LEADERSHIP AND LEARNING WITH ICT

Voices from the profession

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University of Canberra
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<table>
<thead>
<tr>
<th>Abbreviation</th>
<th>Full Form</th>
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<tr>
<td>ACT</td>
<td>Australian Capital Territory</td>
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<tr>
<td>DEST</td>
<td>Department of Education, Science and Training</td>
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<tr>
<td>DfES</td>
<td>Department for Education and Skills</td>
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<tr>
<td>ICT</td>
<td>Information and Communication Technologies</td>
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<tr>
<td>ISTE</td>
<td>International Society for Technology in Education</td>
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<td>IT</td>
<td>Information Technology</td>
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<td>MCEETYA</td>
<td>Ministerial Council on Education, Employment, Training and Youth Affairs</td>
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<tr>
<td>NCREL</td>
<td>North Central Regional Educational Laboratory</td>
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<td>PDA</td>
<td>Personal Digital Assistant</td>
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<td>PICTL</td>
<td>Partnerships in ICT Learning</td>
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<td>QTP</td>
<td>Quality Teacher Programme</td>
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<td>UK</td>
<td>United Kingdom</td>
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<td>USA</td>
<td>United States of America</td>
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- Tom Croker, Australian Primary Principals Association
- Olivia Clarke, Program Implementation Advisor, The Le@rning Federation
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EXECUTIVE SUMMARY

‘Leadership matters’ and ‘start with the pedagogies, not the technologies’, say Australian educators. *Voices from the profession* provides an overview of what a cross-section of over 400 of Australia’s educational leaders saw in 2005 as factors that contribute to how leadership supports learning with information and communication technologies (ICT) in Australian schools. It presents some of the issues raised and solutions proposed by the educational leaders who participated in this research. This paper draws on the words of the participants throughout, to illustrate findings and to give the report authenticity.

This research shows that integrating ICT into teaching and learning is affording educators opportunities to shift from teacher-centred to student-centred learning. Participants indicated that to integrate ICT into teaching and learning requires schools to have a clear ‘whole school’ strategic focus on learning, teaching and organisational improvement; and this requires leadership. They suggested a whole school approach to incorporating ICT into teaching and learning requires taking into account philosophical, pedagogical, physical and practical considerations in an integrated way across a school, where professional learning and in-school processes are regularly reviewed and revisited.

School principals were identified as critical and pivotal people for establishing and maintaining learning environments compatible with student-centred approaches to teaching and learning with ICT. Principals are seen as in-school curriculum and pedagogy leaders and are considered by their school communities as central figures in leading processes for creating the conditions to teach and learn with ICT. Participants recognised however that establishing sustainable structures of a school to enable a culture of inquiry accompanied with an information technology (IT) backbone, where pedagogy drives organisational decisions including the deployment of ICT, is a complex task: one that for many school leaders requires them to facilitate significant organisational changes.

Participants indicated there are educational, financial and social implications to any decisions concerning the deployment of ICT in schools. They suggested school leaders and particularly the school principal must understand the consequences potential changes may have for a school community, and understand their decisions reflect what is valued in teaching and learning at the school. The breadth and depth of the changes being generated as educators integrate ICT into teaching and learning raises questions about what sorts of professional learning is required to improve the workforce capacity of Australian educators. Participants highlighted the role school leaders have in enabling professional learning to meet the emerging trends in school education, including supporting the integration of ICT into teaching and learning.

The Main Report of this paper outlines participants’ responses according to the following headings: ‘teaching and learning with ICT’; ‘school leadership’; ‘professional learning’; ‘school organisation’; and ‘future directions’. During the research, participants regularly indicated that they benefited from visiting other schools to see how the leaders and teachers in those schools undertook their work integrating ICT.
into teaching and learning. They also indicated that where school visits were not possible or practical, case studies were a useful way of highlighting other schools’ approaches and solutions. Part 2 of this paper then, provides three case studies to highlight school organisation, professional learning and models of leadership gathered from schools integrating ICT into teaching and learning.
PART 1: MAIN REPORT
1. INTRODUCTION

This paper provides an overview of the outcomes from the national data collection processes undertaken as part of the Leadership and Learning with information and communication technologies (ICT) project sponsored by Teaching Australia - Australian Institute for Teaching and School Leadership. The aim of the Leadership and Learning with ICT project was to develop deeper, more specific knowledge about the nature of educational leadership required in Australia for the integration of ICT into teaching and learning. This research project set out to investigate ‘how does educational leadership support learning with ICT in Australian schools?’ The data collection focussed on the relationships between school leadership and the integration of ICT into teaching and learning. School-based leadership practices that support teachers’ professional learning and enable decision-making about the use of ICT in schools and their impact on students’ learning, were identified. It is intended this research inform considerations about the professional development that supports teaching and learning with ICT.

1.1 Focus groups

Data was collected through forty focus groups conducted in all Australian states and territories, with 414 participants consenting to take part. Participants were drawn from a cross-section of government and non-government school education communities across the breadth of year levels, subject and across-curriculum areas found in Australian schools. The majority of participants are educational leaders in schools, systems, sectors and universities, with experience in planning, using and/or integrating ICT into their work and the work of schools.

The researcher facilitated the focus group processes with the assistance of the software Zing1. The Zing software system is an Australian product that enables a network of multiple keyboards to be linked to a single portable computer with each keyboard allocated its own self-contained space with several cursors able to work on the same screen at once. To gather the data in this research, Zing was set up with twelve keyboards linked to the portable computer that allowed a total of thirteen cursors to operate at once on the same screen.

With the use of a datashow and large screen, the focus group questions were shown visually and participants were asked to undertake a process of ‘talk-type-read-review’. Participants were encouraged to discuss the focus group questions to clarify their ideas, and then record their views by directly entering them into the computer without mediation from a third party. Following each focus group all participants received a transcript from the session in which they participated.

Further details about the data collection methods for this research are outlined in Appendix One.

1 Further information about Zing is available at http://www.anyzing.com.
2. TEACHING AND LEARNING WITH ICT

Across all focus groups, participants stated that the ‘core business’ of schools is teaching and learning. They also indicated that before any school or school system can have effective policies and practices to incorporate ICT to support learning and teaching, the school must have a clear vision of the learning it is aiming to foster and the organisation it is aiming to be. They indicated school leaders must be able to articulate their aspirations as endpoints including what sort of learning and learners they are trying to develop and what organisational structures will support their development.

Participants indicated once a school is able to articulate the sorts of learning and organisational arrangements to which it aspires, then it can work back from those points to determine what professional learning is required in order for the outcomes to be achieved.

Participants discussed the relationships between pedagogies and technologies; learning theories; learning styles; ways of labelling learning with ICT; and some of the challenges they face in schools. Their views are summarised in this section, which provides a backdrop against which to consider the role of school leaders in supporting the integration of ICT into teaching and learning and to reflect on the nature of professional learning required to support such activities.

2.1 Pedagogies before technologies

Participants across the focus groups asserted that pedagogical decisions should precede technology decisions in schools. As one participant said:

senior staff and leaders need to focus on learning – this drives decisions about procurement, technical support and professional learning.

Participants also indicated that ICT is being incorporated into all year levels of schooling in Australia. Many participants indicated they consider it a more complex task to integrate ICT into teaching and learning than to incorporate it into the administration of a school. They indicated that embedding ICT into teaching and learning represents whole school change. As such, contingent, strategic leadership styles were identified as central to achieving the changes required to integrate ICT into teaching and learning. These leadership approaches were identified as they can be strategically modified and adapted to meet changing circumstances.

2.2 Teaching and learning theories

Participants commented on several different learning theories which are informing their teaching and learning strategies incorporating ICT, and guiding their processes of development and review of online resources. Theories of ‘constructivism’\(^2\) were

\(^2\) The general meaning attached to the term ‘constructivism’ refers to the concept that each learner individually and
discussed by participants and references were made to the priority placed on 'constructivist' approaches to teaching and learning by some state and territory school systems. Relationships between brain theory and learning styles that include ICT are also an emerging interest for some around the country. Other theorists the participants mentioned who inform their integration of ICT into teaching and learning included Gardner's 'Multiple Intelligences' (Gardner 1983); de Bono's '6 Thinking Hats' (de Bono 1985); Bloom's 'Taxonomy' (Bloom 1984); and the Habit's of Mind (Costa & Kallick 2005). Participants also indicated that to support staff to reflect, review and learn from their forays into including ICT into teaching and learning, action research (Kemmis & McTaggart 1988) remains valuable.

2.3 Approaches to learning

Participants identified ICT as a motivator for students to learn. They indicated that students tended to be more motivated and engaged with their learning when it involved solving problems with the application of ICT. Participants identified characteristics of teaching and learning with ICT that focused on the ICT as environments for learning rather than only being tools simply to get a task done.

Pedagogical approaches reported as enabling meaningful inclusion of ICT into teaching and learning included:

- Authentic learning tasks through activities grounded in the students' day-to-day realities;
- Problem-solving activities where ICT provides the means for online research and access to multimedia content;
- Using the functionality afforded in software to enter data for analysis; and
- Enabling students to learn vicariously about other cultures and perspectives.

Participants reported a variety of characteristics of teaching and learning they aimed to foster. They suggested that planning learning activities should start from what it is the students are expected to achieve. The characteristics focused upon by the participants were in the main, student-centred, inquiry-based approaches to teaching and learning. Higher order thinking with a view to developing students' deep understanding and ability to construct insightful questions, were also identified as desirable objectives for teaching and learning with ICT.

Opportunities for students to undertake both individualistic and collaborative learning were emphasised as necessary for students' development. Individualistic learning within the context of teamwork was emphasised. Learning about and understanding of different cultures and perspectives with the assistance of ICT was

socially constructs meaning as he or she learns (cf Hein 1991). Social constructivists suggest that learning involves active processes where learners develop and construct new concepts and understandings based upon their past and current knowledge (cf Bruner 1960, 1986, 1990).

Brain theory is based on analysing the structure and function of the brain and examining the relationships between brain function and learning (cf Bransford, Brown & Cocking 1999; Caine & Caine 1991).
recognised as a benefit of incorporating ICT into teaching and learning. Digital portfolios\(^4\) were promoted as emerging methods for assessment and reporting of students’ learning. In recognition that students’ lives beyond school will continue to include a wide range of technologies, a goal identified to be achieved by students on leaving school was that they have the capabilities required to be autonomous, lifelong learners. Creating a school culture that values independent learning for students, either when operating as a member of a team or to achieve individual outcomes, was identified as important to school leaders’ work.

Figure 1 provides an overview of some of the characteristics of teaching and learning identified by the participants.

