure teachers would be engaged. ICT would naturally step forward because it suits the purpose, powerful communication.

**Greg:**
The focus for collaboration [for professional learning] is student achievement, not the individual theory base of a teacher, [and it] must be monitored and measured for its effectiveness.

Because of the way data on student achievements has been used in the US and the UK in the form of raw scores and league tables, teachers have become suspicious of such approaches to evaluation. We need to involve teachers in the discussion around how to best use data to inform their practice.

**Deb:**
When the light goes on about enhancing learning rather than making technology skills the learning the outcomes with staff and students are exponentially better and more interesting.

Synchronous conversation: Should student achievement be the focus of professional learning and accountability?

**Susan:**
Yes
Greg:
No. What do we mean by student achievement? And should this be the only focus? Of course I think learning is the focus, just not the only focus. I’m committed to what kids can and can’t do, but student achievement is a different ball game. The definition needs to be narrowed.

Margaret:
Maybe. It depends on what you mean by student achievement. My concern is that different people think student achievement means different things. Test results – no. Learning – of course. What else are schools for?

Cecilie:
Yes, it’s the main game. Teaching is focussed on student learning, so professional learning should support what students need to learn.

John:
Yes, but appropriate forms of assessment are required, as well as a sensitive learning culture.

17.6 Conversation 4: Effective professional learning – what does it look like?

17.6.1 Pre-reading material

Many system policy statements point to major changes in learning as a result of the use of ICT. Some statements are vague about how and why this is to be achieved. At the same time, many systems are under strong pressure to measure school outcomes which has resulted in testing of basic literacy and mathematics skills. Schools are therefore under simultaneous pressure to improve both basic and high level learning outcomes.

17.6.2 Asynchronous conversation: Effective professional learning: what does it look like?

Cecilie:
There appear to be two streams in ICT professional learning:

- personal proficiency with ICT skills and technologies
- embedding it in your teaching pedagogy and practice in the classroom.

But what is effective professional learning and what does it look like? How do we learn together and support our colleagues?

John:
I think there is lots of evidence that teachers learn best from their peers. Having presented lots of workshops for teachers and principals on the wonders of ICT I am quite sceptical of the value of this sort of activity.

Cecilie:
I’d agree with you but I think there are two elements here. Teachers need to be made aware of the possibilities and innovative practices in other schools, which can be done through one-off sessions, but then that needs to be followed up with a structured approach or program in their own school where they learn with a group of peers about implementing innovative practices in their classrooms, sharing what works and what doesn’t.

A good example of this was a teacher I worked with last year - great teacher with ICT skills but no understanding of how to implement in the classroom where students worked in teams on an inquiry
project using emerging technologies. She’d always had complete control of the kids and directed their learning. At the end of the project, she commented upon the fact that kids directed their own processes and that ‘groups work’ which meant she was able to give up the control mentality. The kids’ engagement and performance had both improved, and she had become a mentor for her peers in the process.

**Cecilie:**
The 7 principles of highly effective professional learning:


An effective teacher in an effective school is the highest determinant of student success. Teaching is a dynamic profession and research indicates engaging teachers in high quality professional learning is the most successful way to improve teacher effectiveness. The seven principles of highly effective professional learning (Department of Education & Training, Victoria, 2005) support schools transforming, in moving towards Marzano’s ideal model where effective teachers in effective schools enable students to achieve remarkable successes.


Has anyone seen any other effective models?

**John:**
These are the 7 principles from the Victorian Department of Education and Training that Cecilie has mentioned. They look good to me.

The seven principles are designed to underpin the delivery of high quality professional learning to improve student outcomes and apply to all levels of the system – school, network, region and centre.