<table>
<thead>
<tr>
<th>Characteristics of teaching and learning with ICT</th>
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<tbody>
<tr>
<td>• ICT is embedded across the curriculum (K-12)</td>
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<td>• Learning to learn (L2L) is encouraged</td>
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<tr>
<td>• Inquiry-based learning is fostered</td>
</tr>
<tr>
<td>• Problem-solving approaches are encouraged</td>
</tr>
<tr>
<td>• Integrated themes are used to enable students to make connections between different learning outcomes</td>
</tr>
<tr>
<td>• Learning is grounded upon authentic tasks</td>
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<tr>
<td>• Multi-literacies are developed</td>
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<tr>
<td>• There is an emphasis on creativity not just productivity</td>
</tr>
<tr>
<td>• Both individualistic and collaborative approaches to learning are supported</td>
</tr>
<tr>
<td>• Independent learning is valued including in teams</td>
</tr>
<tr>
<td>• ICT is deployed to enable students to learn vicariously about other cultures and perspectives</td>
</tr>
<tr>
<td>• ICT supports the achievement of the required learning outcomes</td>
</tr>
<tr>
<td>• Access from home and school to learning requirements is enabled</td>
</tr>
<tr>
<td>• Access to teachers outside of school hours is fostered.</td>
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Figure 1: Characteristics of teaching and learning with ICT

2.3.1 Indicators

One participant provided the following description of the sorts of indicators that demonstrate ICT is included in teaching and learning:

There is evidence that thought has been given to integrating the use of ICT with the broad teaching and learning goals of the school. The use of ICT has gone beyond simple presentation skills and simple research tasks and is related to higher order thinking and visualising

\(^4\) Digital portfolios or ePortfolios use software and multimedia applications to create and record digital evidence of processes and achievements for the purposes of assessment, reporting and profiling. Digital portfolios can contain data such as a collection of evidence and artifacts demonstrating what a person knows and can do.
activity. Students routinely use ICT across the curriculum and understand issues to do with its strengths and weaknesses in a variety of contexts.

Some of the practical descriptions of how ICT is being incorporated into teaching and learning provided by participants included:

- Incorporating Internet research strategies into their teaching and learning;
- Including blogs as part of students’ reflective writing tasks;
- Using digital portfolios to enable students to map their learning pathways, to see the distance they had travelled in their learning and to report students’ progress to parents;
- Encouraging students to use the school intranet to enable them to submit their assessment pieces;
- Communicating with students via email to clarify requirements of their learning;
- Supporting students to share their learning and life experiences with students in other schools both in Australia and overseas;
- Celebrating achievements by posting students’ work to the school website;
- Incorporating multimedia learning objects (such as those produced by The Le@rning Federation) to enhance students’ understanding of complex concepts;
- Supporting students to create class websites and use wikis\(^5\) to create digital records and foster conversations through the web;
- Utilising ipods for capturing students’ conversations and music and drama performances;
- Using audio software to assist students in practising their language skills in English and in languages other than English;
- Enabling students to play and deconstruct online games (eg SimCity, Runescape) to build students’ capacity to collaborate in online environments; and
- Contributing to collaborative knowledge-making spaces (eg Wikipedia).

The examples provided by participants of how ICT, in 2005, is being incorporated into teaching and learning, were extensive. The examples extracted and presented here are provided for illustration purposes. It is not intended to suggest the teaching and learning approaches outlined above are widespread or embedded into the work of all schools, but the examples do provide insights into the directions Australian schools are taking with incorporating ICT into teaching and learning.

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\(^5\) Wikis are a type of website that allow anyone to edit, delete or modify information on the website.
2.4 Labelling learning

Descriptions by participants of learning with different sorts of technologies tended to include the following phrases: ‘online learning’, ‘e-learning’, ‘flexible learning’, and ‘blended learning’. Both the phrases ‘online learning’ and ‘e-learning’ tended to be used to refer to the activities undertaken with the use of online content, that is, with the use of the resources available on the Internet for a learning activity. The phrase ‘flexible learning’ was used to refer to a range of learning activities that occur in different contexts, including distance education, to cater for differences in students’ learning styles and interests. The label ‘blended learning’ tended to be used to refer to a suite of activities that included both face-to-face learning together with distance learning, as well as face-to-face learning with the use of resources available with computers and the Internet in the classroom.

2.5 Challenges

Some challenges concerning the inclusion of ICT into teaching and learning were also raised in the focus groups. These challenges centred on ethical and appropriate uses to which ICT is put in teaching and learning.

One challenge identified was an emerging tendency by some students to plagiarise directly from the Internet rather than using the Internet as one of many sources of information, including books. It was not seen in the best interests of students’ learning while adding to teachers work. Indeed, the ability of teachers to check for plagiarism by students from the Internet requires teachers to have the required technical skills to enable them to check students’ work alongside the Internet materials.

Participants indicated students understanding of the differences between plagiarising from the Internet and using it as a resource is a key capacity students must develop. Participants argued that students require skills and understandings to check the veracity of information they locate from online environments. In addition, participants identified critical literacy skills as essential for students to make meaning from what they are accessing from the Internet. They indicated students need to learn to question written information rather than simply accept its ‘truth’. Furthermore, the participants indicated they felt the necessity for professional learning to support them to lead and manage these pedagogical issues positively. They suggested that they required the skills to assist teachers learn how to set tasks that cannot generate plagiarised responses.

Other challenges centred on using ICT as an ‘electronic babysitter’ for those students who are early completers of their class work. Participants expressed the view that technology should not be included in teaching and learning as a reward for those students who successfully complete their ‘real work’ faster than their classmates. Rather, it was suggested ICT should be made accessible to all students, as a natural part of teaching and learning activities.
Some participants questioned whether ICT reinforces poor quality teaching. They indicated they were concerned some teachers who are comfortable with didactic approaches to teaching were using ICT to reinforce their teaching styles rather than broadening their approaches to include more student-centred, inquiry based approaches. Indeed, many participants held the view ICT does not make poor quality teachers better.

A few participants stated concerns about the potential costs and liabilities the newly emerging digital copyright requirements may bring schools. Concerns were raised about the potential implications for school leaders’ work such as understanding the new requirements and managing the necessary compliance arrangements at the school level, proposed under the new regime of copyright protection. They indicated concern that digital copyright arrangements may work to dampen enthusiasm among teachers for including digital environments and digital content in their lessons. In particular, among the participants who raised this issue, concerns centred on the potential costs associated with incorporating websites into teaching and learning activities, and the potential record-keeping implications arising from the processes of management and enforcement required to administer the proposed arrangements.
3. SCHOOL LEADERSHIP

This section provides an overview of the participants’ views of attributes, roles and challenges emerging for school leaders as they support the integration of ICT into the pedagogical practices within schools. It builds upon the previous section which outlined participants’ views about learning with ICT.

School leaders, and in particular school principals, were considered by the participants in this research to have significant philosophical and practical responsibilities for the integration of ICT into teaching and learning. School principals were identified as important in leading the processes for creating a school culture, developing leadership in others and setting the directions for pedagogy within the school. One participant put it this way:

The schools where I have seen ICT seamlessly integrated in teaching, learning and administration have a strong vision and commitment from all members of the school community and a real understanding of the ways technologies can be used to extend, expand, amplify and create new learning opportunities. The principal and senior staff understand the possibilities and develop leadership across the school community.

The role of school leaders, but particularly the school principal, was seen by participants as critical to both the provision of learning environments that are compatible with student-centred, inquiry-based approaches to teaching and learning with ICT, and to the provision of reliably functioning technologies.

Many participants indicated it was important for the school principal to ‘lead’ not just ‘support’ the integration of ICT into teaching and learning. This view was expressed in the context that school principals should be the curriculum or pedagogical leader within the school. Since ICT is intimately related to issues concerning teaching and learning, participants indicated that principals would be derelict in their work if they did not take a leadership role in integrating ICT into teaching and learning. As one participant put it:

Leadership in schools is very important: if there is none, then the school can’t effectively manage an ICT program. If there is no leadership with ICT, teachers are not able to fully integrate ICT and as a result the kids and their learning suffer. If teachers don’t feel comfortable teaching ICT then they will not teach with it.

Similar views to the one expressed by this participant were also raised in relation to the importance of the educational leadership exercised at the executive levels of school systems and sectors. Such observations reflect the importance attached to leadership to support the integration of ICT into teaching and learning.
3.1 Attributes of leadership

A comprehensive range of attributes school leaders require in order to support the integration of ICT into teaching and learning was identified through the research. The following list is a selection of the attributes of leadership the participants identified. Some of the following attributes appear to be generic in nature. These attributes however are intended to be interpreted in light of their import for the integration of ICT into teaching and learning.

In every focus group for example, the necessity for leaders to be risk takers in relation to ICT was raised. Many participants provided examples of what they intended by a school leader being a risk-taker. Some of the examples may seem to ICT-savvy people to represent a low level of risk-taking, but many participants recognised ‘risk’ to include the personal risk and the potential cost of failure to the individual and/or the school. Illustrations of the sorts of risk-taking intended included a school principal who is a novice at using ICT, modelling to the staff the learning he or she is doing to incorporate ICT into his or her work. In some large schools, the size of the annual budget implications of deploying ICT were seen to represent a significant risk to the school community. Courageous school leaders lead whole school change around ICT integration and provide release time and professional learning opportunities for teachers to trial new approaches that include ICT into their teaching and learning. Finding innovative budget approaches to afford professional learning was seen as an example of being a creative and adaptable leader.

Discussion indicated that school leaders’ specific and generic attributes must be interpreted to include ICT in the 21st century. Participants emphasised the responsibility of all school leaders to support the integration of ICT into teaching and learning. Participants also emphasised that this support is now a requirement not an option to be avoided.
### Generic attributes required of leaders who support teaching and learning with ICT\(^1\)

These leaders are:
- Risk takers
- Creative
- Keen
- Passionate
- Persuasive
- Capable of critical reflection
- Respected by their colleagues
- Experienced teachers
- Good adult educators
- Willing to try to learn new things
- Not afraid to experiment
- Courageous
- Quick, active, life-long learners
- Team players
- Collaborative
- Ethical
- Adaptable
- Confident with ICT
- Lateral thinkers
- Excited about innovation
- Not resistant to change
- Willing to and good at sharing ideas and strategies

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\(^1\) Note: these attributes are intended to be interpreted and applied in light of their relationship to teaching and learning with ICT
Qualities and capabilities required of leaders to support teaching and learning with ICT

The qualities these leaders have developed include:
- Credibility
- Authority among their peers
- An absence of fear of boundaries
- A futures perspective
- A global perspective
- Political nous
- A good understanding of pedagogy, how students learn and how ICT can be effectively used for teaching and learning in the classroom
- A student-centred view of what makes for good learning and good classroom practices
- A good understanding of the likely impacts of the decisions they make

These people are capable of:
- Driving innovation
- Competently incorporating ICT into their own work
- Conceptualising preferred futures and how to get there
- Being personally productive with technology
- Using ICT to solve problems
- Engaging with others outside of teaching
- Having a broad understanding of people’s lives outside school
- Accepting that they don’t know everything but are willing to have a go anyway

Figure 3: Qualities and capabilities required of leaders to support teaching and learning with ICT

3.1.1 Attributes of a school principal

Furthermore, participants also outlined specific attributes a school principal should demonstrate to support teaching and learning with ICT. These attributes included:

- Having a solid understanding of ICT requirements and their advantages in the curriculum context;
- Being able to lead and support many teams simultaneously while all contributing to an overall goal;
- Taking a whole school approach to the integration of ICT into teaching and learning;
- Focusing on the possibilities and the limitations of ICT in the present, but with a view to future trends;

Note: these attributes are intended to be interpreted and applied in light of their relationship to teaching and learning with ICT
• Providing leadership to all staff as they wrestle with ways of incorporating ICT into teaching and learning;

• Establishing clear expectations of ICT ‘embeddings’ through lesson programming and assessment of ICT learning;

• Ensuring new building work at the school takes into account ICT requirements at the planning stages and reflects the school’s culture about teaching and learning with ICT;

• Modelling the incorporation of ICT into their own work and in particular into their work with the school community, the school’s governing council and with staff;

• Having a sense of the ‘big picture’ with regard to the direction and goals of the school and teaching and learning, as this better places them to make appropriate decisions about implementing ICT infrastructure, hardware, software, teaching programs and the required budgets; and

• Being able to drive change and break through barriers.

The role of school leaders and especially the principal was recognised then, as complex. One participant in the research described the role of the principal as facilitating:

strategic planning; change management; technical support that provides quick turn-arounds to problems; stakeholder investment and commitment to integration across curriculum (multi-literacies) as well as specialist teaching and learning at higher levels of schooling; a culture of learning that is shared by all - not just students; teachers that learn from students; varied learning styles and ICT capacity to facilitate these.

This participant captures the complexity, recognised by participants, of the role of school leaders, and especially the principal, to lead and manage the multiple approaches that support teaching and learning with ICT.

3.2 Leadership roles and styles

Participants identified a variety of leadership styles and roles for school leaders to support teachers integrating ICT into teaching and learning. They commented on some of the approaches to leadership and change management they are using to inform their work as both school leaders and ICT leaders. In particular, the work of Stephen Covey (Covey 1989) and the extensive work of Michael Fullan (cf Fullan 2005; 2001) were mentioned.

Several roles were identified for a school leader supporting teachers to include ICT into their pedagogical practices. These roles included enabling teachers to become:
Guides and coaches in the classroom;
Co-learners with other peers;
Leaders among their peers;
Facilitators; and
Team workers.

Participants indicated that for school leaders to support teachers, they are required to:

- Model good personal use of ICT in their daily work;
- Be a good adult educator;
- Develop relationships between stakeholders across the whole school community;
- Empower people to change; and
- Develop learning communities across the school.

Participants also indicated the work of school leaders requires them to manage ambiguity while giving staff a sense of security and purpose. It was recognised in the focus groups that dilemmas, paradoxes and contradictions often characterise the organisational lives of schools. The ability of school leaders to select an appropriate leadership approach that is suitable for a given context from a range of personal leadership styles, and to apply that approach, was an important capability. Participants indicated leaders require multiple leadership styles, such as those outlined below.

### 3.2.1 Contingent leadership

‘Contingent leadership’ refers to the readiness of a leader to address the expected and the unexpected. Some participants discussed the necessity for school leaders to be able to provide leadership within a context of possibility rather than certainty about the future. The data gathered indicates contingent leadership that is visionary, and coupled with effective school leadership practices, is seen as necessary to support the integration of ICT into teaching and learning. The ability of a school leader to solve problems was seen as an underpinning of such a leadership style.

### 3.2.2 Situational leadership

Other participants indicated no one leadership style is appropriate for all people in all contexts. They highlighted the importance of situational leadership where a leader adopts the style of leadership that most closely matches the willingness of those involved to undertake given tasks. The ability of a leader to identify the level of willingness of individuals within a school staff and to pitch approaches to interact with those levels of willingness was identified as important.
3.2.3 Transformational leadership

The value of transformational leadership was identified in the focus groups as it involves a multi-layered approach to leadership. Transforming schools implies change. Participants indicated that a transformational leader requires:

- an understanding of and caring for the human and personal concerns of the people involved;
- a knowledge of the dynamics of change and transformation;
- an understanding of the collaborative and collegial foundations that exist within a school; and
- an emphasis on the ethical and reflective dimensions of leadership.

Participants indicated school leaders should identify their own personal vision and personal professional development to support ICT in teaching and learning.

Shared leadership/Distributive leadership

Participants recognised that there are limitations to what one school leader or school principal can achieve by him or herself. A team-based approach to leadership, where the leadership capabilities of others are fostered and developed, and the leadership responsibilities are shared, was identified in the focus groups as a useful strategy for handling the extent and complexity of the work involved in incorporating ICT into teaching and learning. Shared leadership models were identified by participants as those where teachers become active members of a learning community and where all staff contribute to the school’s capacity to include ICT into teaching and learning strategies. Participants linked concepts of participatory decision-making to distributed or shared leadership approaches.

3.2.5 Multiple leadership styles

While each of the above leadership styles was identified as a suitable leadership approach that was robust in its own right, some participants indicated that no one style of leadership is likely to be successful in every school. These participants emphasised the importance of being able to move between different leadership models as the context required. Some participants reflected that using multiple styles of leadership requires school leaders to have strong project management skills in order to manage the different approaches simultaneously.

3.3 Challenges

Several challenges were raised in the focus groups concerning school leadership and the incorporation of ICT into teaching and learning. Underpinning the respective challenges raised however, was the role of the school leader in transforming schools: leading, supporting and managing change at the local level. Indeed, a theme running through the data generated by this research was one of ‘change’: organisational change; leading and managing change; and leaders knowing what changes to make.
The language of the participants was of ‘change’ rather than of school ‘reform’, albeit the changes may be seen as evolutionary. It was observed by some participants that much of the work of school leaders supporting the inclusion of ICT into teaching and learning requires changes to the underpinning culture of the school: and these changes take time to achieve. Indeed, the role of school leaders including school principals as agents of change was a theme that emerged throughout the focus groups.

3.3.1 Leading and managing change

Leading and managing whole school change in relation to incorporating ICT into teaching and learning was recognised by the participants as one of the most complex tasks of school leadership. Changes are occurring at a variety of levels within the organisation of schools in order to embed ICT into school life.

One participant provided the following view of the nature and extent of the changes principals are required to accommodate and support:

ICT is enabling new ways of communicating, requiring changes to resourcing models and resource management, and principals need to be seen as innovative leaders or people who encourage innovation. There are changing expectations from parents and students, so the ability to be flexible and willing to readily adapt to changes and the rate of change in the technology is necessary. There are changing relationships with staff and the way they work. There is the need for encouragement of staff to adopt new practices and adopt new technologies and to be innovative in the way they teach and they need to be happy with the technology.

Participants indicated that school leaders, and especially school principals have to understand the change processes if they are to support teachers’ integration of ICT into teaching and learning. They suggested that addressing changing contexts requires school leaders to be able to work persistently and consistently towards implementing the school's vision and strategic plan and, if necessary, to improvise along the way while still working toward the overall strategic aims of the school.

The nature and extent of the changes participants identified school leaders require to encourage the embedding of ICT into teaching and learning included:

- Bringing about deep, sustained cultural and attitudinal change across the school;
- Identifying and meeting the varying requirements school staff have for professional learning;
- Changing the nature and make-up of schools’ infrastructures and organisational processes;
- Changing the established systems and structures within the school such as identifying new roles that are in harmony with curriculum development and technology changes;
• Changing the budget processes to accommodate ICT across subject areas and year levels;

• Leading by example in emphasising the way students learn and leading teachers to realise that their roles are changing;

• Bringing about rapid change but with a level of stability to give staff security (i.e. stability in a time of change);

• Helping staff to take risks while ensuring support is there for the risk taking; and

• Fostering changes in how teachers teach, assess, report, monitor, interact and communicate with other staff, parents and students.

These changes occur concurrently and are all complex.

3.3.2 Models of change

Models and approaches to the processes of change were outlined in the focus groups. Processes of school change identified in the research tended to be cyclic or iterative. Two models specifically mentioned were action research (Kemmis and McTaggart 1988) which is essentially based on a spiral of plan, act, observe and reflect (Kemmis and McTaggart 1988); and the school improvement cycle developed by the North Central Regional Educational Laboratory (NCREL) in the USA. As indicated earlier, participants in this research pointed to the benefits of action research for supporting changes to teaching and learning in order to include ICT in those processes. The NCREL school improvement cycle is similar to action research and includes the following steps:

1. The school community defines its goals and identifies the issues with achieving those goals;

2. Understandings about teaching and learning with ICT are investigated to inform strategies for addressing the identified issues and achieving the desired goals;

3. Changes initiated are consistent with the local context and conditions; and

4. Outcomes and achievements are evaluated to determine what next should be done to achieve their goals (NCREL 1995).

Participants indicated leaders need to understand change management processes. Figure 4 illustrates a 'chunking up' model developed for informing change at a Victorian primary school (Giulieri 2005). The Principal developed this model from work undertaken by Tim Knoster in 1987 and 1991 for Enterprise Management Ltd. The model was developed to guide change at primary schools which embed technologies into teaching and learning across the whole school. This figure illustrates the likely outcomes for a school if one of the components of change is not included in the change process. For example, if all of the components are in place except a vision, a likely scenario is going to be an outcome of confusion. If all the components are in place except professional development, it could lead to anxiety.
Participants also drew attention to the degree of change occurring in schools in this process of incorporating ICT into teaching and learning. They highlighted the need for integrated, contextual approaches to teaching and learning and problem solving skills.

Participants indicated that for effective whole school change to implement pedagogical practices that include ICT, school leaders should foster ‘top down’ ‘bottom up’ and ‘middle out’ changes. ‘Top down’ changes are initiated and maintained by those in formal positions of school leadership, but they also foster ‘bottom up’ and ‘middle out’ models of change. ‘Bottom up’ changes refer to developing pedagogical leadership in classroom teachers. ‘Middle out’ changes refer to year level or subject level teachers in ‘middle management’ positions initiating and supporting ICT leadership in classrooms and across year levels and subject faculties. Participants indicated that where the leadership of ICT changes in schools has emerged from the middle levels of school organisations, a challenge for principals is how to harness the energy, enthusiasm and knowledge of these people and incorporate their skills and abilities into whole school approaches to change.

Underpinning the attributes, styles and models of leadership and change raised in the focus groups was an emphasis on fostering greater team work among the staff of schools.

### 3.4 Change and professional learning

School leaders, and in particular school principals, have a key role in leading and managing in-school change processes to support teaching and learning with ICT.
The necessity for school leaders and in particular school principals, to lead and manage in-school change processes to support teaching and learning with ICT, led participants to identify the implications from these processes for professional learning. Some insights from the research in regard to the implications for professional learning arising from the necessity for school leaders to lead and manage change to support teaching and learning with ICT then, now follows.
4. PROFESSIONAL LEARNING

This section addresses the issues raised in the focus groups concerning the necessity for professional learning. It is undertaken from two perspectives: firstly from the point of view of leading organisational change through professional learning that is pertinent to both teachers and leaders; and secondly, from the point of view of what types of professional learning are required specifically by school leaders.