1. Professional learning is focused on student outcomes (not just individual teacher needs).
2. Professional learning is focused on and embedded in teacher practice (not disconnected from the school).
3. Professional learning is informed by the best available research on effective learning and teaching (not just limited to what they currently know).
4. Professional learning is collaborative, involving reflection and feedback (not just individual inquiry).
5. Professional learning is evidence based and data driven (not anecdotal) to guide improvement and to measure impact.
6. Professional learning is ongoing, supported and fully integrated into the culture and operations of the system – schools, networks, regions and the centre (not episodic and fragmented).
7. Professional learning is an individual and collective responsibility at all levels of the system (not just the school level) and it is not optional.
Mike:
The current path of professional learning does not seem to be resulting in a significant spread of use of ICT in teaching. What might improve the pace of uptake among teachers? Some possibilities:

1. One possibility is that the issue is not confronting teachers. Rather ICT is in the workplace but it is still part of the background, the low-level noise in the place. Computers are in many rooms, phones and MP3 players are in pockets or bags. The internet is used at home for email, talking to the relatives overseas, and for checking on the weather radar etc. But for most there is nobody saying, ‘Hey. You must know how to use this by next month!’

2. Teachers are not convinced that the extra effort will be worthwhile, either for their presentation of the material or for the quality of the students' understanding.

3. Teachers see possible benefits, but don’t know how to generate these for their own classes. No one is shaping their growth in understanding.

4. Teachers haven’t been able to quarantine time and people resources to get the benefit for themselves and their students. Or these resources have not been provided in the school time and funding budgets. As has been noted these teachers are likely to need both these resources - time and access to a suitable teacher or student mentor.

5. The teachers got the basic instruction but this didn't extend to providing them with a functional product that could be used by students in the classroom, or in some other part of their work. Perhaps the teacher saw the students in Room 26 using the material they had gathered on their phones but the teacher didn't know how to access that material for future lessons and didn't ask.

6. The teachers fear relinquishing control of material.

7. The teachers don’t realise the extent of use of ICT by their students outside the school. If this is the cases the teacher and students might be using different sets of curriculum resources.

John:
- Learning teams in the school
- Strong but not singular focus on deep learning. The basics get attention.
- Assessment of achievement is largely a school based issue.
- High level student performance is a key measure of whether teacher professional learning is working, along with other data.

Margaret:
It would look like kids directing and managing their own learning, collaboratively with other people, with support and guidance from teachers. Kids setting goals and striving to achieve them.

We need to convince school leaders that change is required and to free up opportunities for teachers and students to work collaboratively. It takes courageous school leadership to bring about change.

Susan:
- National testing, but also great richness of learning for individual students.
- There is so much other work and data available to schools and we need to recognise and acknowledge it in the way we work with teachers, principals and students.
• Different experiences, opportunities and networks within the school, outside the school and across the world.
• This is not just about educators. We need the rest of the world to catch up.
• Assessment and reporting will need to change at all year levels.

**Greg:**
What students can and cannot do is critical to the purposes of schooling. How the learning is encouraged and deepened will lend great insights to teachers’ work. We need both qualitative and quantitative ways of looking at this.

• Teachers negotiating the timetable to allow the time needed.
• Integrated work units based on personalised learning.
• Deprivatising teaching practice for collaboration.
• Sharing good teaching and rewarding it.
• Demanding diversity.

**Cecilie:**
• Student learning teams on inquiry projects.
• Teachers working together in professional learning teams to improve their performance in a supportive environment.

Teachers meet in teams on a regular basis to work on data and evidence of their practice and student performance. Time must be given for this and the work should focus on schools and not administration and meetings.

17.7 **Conversation 5: Professional development**

**Pre-reading material**

Successful organisational professional development depends in part on clarity of purpose, and ICT development has complex goals, including:

• personal proficiency in using ICT
• knowing how to adapt and develop methodologies to take advantage of ICT
• being able to adapt to new developments.

Professional development literature consistently supports the development of ‘learning communities’ in which teachers investigate, trial, test and reflect on how new approaches impact on student outcomes. Three key features of this approach to professional development are: proximity to the classroom, collaboration and focus on student outcomes.

Leadership is critical to staff development and the concept of ‘learning communities’ requires a sophisticated and adaptable type of leadership. There is growing support for the peer support for principal-development, termed ‘system leadership.’

17.7.1 **Asynchronous conversation: What are the desired outcomes of professional learning?**

**Margaret:**
It really comes down to which student learning outcomes we want to see improvement in, and whether they are the learning outcomes that we traditionally measure in schools.
**John:**
The trap we sometimes fall into is to specify low level outcomes for students rather than high level ones.