The necessity for professional learning to underpin changes in schools emerging from the integration of ICT into teaching and learning was raised in all focus groups. Participants indicated the nature and characteristics of the changes required to include ICT in teaching and learning are complex. Participants commented that the regular upgrading of computing hardware and software and the ongoing introduction of new and more powerful devices into the market tend to feed a sense of perpetual change and development, where nothing seems static. How to cultivate the ability to position school communities for the future while at the same time, operate in and acknowledge the constraints of the present, is a challenge being faced by many of the participants in this research. Professional learning and support was identified as one strategy to assist leaders become ‘future-thinkers’ in the present.

4.1 Professional learning requirements

Throughout all the focus groups, professional learning was raised as critical for both school leaders and teachers to enable them to provide teaching and learning that integrates ICT. Participants indicated that for many teachers and leaders, ICT represents a new environment for students’ learning. The teachers themselves must gain the confidence and understanding in the use of ICT so they can integrate it into their programs of learning. Participants indicated the majority of professional learning concerning ICT they and their colleagues undertake is school-based and often self-directed.

A complexity for school leaders and those organising professional learning activities in schools is that staff are at different stages of ‘ICT development’. ‘One size fits all’ approaches to professional learning are not appropriate. Participants indicated that varying types of in-school professional learning are required to meet the different requirements and stages of learning evident in a school staff. Some participants indicated that we are at a unique point in time where schools have sole educators who are not sure how ICT can be embedded into their teaching and learning and a new generation of teachers who have developed technical skills as part of their own learning and training. ‘Buddying up’ younger with older teachers to foster an exchange between those who have technical expertise and those who have wisdom about educational approaches and pedagogy, may be a way to harvest the expertise of both types of educators.

Some participants identified the necessity for career-long professional learning to enable educators to remain up-to-date with how their work is changing and with the developing trends in educational purposes of ICT.
4.1.1 Objectives of professional learning

Various objectives for professional learning were identified in the focus groups. These objectives included supporting educators to:

- Embed ICT into learning strategies;
- Develop, participate and sustain an ICT learning community;
- Ensure all teachers are confident and competent in incorporating ICT into their teaching and learning;
- Improve teaching and learning with ICT across all subject areas and year levels;
- Foster team building; and
- Identify appropriate materials and guidance to enable effective use of ICT in teaching and learning.

4.1.2 Purposes of professional learning

Participants identified different purposes for professional learning, with the following purposes highlighted as crucial for supporting the integration of ICT into teaching and learning:

- Skills development;
- Understanding the role of ICT in teaching and learning; and
- Coping with the demands of change.

While the different purposes of professional learning have been disaggregated here, many professional learning activities are aimed at meeting all of the above purposes, in the one activity.

Skills development

Participants tended to refer to professional learning that focuses on ‘skills development’ as those types of learning required to acquire the necessary skills to enable them to use software or hardware to undertake a specific task.

Examples of ‘skills development’ professional learning provided by the participants included learning how to use the hardware and software for tasks such as:

- Word processing, presentation and spreadsheet software;
- Using online communication tools such as:
  - Emails;
  - Bulletin boards;
  - Shared staff spaces for discussing issues, seeking tips and getting help;
- Using the school’s online administration tools such as:
• Booking rooms and other facilities;
• Utilising the online calendar;
• Understanding the timetable;
• Employing electronic mark books and roll books;
• Using a student tracking system;
• Uploading and downloading files to the school’s intranet;
• Addressing practical implementation issues; and
• Practising how to use specific pieces of software.

**Understanding the role of ICT in teaching and learning**

Participants identified a wide variety of activities as constituting professional learning that contributes to developing understandings of the role of ICT in teaching and learning. A small selection of activities identified by participants were:

- Spending time investigating and researching answers to personal questions and dilemmas;
- Reviewing curriculum, syllabus and learning outcome statements to consider whether they can be achieved well with ICT;
- Reflecting on ICT teaching and learning practices;
- Sharing ideas and strategies with peers; and
- Reflecting on trends, ethical, social and philosophical implications of ICT in teaching and learning.

**Coping with the demands of change**

Participants recognised that leading, managing and participating in change is emotionally demanding and can be stressful. Professional learning must be non-threatening, involve sharing, be mutually supportive and provide support. Participants indicated this sort of professional learning includes:

- Mentoring relationships;
- Communities of practice; and
- Learning teams.

**4.1.3 Professional learning strategies**

To support teachers’ incorporation of ICT into teaching and learning, participants indicated that professional learning must be seen as a critical requirement of teachers’ core duties. They also asserted that professional learning requirements should be reflected in their job specifications and in the schedules or timetables for their respective working weeks. Participants identified a range of strategies that
could be used to support professional learning about the integration of ICT into teaching and learning. Both individual and collaborative strategies were proposed. These strategies included:

- Undertaking self-paced online learning;
- Identifying ongoing personal projects which require the learning of new software and/or hardware;
- Developing lessons or modules which are relevant to class or staff requirements;
- Organising whole-school professional development that is facilitated by a respected, effective ‘expert’, so that all the staff can hear the same message and respond to it systematically;
- Establishing ongoing ICT modelling and evaluation activities that relate to the whole school plan;
- Engaging with schools and sites that not only have ICT embedded seamlessly into their teaching and learning practices and the broader running of the school, but also link these practices to evidence of student learning and enhanced outcomes;
- Establishing communities of practice, either synchronously or asynchronously;
- Taking students with staff to professional learning opportunities where teachers and students attend professional development sessions to learn about new software e.g Kahootz, or The Le@rning Federation learning objects;
- Establishing mentoring relationships between staff, and between staff and students;
- Identifying mentors in the school and planning a mentoring strategy where there are benefits for the mentor, the ‘mentor-ee’ and the students;
- Establishing ‘reading circles’ where staff all read an article and then spend dedicated time discussing it;
- Using a ‘train the trainer’ model to in-service one person in a year group or faculty who then works regularly and systematically with other staff on a one on one or small group basis over a period of time;
- Organising the timetable so small groups or teams of teachers are released together to plan and support each other;
- Scheduling specific and regular times at staff meetings where the agenda is to share ideas across faculties; and/or
- Ensuring in school professional learning is accommodated in the school and faculty budgets.

Participants indicated they benefited from seeing examples of how ICT had been integrated into teaching and learning in other locations. They suggested the gathering, reviewing and analysing of resources and examples drawn from other
schools and contexts were useful exercises to ascertain whether these resources had applicability to their local contexts. Examples of the sorts of resources identified as useful to share with others included:

- Online teaching and learning materials, lessons and courses;
- Exemplary subject specific software programs;
- Case studies; and
- Educational leadership training packages which enable access to online international best practice modules which support identified gaps in performance.

### 4.1.4 Effective professional learning

Participants identified characteristics of effective professional learning. They indicated that it should:

- Address what teachers want to know;
- Build on what teachers already know;
- Meet personal goals;
- Consolidate experiences;
- Occur in work time or be recompensed with time in lieu;
- Be immediately implemented in the classroom;
- Be ‘hands on’;
- Provide guidance from an expert, mentor or coach;
- Encourage reflection;
- Involve team work with peers; and
- Include rewards (e.g. provide a career path; meet appraisal requirements).

### 4.2 Professional learning for school leaders

School communities have high expectations of school leaders. Professional learning for school leaders was recognised by the participants in this research as fundamental to achieving and sustaining the changes envisioned. They indicated that professional learning is seen as a way for them to bring together the different components underpinning teaching and learning with ICT.

#### 4.2.1 Purposes of professional learning for school leaders

Most of the participants in this research are educational leaders, located in schools or in systems and sector offices, or they are leaders of the profession through involvement in professional associations. Addressing the educational, emotional,
social, technical, ethical and philosophical aspects that underpin teaching and learning with ICT was identified by them as important.

Purposes for leaders’ professional learning identified by the participants included the following:

- To develop understandings of strategic leadership;
- To be able to make judgements and evaluate their own school’s current position;
- To be confident about developing their own vision for embedding ICT;
- To be able to lead staff through processes of identifying their core values for teaching and learning and assisting them to identify the relationships between their core values and teaching and learning with ICT; and
- To be able to identify key areas for development in the short and longer terms.

### 4.2.2 Outcomes sought

Outcomes identified by the participants as those sought by leaders from their professional learning with ICT activities included developing understandings and strategies to assist them to:

- Lead and manage team-based, whole school change;
- Support school communities to review learning outcomes and identify how ICT can assist students to achieve those outcomes and to include ICT in the teaching and learning approaches used at their school;
- Facilitate the development of a school culture that values risk-taking and innovation in students and staff; and
- Develop an understanding of ICT requirements and their advantages and disadvantages in the curriculum context for their school.

### 4.2.3 Professional learning opportunities for school leaders

A diverse range of professional learning activities was identified by participants in order to meet the varying interests, skill levels, developmental cycles and levels of understandings they saw were of particular pertinence to them. A key question arising for participants was: ‘why are we integrating ICT into teaching and learning?’

Several suggestions for professional learning activities were made. These suggestions included that leaders require:

- Examples drawn from across a wide range of different schools and communities of how ICT has been integrated into classroom practices and into the assessment of students’ learning in creative but achievable ways;
• An understanding of how to focus on pedagogical issues while at the same time as on management/change leadership processes, as well as on the more common technical issues that have to be addressed in schools;

• Opportunities constructed for sharing experiences with their peers about the benefits of incorporating ICT into teaching and learning for students and staff;

• Opportunities to network with colleagues in ways that are congruent with the value sets around education and teaching and learning appropriate for their local context;

• Exchanges between schools, of teams comprising leaders and teachers with varying levels of ICT;

• Visits to schools by school-based teams of leaders, teachers, students and parents, to see how other schools integrate ICT;

• Knowledge about how school leaders can provide effective feedback to staff on the integration of ICT into teaching and learning programs;

• Personal (leader to leader) mentoring and/or coaching arrangements established, that extend over time; and

• Work shadowing opportunities organised to see how others provide leadership in integrating ICT in teaching and learning, where the work shadowing includes experiences of those staff with similar roles (eg Principal, Assistant Principal) and also with staff in dissimilar roles, in order to get a whole school perspective of how the different components fit together.

4.2.4 Issues requiring professional learning

Participants identified a range of areas where they believed school leaders would benefit from professional learning. These areas included:

• How to develop a successful school with ICT as a base;

• How to bring about cultural change throughout a whole school and its community (including parents);

• How to establish school-based financial/budget approaches that can be used to underwrite training hardware/software/networking;

• Identifying what staff need to know to support students learning with ICT;

• Identifying the global trends and directions in ICT and the implications of these for learning, teaching and assessment, and for policy directions and system initiatives and directives;

• Identifying what approaches to accountability should be in place in schools for implementing ICT in teaching and learning;

• Determining how the impact of initiatives in the classroom can be identified;
Examining the practical implementation issues for integrating ICT into teaching and learning (e.g. resourcing; establishing effective infrastructures/accountability), about which a school leader ought to be aware;

- Exploring the learning/cognitive theories that are of relevance to ICT in teaching and learning;
- Identifying change management strategies to inspire and motivate people, and lead and manage people who resist change;
- Identifying strategies for managing ICT staff;
- Identifying strategies that support in-school research, data collection, analysis and presentation; and
- Identifying team approaches to leadership and exploring specific roles, rules, expectations and accountability mechanisms for the team.

### 4.3 Pre-service teacher education

In the context of discussion about the professional learning required to support the inclusion of ICT into teaching and learning, some participants also commented on the nature of pre-service teacher education.

While early career teachers were seen by some as already familiar with incorporating ICT into teaching and learning, others expressed concern about the lack of these capabilities developed in pre-service teacher education programs. Other participants indicated they preferred to engage teachers in their first year of teaching because they could mould them and they tend to accept processes of change as a part of school life. Some participants called for pre-service teacher education programs dedicated to addressing ICT in teaching and learning.

Some participants pointed to the International Society for Technology in Education (ISTE) essential conditions necessary for teacher preparation to support the teaching and learning with ICT. These conditions are provided in Appendix Two.

### 4.4 Summary

This section, along with Sections 2 and 3 has outlined what Australian educators talked about in this research concerning the relationships between pedagogies, technologies, school leadership and professional learning. We now turn to the organisational structures and roles of leaders that support teaching and learning with ICT that were identified through the research.
5. SCHOOL ORGANISATION

The organisational conditions, major issues and considerations raised by participants in relation to supporting teaching and learning with ICT are outlined here. Practices described by participants as evident in schools including ICT in teaching and learning have been used to inform this section. Participants identified school leaders, and in particular the school principal and staff in promotional positions, as critical to the school integrating ICT into teaching and learning.

Participants identified six inter-connected organisational conditions as necessary for supporting teaching and learning with ICT:

1. Strategic plan;
2. Vision;
3. School culture;
4. Whole school approach;
5. School infrastructure; and
6. Organisational structures.

These six inter-connected conditions are used here to structure this section.

5.1 Strategic planning

Many schools around Australia have ICT strategic plans. Participants stressed the importance of whole school planning in order to incorporate ICT into teaching and learning. Typically a strategic plan includes a vision, goals or objectives, and strategies to achieve these. Whole school strategic plans tend to straddle several years and incrementally approach the outcomes identified in the vision section of the plan. Some participants indicated that ICT strategic plans have a shelf life of between eighteen months and three years before they no longer match the technological realities of the school. They therefore suggested that ICT strategic plans require regular revision, monitoring and updating. Several participants indicated that incorporating ICT into teaching and learning should be a part of a whole school plan rather than the subject of a separate plan.

Participants indicated the goal of incorporating ICT into teaching and learning should be tracked through documents such as a school's Annual Operating Plan, Strategic Plan, Budget, School Reviews and Annual Reports. School review processes were proposed as a mechanism by which targets could be set so ICT in teaching and learning is embedded into planning and review processes at a strategic level and from a school perspective.

5.2 Vision

Participants indicated that concise vision statements to which the whole school community agreed were necessary if ICT were to be successfully integrated into
teaching and learning. Vision statements focus on the future. They serve as a foundation for establishing the directions of a school. Vision statements were identified in the focus groups as important in leading to the development of specific strategic plans. Participants indicated that the visions articulated and agreed to by the school community had to lead to action, not just sit on a shelf in the principal’s office or the staff room. Participants also reiterated that visions and strategic plans require regular review if they are to remain pertinent to the school community, and their scope and sequence achievable.

The following figure provides an example of a school vision statement that incorporates ICT.

The vision for student learning at Our School is the creation of authentic and collaborative learning environments where students can motivate themselves and each other to become self-sufficient, lifelong learners, able to utilise the opportunities provided by a wide range of technologies, including the Internet.

**Figure 5: Example of a school vision statement that incorporates ICT**

Participants identified the following characteristics of a school sharing a common vision:

- The school community has been involved in the development of the vision;
- The vision is focused on requirements of the school community;
- Staff in the school are able to articulate the vision and demonstrate a commitment to it;
- Staff have a shared knowledge about the vision of the school;
- There is the use of a shared language about the vision;
- Organisational purpose is evident in the work of all staff;
- The vision is regularly articulated and refined in conversations; and
- The vision leads to a strategic plan that is appropriate for taking action and making progress.

The necessity for visionary leaders to accompany visionary plans was identified by participants in the research as important in schools. They indicated that leaders with the ability to see potential future scenarios and who can lead people to achieve that future are required in schools. The challenge for school leaders however, is to be able to paint a concrete picture or a scenario for the future, in which others can see themselves, and to which they can commit. Leaders then, need to be able to provide a vision of the future that is inspirational and challenging for staff and students.

Participants suggested the following as assisting in conceptualising the future:

- Leaders should follow trends and investigate futures thinking;
• Visions for the future should be linked to students’ real world and interests; and
• Questions should be asked about how we see classrooms of the future and what the role of the teachers is in those scenarios.

Linking vision statements to strategic plans was identified by participants as an important step in incorporating ICT into teaching and learning.

Participants indicated they wanted schools’ visions for incorporating ICT into teaching and learning to be supported by system and sector ICT visions and plans. Some participants indicated that at a system or sector level, there needs to be an improved educational match between policy developers, technical experts and the curriculum people. In addition, they indicated the synergies these people could generate at a system level, should flow through to schools. Where educational units and agencies do not have an articulated vision and plan that support their ICT work in schools, or where such plans are at odds with the realities of schools, participants indicated they tended to give these units and agencies limited credibility.

5.3 School culture

Participants described school cultures that support teaching and learning with ICT as being flexible places where risk taking is encouraged, and where the culture of the school inspires teachers to 'have a go'. The school culture can be considered to be its collective personality (Deal & Kennedy 1983) or the 'atmosphere' of the school which is based around its own combination of values, beliefs and priorities. The educational, social, emotional and professional interactions of individuals within a school constitute the climate or culture of that school.

Participants indicated school leaders, and especially the principal, are important in setting the culture of the school. Leadership that has a shared sense of purpose and is clearly supportive of ICT is required to foster, maintain and develop a school culture that enables the integration of ICT into teaching and learning. Many participants indicated where ICT is infused across the school, technologies are seen as integral parts of the curriculum and are incorporated into the overall culture of the organisation. Participants indicated that such a school culture requires leaders who see ICT as integrated, not separated from the curriculum.

Participants described several indicators that demonstrate a school culture which values the integration of ICT into teaching and learning. These indicators included:

• Members across the school community being able to articulate why ICT is important for the school community (i.e. students, parents, staff);
• There is an expectation across the school that all teachers will embed ICT across the curriculum;
• Innovation and risk-taking are valued and encouraged;
• A culture of inquiry is fostered, underpinned with processes of reflection, conversations and action;
• Learning to learn strategies are used with all staff and students;
• There is a lack of fear of failure in staff and students;
• The school provides a supportive environment that accepts and learns from failures;
• The school has a focus on professional learning of all staff which is varied according to the different requirements the respective staff members have;
• The student outcomes to be achieved are examined, and appropriate technologies are included in teaching and learning to enable students to achieve their learning outcomes;
• A culture of collaboration and cooperation exists where it is acceptable to challenge existing paradigms and structures;
• There is an environment of respect and trust;
• Professional conversations occur incidentally and formally about ICT and students’ learning; and
• A lifelong learning approach is evident across the school with everyone learning.

One participant described how a school culture can translate into the way teachers and students interact as follows:

Students integrate various kinds of technology into their work i.e. mobile phones, digital cameras and video; teachers encourage students to share their knowledge with all; teachers allow students to take risks with technology and learning within a safe environment; and students know how to use technology ethically.

Participants indicated that achieving the sort of school culture outlined here, requires having a futuristic vision about including ICT in teaching and learning, which is shared across the school community.

5.4 Whole school approach

Participants talked about the integration of ICT into teaching and learning requiring a holistic approach by leaders both within schools and school systems. Participants highlighted the necessity for ICT to be incorporated into the full range of a school’s operations. They commented that employing ICT to support learning must be seen as a natural part of school processes.

Participants described characteristics of a whole school approach to integrating ICT.

Their descriptions included the following. The school:

• Has a vision, well understood planning processes, access to technologies in all classrooms, time allocation for teachers’
professional learning, technical support, an ICT committee, budget allocation including an allocation for professional learning for staff, an ICT replacement schedule, an intranet with 'help' facilities, up to date software, and educational and technical support for classes to trial and develop learning with technologies;

- Provides strategic thinking opportunities for all members of the school community which includes getting the whole school community engaging with ICT;
- Includes technology issues as parts of other committee agendas;
- Ensures there is a multi-faceted approach to in-school processes aimed at supporting ICT in teaching and learning including:
  - budgets for ICT;
  - staff meetings conducted around ICT issues;
  - professional development activities held to address issues pertaining to learning with ICT;
  - processes ensuring equity of access to the technologies for the whole school community (eg class sets of computers);
  - in school curriculum planning processes which are well understood and include the integration of ICT;
  - technology-rich tasks embedded into students’ learning outcomes;
  - technical support officers and ‘help’ strategies;
  - understood mechanisms for sharing information on interesting websites among staff;
  - in school research and development strategies to inform teaching and learning approaches; and
  - monitoring, review and evaluation strategies in place.

Integrating ICT into teaching and learning requires consideration of physical, pedagogical, philosophical and practical issues in an integrated way where professional learning and in-school processes get regularly reviewed and revisited.

### 5.4.1 Budgets

Budget considerations were consistently raised as central to supporting the inclusion of ICT in teaching and learning. Participants indicated that sufficient resourcing of ICT shows a high regard and emphasises its importance to students. Budgets for ICT vary across schools, depending on the size and wealth of the school. In the government sector, the relationships between budgets, ICT provision and local school management, butt up against each other.
Budgeting was identified by participants as a key factor in the success of ICT integration. Many participants raised the importance of reshaping budgets to keep in touch with the changes to ICT, including sufficient funds within school budgets for regular review and replacement of equipment, technical support and ICT professional development of staff.

Several participants indicated staff must be supported in their quest to increase and improve their ICT skills and understandings about the place of ICT in teaching and learning. They argued that the equipment must be reliable, and therefore budgetary considerations must be of appropriate levels to enable uninterrupted access to the ICT. They also suggested leaders need to recognise a lot of professional learning is informal on a just in time basis, and that this also has to be recognised in budgeting and planning.

Some participants addressed strategic issues in relation to the allocation of budgets for ICT in teaching and learning, as the following extracts from the transcripts illustrate:

- ICT budgets need to accompany a strategic plan and approach and should form a part of the overall school budget;
- Budgetary processes need to ensure shared understanding by the school community of all processes;
- The cost of keeping abreast of technological changes must be budgeted by the school; and
- ICT budgets need to be specific but allow for growth.