**17.8 Conversation 6: Which approach will improve learning in today's world?**

Asynchronous conversation - Which approach will improve learning in today's world?

**Deb:**
In decades past the knowledge and skills with which teachers commenced their career were generally adequate for life, whereas now, new knowledge, teaching tools and strategies are emerging frequently during a teaching career requiring a commitment to ongoing professional development and pedagogical change.

How do we best frame a narrative about learning and Information and Communication Technologies (ICT) use within this context?

It is about doing old things in old ways and adding on technology to tried and testing ways of learning to keep up with the tools of the time and engage students?

Or is it about doing old things in new ways and integrating the best of the past with contemporary technologies to enhance learning?

Or is it about doing new things in new ways and enabling learning experiences that weren't previously possible without the use of ICT and pedagogy that makes sense in a digital world?

Or are there other approaches we need to consider?

The narrative we create about learning has an impact on the approach to using ICT; ie skills focus or learning focus?

If we consider learning to be recalling facts, practising skills or content to be worked through, then ICT can provide short term engagement in drill and practice as well as publishing for a local audience.

If learning is viewed as a process to prepare students for the digital world in which they will be living, then ICT will change the way learning takes place, how it takes place and what is learned.

The research clearly tells us that ICT is no guarantee as to the development of contemporary perspectives on how teaching and learning best occurs nor the does it necessarily lead to valuable student learning (Kenewell, 2008, Mishra, & Koehler, 2006).

Additionally In isolation, or in addition, ICT skills simply allow faster access to information, more efficient processing and clearer presentation. Such an approach best supports a continuation of traditional methods of learning albeit faster, more reliable and with increased interactivity (Noss & Pachler cited in McNair & Galanouli, 2002).

Transforming pedagogies to support learning in a digital world requires an understanding of how, where, when and when not to use information and communications technology (ICT) in teaching and learning.

Where do we start to improve learning in today’s world?
John:
Very well put, I think, Debbie. Am I right to make the follow conclusions?

‘Additionally In isolation, or in addition, ICT skills simply allow faster access to information, more efficient processing and clearer presentation. Such an approach best supports a continuation of traditional methods of learning albeit faster, more reliable and with increased interactivity (Noss & Pachler cited in McNair & Galanouli, 2002).’

...that this is pretty limited gains from the use of ICT.

‘Transforming pedagogies to support learning in a digital world requires an understanding of how, where, when and when not to use information and communications technology (ICT) in teaching and learning.’

...here the gains are much greater and richer, but more sophisticated application, more difficult to achieve.

Deb:
Hello John

Your conclusions are valid however I am not sure that the second approach is more difficult or just a different way of thinking, working and designing professional development.

I have been interviewing career-change beginning teachers with high level ICT skills recently. While some have gone into schools and shown teachers (eg. 50 things to do with Word), as soon as the ‘light goes on about enhancing learning rather than making the technology skills the learning’ they tell me that they take a very different approach and the outcomes with staff and students are exponentially better and more interesting.

I think it is all in how we support our colleagues to get beyond thinking that they need to teach students how to make keystrokes

Deb

John:
Yes, Debbie, as you put it, ‘the light goes on’ is really crucial. It is so easy to see the use of technology as the goal, especially if one is a technology enthusiast.

My current hero Richard Elmore, the leading US School Reform leader, puts a strong focus on student learning outcomes as the measure of reform rather than process activities, like having lots of use of ICT and so on. Elmore’s second law is: ‘the effect of professional development on practice and performance is inverse to the square of its distance from the classroom.’

Here is a blog I did about a report for the OECD in which he has a very good chapter on school improvement (not just about ICT):


If teachers are focusing on high level curriculum outcomes like, searching and selecting evidence, then they will naturally tend to look to the Internet to help them achieve this.

Can a real focus on this sort of outcome drive teacher professional learning?