The role of school leaders was raised in relation to budgets. The following proposals were made:

- Leaders must have a commitment to allocating resources to ICT;
- Leaders need to have a vision which guides their decisions in ICT budgets, yet maintains the standards in all areas of the curriculum; and
- Leaders must establish recurrent financial models that underpin sustainable budget approaches for schools’ ICT infrastructure.

Some participants commented that teaching and learning is supported by a school’s leadership through budget and time support and by developing a school culture which gathers staff enthusiasm and commitment.

5.5 School infrastructure

Relationships between teaching and learning and the physical design of classrooms and schools were regularly raised in the focus groups. The ICT infrastructure of schools usually includes the hardware, software, Internet services, networking and connectivity requirements necessary for the teaching, learning and administration of
schools. Sufficient infrastructure was identified as a pre-requisite for including ICT in teaching and learning. Remote access to the school’s intranet was seen as important for making education available on a 24 hours, 7 days a week basis. It was consistently emphasised that the nature of the teaching and learning should drive the ICT network, not the network drive the teaching and learning.

Participants emphasised the importance of ensuring the school’s ICT infrastructure is secure, robust and reliable, suggesting that only one or a few negative or frustrating experiences lead staff to believe that incorporating ICT into teaching and learning is more problematic than helpful. Participants indicated that students require access to a variety of technologies, with some participants suggesting schools should have a mix of laboratories, pods, in-class computers, wireless technologies, laptops, and other portable technologies. Several participants indicated peripherals such as digital cameras and video cameras, scanners, and handheld devices also form an important part of teaching and learning with ICT. How these technologies are deployed in schools was seen by participants as an embodiment of what sorts of teaching and learning school communities value.

Participants indicated schools are changing as they incorporate ICT into aspects of their work. Some of the most obvious signs reported were the physical and infrastructure changes. The role of school leaders including school principals in leading, managing and supporting change is a theme that has emerged throughout the transcripts. Here, some of the changes to the physical infrastructure of schools are outlined. The nature and directions of these changes link to the beliefs underpinning the school culture and vision, especially as they pertain to teaching and learning that includes ICT. In turn, these changes point to factors affecting school leadership.

### 5.5.1 Classrooms

The physical layout of classrooms was discussed in the focus groups. Over time there have been changes to the tools used in the classroom: desks and inkwells; books and pens; computer laboratories; laptop computers and different technologies that can challenge notions of ‘classroom’.

Many participants expressed the view that computer laboratories (‘labs’) either are, or should be, replaced with ICT in classrooms or with laptops for all students and staff. While some participants suggested that all ‘labs’ should be removed, other participants took a more pluralistic view suggesting that pods, laptops and computer ‘labs’ should all be evident in schools.

Participants linked debates about the physical layout of schools with their philosophical beliefs about the ways ICT should assist with or ‘add value’ to teaching and learning. There were some participants who indicated the allocation of computer laboratories provided a rational response to current issues such as a lack of sufficient computers to be allocated to every classroom. In secondary schools, ‘computing’ is taught as a subject and some participants indicated computer laboratories are necessary to cover the subject matter in these courses.
Developing classrooms with the physical flexibility to meet different learning styles, including the incorporation of ICT into the teaching and learning of a range of subject areas, is seeing many schools opting for portable and wireless technologies, as they are convenient tools for the job.

Participants were aware that changing the layout of classrooms is not a rapid or inexpensive process. It involves careful planning, consultations and collaboration with many stakeholders. Hence school leaders in the focus groups indicated that one of the professional learning activities they would value is assistance to understand and interpret issues in their school, about the relationships between pedagogy, technology, budgets and the physical layout of schools that are appropriate to their local context, and meet their emerging teaching and learning paradigms.

5.5.2. The library/resource centre

The physical spaces of libraries and/or resource centres, and the roles of teacher-librarians were consistently mentioned by the participants. Libraries and resource centres are growing to include a range of electronic and digital resources and facilities. Libraries and resource centres are being renamed with labels such as the ‘Thinking Centre’ or the ‘Centre for Solutions’. The name changes are being used as symbols in schools to highlight the changing nature of learning in the school and to recognise the emerging digital roles of the library.

Participants commented that the role of teacher-librarians is broadening. Teachers are looking to teacher-librarians for assistance with sourcing suitable online and other electronic resources. Some participants reported that many libraries or resource centres house a bank or pod of computers for student use. Some participants indicated teacher-librarians are now being asked to provide some troubleshooting support for students, ranging from assisting students with software, through to fixing the printer.

5.5.3 Remote access: access from home

Remote access to a school’s intranet was raised in the focus groups as an asset schools already utilised or were in the process of setting up. Many schools in Australia already provide families with access to the school intranet from home. Other schools and school systems are in the process of laying out the necessary infrastructure, including undertaking assessments of a range of proprietary and open source software, to enable that access. Participants reported that in the schools that provide remote access to the intranet, students can undertake some of their study from home rather than being physically located at school, or they (and their parents) can access their personal study files, such as their digital portfolios, after hours to assist them to complete their homework.

Participants raised several opportunities and threats that arise from creating remote access for families to the school intranet. Participants reported that parents like to be able to see what it is their child is learning at school and indicated that some
parents feel they are more able to assist in their child’s learning with the remote access provided to their specified learning requirements.

It would appear that blended learning opportunities that include a mixture of face-to-face and distance education methods, are being used in a widening range of schools. Teachers in face to face schools are starting to require expertise in what previously would have been called ‘distance education’ methods.

The same technology has also changed the expectations of students, parents and school staff members about how their work is done. Although some schools provide remote access through a school intranet, and some teachers are using blogs and wikis to support dialogue and collaborative learning activities, the main way communications currently are occurring between home and school is via email. Participants commented that the speed of responses through email is changing expectations of what is a reasonable response time. They indicated that some leaders and some teachers find this stressful.

5.5.4 Remote access: networking with other schools

Much of the hardware and software that enables remote access from home also enables schools to network with each other: across the same district and across the world. Participants provided stories of students in schools networking with students in other schools in other countries. Schools are also beginning to cluster with others to enable certain subjects that do not attract enough student numbers in one or more schools individually to justify a class, to become viable by linking two or more schools together to create a class. As such, some teachers are starting to teach classes straddling several schools.

5.5.5 Information provision

Participants indicated that in the 21st century, websites are a common and accepted way in which schools provide information about and promote themselves. Many if not most schools in Australia have one. They indicated that the school’s website is often regarded as the first ‘port of call’ for people seeking information about the school and its activities. Participants indicated the quality of the web interface and the nature of the information provided on the website was interpreted by potential parents as an indicator of the quality of the school itself and its commitment to using 21st century communication tools.

Several purposes to which schools put websites were identified in the focus groups. These purposes included providing information to and communicating with current parents through online newsletters and bulletin boards; promoting the school and its policies to future parents; and in some schools, making it a place where student achievements are posted and celebrated. Via the web, some schools provide facilities for e-commerce transactions and others provide students with password protected remote access to their learning materials, the library, and to the school intranet.
The infrastructure changes required to host a website and secure remote access to the intranet are seeing changes flow through to the personnel and policy requirements of schools. The ability of a school to identify a leader with the necessary skills and capabilities to lead and manage the in-school policies and processes necessary to develop and maintain a school website was identified as an emerging requirement within a school leader’s workload.

5.6 Organisational structures

Participants indicated those schools with a clear, holistic or ‘whole school’ strategic focus on teaching, learning and organisational improvement, are likely to be well placed to integrate ICT into their teaching and learning. Establishing sustainable structures of a school to enable a culture of inquiry accompanied with an information technology (IT) backbone, where pedagogy drives organisational decisions including the deployment of ICT however, was recognised by participants as a complex task: one that for many schools represents significant organisational change. Paradoxes for principals having to balance the legislative requirements of students physically attending school with the emerging capacity of schools providing students with ‘24x7’ access through the intranet and online learning courses and resources, were discussed.

Leadership was identified as having a key role to play in organisational change. Many participants talked about both leadership and change being shared endeavours in schools. Principals were viewed as important as they can establish and foster decision-making processes to assist school communities make decisions based on the broader perspectives of the school’s vision, strategic plan, and the organisational structures that include the school’s ICT network or infrastructure. Participants indicated that one of the fundamental characteristics required of school principals in the 21st century is the capacity to initiate actions that lead to innovative change and the ability to motivate others into action. The way the principal goes about leading and managing change, and the types of organisational models and methods used, reflect the degree to which the leadership in the school is indeed shared.

School structures and processes organise schools’ work. Participants indicated that creating flexible school organisational structures assisted the integration of ICT into teaching and learning. They referred to organisational structures and processes that support teaching and learning with ICT and others that create challenges.

Organisational structures identified as supporting teaching and learning with ICT included:

1. Team approaches to ICT leadership;
2. Relationships of school staffing profiles to teaching and learning with ICT; and
3. Time and timetables.

Two issues of concern raised by participants were:
4. Workloads; and
5. Equity issues.

These last two issues were discussed in the context of having the potential to create barriers to including ICT into teaching and learning.

The above five issues are illustrated in the next few pages with examples of the types of school structures and processes discussed in the focus groups. The examples provided, while illustrative, are not intended as ‘recipes’. Rather, they are indicative of some of the approaches that were promoted in the focus groups. Participants recognised that each school community has to determine its own approach to organisational structures and processes, in its own context. For some, their context is a self-managing school, operating within system or sector wide ICT initiatives, and for others, their context is as a standalone organisation.

5.6.1 Team approaches to ICT leadership

The complexity and extent of work involved in establishing conditions that support the integration of ICT into teaching and learning have led some schools to adopt team approaches to school leadership. Participants indicated that developing a model of shared leadership, and the fostering of leaders of ICT and learning in schools, assisted the infusion of ICT into teaching and learning across a school. One participant suggested that the whole staff should be seen as a team, adopting an organisational approach that fosters the development of a range of different ICT skills and knowledge across that staff.

Team approaches to leadership supported through in-school committees and decision-making structures were identified by some participants as strategies for getting the ‘right’ people to do the ‘right’ jobs by matching expertise and interest to the tasks. Participants identified several different teams and purposes that could be deployed to support teaching and learning with ICT. Here, some of the approaches outlined in the focus groups are summarised:

- The school has an 'expert team' as the core for whole school development in ICT;
- A Curriculum/Teaching and Learning team organises teachers to share ideas;
- Communities of practice are established in school to support professional learning for teachers across classrooms;
- Staff are ‘buddied’ up for mentoring and ongoing professional support;
- The Executive Team of the school includes someone who holds the responsibility and oversight for ICT issues across the school;
- Cross-faculty teams share ideas and strategies about incorporating ICT into teaching and learning; and/or
A ‘key ICT person’ participates in each school committee to monitor the committee’s work in relation to including ICT in teaching and learning.

Some schools are using a mixture of these strategies. Linking teams and committees into the decision-making processes for budgets was seen as important by participants to ensure plans and strategies could be matched with funding.