Williams, Andrew. 2008. *Situation analysis*. Education.au. Embargoed for use only within DEEWR.


http://www.aictec.edu.au/aictec/go/home/about/cache/offonce/pid/95


Pesce, Mark. 2007. *Challenges and opportunities: Peer-produced knowledge and Australian education.*

http://www.thejournal.com/articles/24383


http://www.educationcounts.govt.nz/publications/series/2515/15341


1 Commonwealth of Australia. Australian Flexible Learning Framework. 2007. LearnScope
http://www.learnscope.flexiblelearning.net.au/learnscope/go/cache/offonce/pid/2;jsessionid=C1CABB5F471CE
E272E53178B1865ED02


3 Home | ACARA. 2009. Australian Curriculum, Assessment and Reporting Authority.

http://www.thejournal.com/articles/24383

5 Home | ACARA. 2009. Australian Curriculum, Assessment and Reporting Authority.

6 Government Media Release. 2009. Australia takes lead on bringing students into the 21st Century

of the Information and Communication Technology (ICT) knowledge and Skills level of Western Australian
Government School Teachers.

http://www.iste.org/

9 Department of Education, Science and Training. 2002 Raising the standards: A proposal for the development
of an ICT competency framework for teachers.


Educational Goals for Young Australians.

12 AICTEC. MCEETYA. 2008. Joint Ministerial Statement on Information and Communications Technologies in
http://www.aictec.edu.au/aictec/go/home/about/cache/offonce/pid/95


14 Home | ACARA. 2009. Australian Curriculum, Assessment and Reporting Authority.

16 Australian Curriculum, Assessment and Reporting Authority. 2009. The Shape of the Australian Curriculum. 

17 Australian Curriculum, Assessment and Reporting Authority. 2009. The Shape of the Australian Curriculum. 


http://www.groups.edna.edu.au/


27 Ministerial Council on Education, Employment and Youth Affairs, 2008, Melbourne Declaration on Educational Goals for Young Australians, Reference: 


33 About us. 2009. The Le@rning Federation.
http://tif.edu.au/for_jurisdictions/about_tlf/about_tlf.html

34 Freebody, P, Muspratt, S, McRae, D, 2007, Evaluating TLF’s online curriculum content initiative: Summary of findings from surveys, site visits and a field experiment, The Le@rning Federation, Reference:

35 Australian Curriculum, Assessment and Reporting Authority. 2009. The Shape of the Australian Curriculum.

36 Australian Curriculum, Assessment and Reporting Authority. 2009. The Shape of the Australian Curriculum.

37 Australian Curriculum, Assessment and Reporting Authority. 2009. The Shape of the Australian Curriculum.
12.

38 Australian Curriculum, Assessment and Reporting Authority. 2009. The Shape of the Australian Curriculum.
15.

39 Australian Curriculum, Assessment and Reporting Authority. 2009. The Shape of the Australian Curriculum.
7.

http://www.aictec.edu.au/aictec/go/home/about/cache/offonce/pid/95

http://www.aictec.edu.au/aictec/go/home/about/cache/offonce/pid/95


http://www.thelearningfederation.edu.au

http://www.flexiblelearning.net.au


61 Pont, B et al Ed. Improving School Leadership Volume 2: Case Studies on System Leadership, 2008 OECD. http://www.oecd.org/document/18/0,3343,en_2649_39263231_41165970_1_1_1_1,00.html
Council of Australian Governments. National Partnership Agreement on Improving Teacher Quality

AICTEC’s Teaching for the Digital Age Work Plan 2009-2012


http://www.edna.edu.au

http://www.thelearningfederation.edu.au

Tankette discussion. 2009. Education.au.


Reynard, Ruth, Technology’s impact on learning outcomes: Can one be measured?, T.H.E. Journal.
http://www.thejournal.com/articles/24383


91. The Australian Curriculum, Assessment and Reporting Authority. 2009. The Shape of the Australian Curriculum.

92. The Australian Curriculum, Assessment and Reporting Authority. 2009. The Shape of the Australian Curriculum.


Victorian Essential Learning Standards.  

Home – Board of Studies NSW. 2009. NSW Government.  


http://www.cisco.com/web/about/citizenship/socio-economic/globalEd.html

http://www.21stcenturyskills.org/index.php?option=com_content&task=view&id=254&Itemid=120

http://www.iste.org/


http://www.iste.org/


http://www.tda.gov.uk/
   http://www.ccsso.org/Projects/interstate_new_teacher_assessment_and_support_consortium/

   http://www.nbpts.org/

127 UWS, ACSA, ACCE, TEFA. Raising the standards 