Several participants provided examples of using ‘ICT Committees’ to support teaching and learning with ICT. The following description provides an insight into the roles and make-up that could be seen in such committees:

There is an across school ICT or technology committee with representation from the executive level within the school, technical officers, teacher-librarian, parents, students and teachers that takes a leadership role for planning including issues to do with ICT usage, budgets and management.

Other participants described ICT Committees with a composition reflective of the whole community that are established to:

- Plan resources and hardware and software for meeting education goals;
- Formulate whole school ICT policy and plans; and
- Monitor ICT development and implementation.

5.6.2 Staffing profiles

Participants indicated they see learning with ICT and the staffing profile of a school as inextricably linked. The staffing profile of a school reflects what it is a school is seeking to achieve. This research highlighted the role school leaders play in constructing a school staff with the necessary balance of skills and capabilities. One participant recorded:

The Leadership Team has the ability to bring the right type of people together to assist other teachers integrate ICT eg ICT Curriculum resource person with responsibility to be the point of help for teachers, to provide in-service relevant to the needs of the school.

Different leadership roles and levels were identified in the focus groups, with the key positions for supporting the incorporation of ICT into teaching and learning identified by participants as the:

- Principal;
- IT Systems or Information Systems Manager;
- Curriculum Coordinator;
- Professional Development Coordinator;
The following four responsibilities were consistently reported by participants as necessary across all positions within a school, irrespective of level. The staff should:

- Lead and contribute in their own ways to professional dialogue about ICT and implications for student learning;
- Attend meetings and conferences to keep up to date with trends;
- Work towards personal professional learning plans for ICT; and
- Participate in in-school mentoring programs.

Participants also identified several responsibilities within specific leadership positions for supporting ICT in teaching and learning. Table One (over the page) provides an overview of these. The table provides a summary of the types of responsibilities, including across school responsibilities, identified in the research that different personnel within a school can undertake to support teaching and learning with ICT. Different schools use different titles and mixes of roles and responsibilities. The purpose here is to provide an insight into the types and roles of functions supporting teaching and learning with ICT encompasses.

The importance to schools of having onsite technical support was strongly raised by participants. Some suggested a school requires a person identified as an IT Systems Manager, and were interpreting the role of this person as holding high level, overarching technical and educational responsibilities. Others referred to the importance of having an onsite technical support officer to troubleshoot problems, and ensure upgrades and patches are installed. Some participants indicated they were unsure how to structure or manage a technical support officer's work. In addition, some participants indicated the importance of having staff with reasonable technical knowledge, which are also able to provide educational ICT leadership.

Different strategies for incorporating students' knowledge and skills of ICT into the life of the school were discussed in the focus groups. Positioning students as ICT leaders was reported as a teaching and learning strategy that enables students to contribute to the overall life of the school community.
Table One: Indicators of roles in schools with responsibilities in relation to integrating ICT into teaching and learning across a school

<table>
<thead>
<tr>
<th>Principal</th>
<th>IT Systems Manager</th>
<th>Curriculum Coordinator</th>
<th>Learning Area/ or Year Level Coordinator</th>
</tr>
</thead>
<tbody>
<tr>
<td>• Provides organisational leadership in relation to ICT;</td>
<td>• Works across the school community to support learning about and with ICT;</td>
<td>• Works in ICT across the specific curriculum area;</td>
<td>• Works within a subject area or year level;</td>
</tr>
<tr>
<td>• Facilitates in-school processes to establish and maintain the school culture and pedagogical directions of the school;</td>
<td>• Ensures technical support is provided across the school for activities such as:</td>
<td>• Assists teachers and the broader school community to align local, state and national initiatives into meaningful classroom curriculum activities;</td>
<td>• Audits curriculum, teaching and learning and computer labs/pods use;</td>
</tr>
<tr>
<td>• Articulates a vision;</td>
<td>• File management;</td>
<td>• Assists teachers with curriculum development incorporating ICT;</td>
<td>• Identifies best practice and celebrates this model throughout the school;</td>
</tr>
<tr>
<td>• Is a curriculum leader with an understanding of the roles ICT can play in fostering teaching and learning;</td>
<td>• Network management;</td>
<td>• Helps teachers embed ICT into their teaching and learning;</td>
<td>• Motivates other teachers;</td>
</tr>
<tr>
<td>• Models good ICT practice;</td>
<td>• Data transfer;</td>
<td>• Supports teachers to actually include online materials in their teaching and learning;</td>
<td>• Models teaching and learning that includes ICT;</td>
</tr>
<tr>
<td>• Fosters in-school ICT leaders;</td>
<td>• Intranet maintenance;</td>
<td>• Conducts in-house professional development sessions;</td>
<td>• Is a member of state and/or national professional associations.</td>
</tr>
<tr>
<td>• Is a risk taker, innovative and courageous;</td>
<td>• Troubleshooting;</td>
<td>• Models ICT use in own work;</td>
<td></td>
</tr>
<tr>
<td>• Fosters risk-taking and innovation in others;</td>
<td>• Manages software patches and upgrades;</td>
<td>• Is a member of and contributes to online technical communities.</td>
<td></td>
</tr>
<tr>
<td>• Understands the change processes required that incorporate ICT into the life of the school community;</td>
<td>• Installs software;</td>
<td></td>
<td></td>
</tr>
<tr>
<td>• Drives change and removes barriers to change;</td>
<td>• Backs up files including to tape;</td>
<td></td>
<td></td>
</tr>
<tr>
<td>• Manages conflict;</td>
<td>• Refreshes hardware in a planned way;</td>
<td></td>
<td></td>
</tr>
<tr>
<td>• Ensures budgets have funds for hardware; software; professional learning; &amp; technical time;</td>
<td>• Establishes and monitors disaster recovery policies and procedures;</td>
<td></td>
<td></td>
</tr>
<tr>
<td>• Secures ICT expertise;</td>
<td>• Manages the website development, upgrade and management; and</td>
<td></td>
<td></td>
</tr>
<tr>
<td>• Mediates system accountability demands with school programs; and</td>
<td>• Is a member of and contributes to online technical communities.</td>
<td></td>
<td></td>
</tr>
<tr>
<td>• Is a member of state and/or national; and international professional associations.</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Professional Development Coordinator</td>
<td>Teacher-Librarian</td>
<td>Teachers</td>
<td>Technical support officers</td>
</tr>
<tr>
<td>-------------------------------------</td>
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</tr>
<tr>
<td>Works across the whole school to assist in the linking of ICT with teaching and learning;</td>
<td>Sources and makes recommendations about online and other digital media resources;</td>
<td>Leads at the classroom level and within faculties;</td>
<td>Provides trouble-shooting support both on a just in time and longer term basis;</td>
</tr>
<tr>
<td>Identifies existing staff skills and determines professional learning priorities;</td>
<td>Supports professional learning of staff by sourcing suitable journal articles and books;</td>
<td>Utilises the skills of students;</td>
<td>Installs upgrades and patching of software across the school;</td>
</tr>
<tr>
<td>Links leaders who can work with teachers to integrate ICT into their curriculum;</td>
<td>Supports students to research using the Internet and other digital resources;</td>
<td>Participates in in school and out of school professional learning activities; and</td>
<td>Un-installs obsolete software;</td>
</tr>
<tr>
<td>Organises professional learning activities required to ensure staff keep up with ICT in teaching and learning;</td>
<td>Holds administrator rights in the school's intranet;</td>
<td>Is a member of state and/or national professional associations.</td>
<td>Contributes to the upgrade of hardware;</td>
</tr>
<tr>
<td>Designs and organises professional development for the school community as appropriate;</td>
<td>Provides a ‘future scanning’ role to the school staff concerning emerging trends in ICT and teaching and learning; and</td>
<td></td>
<td>Ensures plugins are installed as required;</td>
</tr>
<tr>
<td>Conducts in-house professional development sessions;</td>
<td>Is a member of state and/or national and/or international professional associations.</td>
<td></td>
<td>Ensures virus checks are undertaken across the system;</td>
</tr>
<tr>
<td>Coordinates mentoring and coaching support for teachers;</td>
<td></td>
<td></td>
<td>Ensures processes are undertaken to maintain the backup systems and keep disaster recovery processes up to date;</td>
</tr>
<tr>
<td>Sources and disseminates professional readings as part of professional development programs; and</td>
<td></td>
<td></td>
<td>Contributes to the development and maintenance of the school’s website and intranet; and</td>
</tr>
<tr>
<td>Is a member of state and/or national and/or international professional associations.</td>
<td></td>
<td></td>
<td>Participates in online technical communities.</td>
</tr>
</tbody>
</table>
Strategies identified for positioning students as ICT leaders included students:

- Demonstrating the use of ICT tools in course work with staff and other students;
- Participating in cross-age peer tutoring systems between senior and junior students in the school which focus on the transfer of ICT skills;
- Participating in mentoring programs where students mentor teachers about ICT;
- Attending professional development with staff to learn new software together;
- Linking their high-level skills into the technical support of the school, while at the same time teachers are supporting and developing these students’ learning through extension programs, and are accrediting their participation in school life.

Some participants commented on the value of having someone in the school identified to ‘future scan’ or follow trends concerning what is happening in ICT; analyse the implications for school education; and share those findings with the school community. Some suggested such tasks could fall within the role of teacher-librarians.

### 5.6.3 Time and timetables

Participants raised issues concerning the organisation of time and how teachers’ time is allocated in schools. They indicated that timetables reflect what a school community values and that time can be organised to reflect a school’s priorities. Timetables are used to structure the school day, schedule teachers’ work and compartmentalise students’ learning. Some participants pointed to the timetable as a means by which time could be scheduled differently in order for both students and teachers to learn and develop their capabilities using ICT.

Some participants suggested current school timetabling and organisational structures do not take into account the investment of time and exploration required for the effective use of technologies as tools or as environments of learning. They suggested while there is a greater focus on team learning and teaching with ICT, these approaches are often not supported within the timetable constraints of schools, particularly in secondary schools. Some participants observed that in schools where professional learning is valued, the timetable is constructed to enable in-school professional learning communities to meet and flourish.

Some participants indicated they are searching for timetabling models and strategies that better align the teaching and professional learning requirements of staff incorporating ICT into their pedagogical practices, than do their current timetabling practices. They are wrestling with the problem of being able to create time in a school day to enable teachers to get together to learn from and with each other.
Other participants provided suggestions that could be taken into account when 
creating timetables. Their suggestions included the following:

- Include a person with a sound and broad understanding of ICT issues as a 
  member of the school's timetable committee;
- Allow flexibility in the timetable to accommodate the movement of students 
  and teachers to access ICT resources;
- Create timetables that enable teachers to be released for professional learning 
  activities;
- Recognise different student participation models and the emerging changes in 
  how specific subjects are taught;
- Match teachers and mentor relationships to the timetable, so that time can be 
  created that enables these teachers to get together;
- Revise timetables to allow time for ICT coordinators to work with classroom 
  teachers; and
- Organise the timetable so students and teachers can regularly access 
  computers.

There was a questioning among some participants about what are the ‘right’ blocks 
of time teachers and students require to incorporate ICT into their teaching and 
learning. Several participants indicated for example, that forty-five minute blocks of 
time were too short for both teachers to investigate options for including ICT into 
lesson plans, and for conducting classes that include ICT. Similar questioning about 
what are appropriate blocks of time for lessons was also raised by participants in 
schools networking with other schools to create viable class sizes between them. 
Issues arising from coordinating timetables across geographical locations for 
synchronous learning with ICT is leading some schools to consider longer blocks of 
lesson time than they may previously have had. Indeed, incorporating ICT into 
teaching and learning appears to be leading many schools to rethink their ‘time’ and 
timetabling issues, and to consider the relationships between timetables and teaching 
and learning, where the pedagogy includes ICT.

5.6.4. Workload issues

Some participants noted benefits of ICT for teachers’ work, including better 
management, storage, access and maintenance of their materials and reports. Other 
participants raised concerns about ICT increasing their workloads. For instance, 
administrative responsibilities such as responding to emails; reporting online; 
preparing an ICT lesson; and the professional development required to learn about 
and understand the capabilities of online resources, were some of the reasons 
provided to illustrate the potential ICT has at this point in time, to increase teachers 
and leaders workloads.

The issue of ‘workloads’ is not an issue idiosyncratic to Australian schools. In the 
UK, the Department for Education and Skills (DfES) (2004) commissioned some
research examining workload issues in schools as a result of introducing ICT. This report found that:

... among the variety of models of ICT strategy, teacher workload issues are more likely to be addressed where ICT objectives are clearly linked in to wider school objectives. Whether this takes place within a discrete document or within the School Improvement Plan, links to any wider objectives the school has for teacher workload reduction or professional development need to be explicitly made (PricewaterhouseCoopers 2004).

Participants suggested leaders have to be aware of the ways in which ICT can increase or decrease teachers’ workloads. They indicated the integration of ICT into teaching and learning requires leaders to be able to understand staff members’ respective workload requirements and their level of ability with ICT teaching and learning styles. Some participants indicated, for example, they believed more planning is required to conduct a lesson incorporating ICT than to prepare the same lesson without ICT. They suggested this is especially so if the teacher is not confident or is unfamiliar with the software and/or the hardware. As with any new task however, all things being equal, the more you do it, the faster you become at it. Herein then lies a place for teachers’ professional learning, and a role for school leaders to ensure teachers are provided with the necessary professional support to improve their proficiency and confidence and enable them to plan and conduct lessons that include ICT.

5.6.5 Equity considerations

Several issues and dilemmas were raised as ‘equity considerations’ by the participants. Interpretations of the concept of ‘equity’ varied across the focus groups, with some referring to social and economic inequality between schools and others referring to equality of access to ICT within a school.

Some participants commented on the growing disparities between schools in relation to the quality, nature and extent of the equipment and infrastructure they are able to afford. They indicated that technical support in schools is necessary to support the integration of ICT into teaching and learning and different schools are able to afford varying levels of technical support depending on their context and wealth. Some participants indicated the difficulty of keeping technical support staff in their schools because they can get better pay working in other organisations. Some participants suggested that it was especially difficult to retain technical support officers in poorer schools, contributing to a growing ‘digital divide’ between schools.

Several participants also mentioned the importance of ensuring equity of access to computing equipment at school. Some participants identified a dilemma of how to provide authentic teaching and learning that includes ICT, when students at home have higher quality equipment and a more diverse range of technologies available to

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6 Appendix Three provides a workflow plan for incorporating digital learning objects into a lesson.
them. Another issue raised was how to provide students with access to ICT at school especially where the rate of home ownership of ICT is lower than in the rest of the community (eg in Indigenous communities), or where the required software and hardware are too expensive for the family. For example, some participants indicated the ICT resources for students with disabilities are comparatively expensive. Issues around gender and socio-economic status were also raised in relation to equity of access to ICT at school.

School leaders, and in particular school principals and staff in promotional positions, were identified in the focus groups as critical for schools to address these equity issues in strategic ways.

5.7 Summary

This section has reported six inter-connected conditions raised by participants in relation to supporting teaching and learning with ICT. These conditions have been illustrated with examples discussed in the focus groups to show how participants see schools’ organisational structures supporting teaching and learning with ICT.
6. FUTURE DIRECTIONS

This section provides an overview of some of the key issues and dilemmas identified in the research that schools, school systems and sectors are facing concerning future directions with ICT in teaching and learning. Contextual issues, trends and some emerging ethical issues raised in the focus groups that are seen as arising from incorporating ICT into teaching and learning, are reported.

6.1 Contextual influences and challenges

Participants indicated it is difficult to predict the future implications of incorporating ICT into teaching and learning. They indicated that it is difficult to separate out considerations of the future implications of incorporating ICT into teaching and learning from the challenges for school education that these implications create. They commented that the speed with which producers deliver new products to the market tends to feed a sense of uncertainty and ambiguity in those attempting to remain abreast of technological developments as they apply to school education. Participants identified the emerging nature of technologies as a complexity for considering future directions that include ICT. Questions raised in the focus groups included:

- Is there a place for incorporating online environments such as vlogs, photologs, online games and digital portfolios into teaching and learning?
- Are portable technologies such as PDAs, MP3 players, tabletPCs, gaming devices, navigational technologies (eg GPS) handhelds and mobile phones going to be the technologies for classrooms of the future?

Participants identified future directions on their horizons as including:

- ICT in teaching and learning is here to stay;
- School education will continue to be redefined to include 24x7 access to the school intranet;
- Ongoing professional learning will continue to be required for educators to remain current with technologies as they emerge for classroom use;
- Email will increase as a communication mechanism between schools, between schools and families, and between schools and central and district offices; and
- The functionality of online learning environments will continue to build with their capacity to support communications across distance and time, continuing to be part of a 21st century school education.

Identifying these directions however, raised questions about the future for school education among participants. The questions raised included:

- What are the strategies for planning and creating learning spaces that are suitable for the present but acknowledge there is the potential to change the boundaries and timeframes of a school in the future: i.e. how can we develop
teaching and learning activities that enable students to learn anywhere, anytime in both formal and informal settings?

- What are the models of recurrent funding that will enable schools to sustain their efforts to include ICT into teaching and learning?
- What are consultative budget organisation and management processes that take account of future requirements for ICT in teaching and learning?
- What are the sustainable software licence regimes available for educational purposes?
- How can ICT in the future be more flexible and more attuned to the learning styles of students? and
- How can links be made between the physical constructs of schools and the technical solutions?

While participants were able to articulate a wide range of concerns about the future, it would seem there are two variables identified as valuable by school educators that are likely to remain important into the future:

- the primacy of the relationship between teacher and student; and
- the importance placed by educators on putting pedagogies before technologies when planning teaching and learning activities that incorporate ICT.

Indeed, one strategy described by a participant for imagining the future while implementing in the present is to identify the characteristics of teaching and learning with ICT that are likely to be more perennial. This person asserted such an approach can assist schools as they plan for a future that seems in the main, uncertain, and difficult to plan for. It was suggested such an approach highlights the importance of schools articulating vision statements and preparing strategic plans to underpin their visions.

### 6.2 Ethical issues

The ethical use of ICT in teaching and learning was identified by participants as an emerging issue for them, particularly as it relates to the production of quality student outcomes. Some participants identified ethical applications and use of ICT as areas in which further research is required. As one participant indicated:

> there will need to be some very tangible work done on ethics and appropriate material usage to ensure that teachers are not accused of serial plagiarism and intellectual property theft. The copyright issue with software and materials sourced on the www will be an ongoing issue.

Participants also indicated while there are various aspects to leadership such as contingent leadership, transformational leadership and political leadership, it is the
ethical leadership that now requires further investigation. Ethical issues that participants identified as requiring consideration included:

- The ethical use by all members of the school community of materials posted on the Internet;
- Establishing policies and procedures for monitoring and addressing ‘cyber-bullying’ at school;
- Developing a deep understanding across the school community of the moral and ethical implications that arise from increased access to information;
- Understanding the ethical issues of information use, publication, intellectual property, identity management and identity protection;
- Protecting students’ identities while encouraging students to publish; and
- Developing understandings across the whole school community of what it is that is acceptable to post to email and online environments, that is cognisant of libel and slander laws, and to also understand the consequences of not respecting these laws, such as litigation.

6.3. Implications arising from integrating ICT into teaching and learning

This research has highlighted how ICT is providing a lens through which to reconceptualise schooling in the 21st century. Indeed, the integration of ICT into teaching and learning has been reported as a fundamental part of bringing about whole school change. Through this research, many practical ways in which leaders can develop their knowledge, skills and understandings concerning the integration of ICT into teaching and learning in schools have been revealed.

It has also highlighted the importance of further developing leaders’ capabilities in leading school change that includes incorporating ICT into teaching and learning. A strategy emerging in some schools and jurisdictions to ensure teachers and leaders are incorporating ICT into their work has been to include specific ‘ICT requirements’ into job specifications, performance indicators and other appraisal systems.
CONCLUSION

This research has investigated how leadership supports teaching and learning with ICT. Two resounding themes emerged: ‘leadership matters’ and ‘start with the pedagogies not the technologies’. Integrating ICT into teaching and learning is affording educators opportunities to shift from teacher-centred to student-centred learning. School principals were identified as critical people for creating and maintaining environments compatible with such changes in approach. Furthermore, participants indicated that integrating ICT into teaching and learning requires schools to have a ‘whole school’ strategic focus on student learning, teaching and organisational improvement. In-school strategic approaches have been identified as necessary to accommodate philosophical, pedagogical, professional learning, physical and practical issues arising from the integration of ICT into teaching and learning. Participants also reinforced the importance of having in-school processes that are regularly reviewed and revisited.

Professional learning was consistently raised as being critical for both school leaders and teachers to enable them to integrate ICT into teaching and learning. The majority of the professional learning concerning ICT was reported as being school-based and often self-directed. A current complexity for school leaders and those organising professional learning activities in schools however, is that not all staff are at the same stage of ‘ICT development’. ‘One size fits all’ approaches to professional learning are therefore not a suitable solution. Instead, varying types of in-school professional learning were identified as being required to meet the different requirements and stages of learning evident in a school staff.

The research has highlighted educational, organisational, philosophical and social implications of decisions concerning the deployment of ICT into teaching and learning in schools. The participants in this research indicated that school leaders and especially principals are curriculum and pedagogical leaders and must not only ‘support’ but ‘lead’ initiatives integrating ICT into teaching and learning. School leaders and especially principals were nominated as key people who must understand the consequences of their whole school ICT decisions. They should have the ability to reflect on the consequences of their decisions for their school and community and for the types of teaching and learning they value.

This research highlighted the necessity for taking a strategic approach to the embedding of ICT into teaching and learning. The following aim is indicative of the sorts of integrated approaches proposed in the focus groups:

It is important to have a vision, access to technologies in classrooms, time for teachers’ professional learning, technical support, budget allocations for infrastructure and professional learning for staff, an ICT refurbishment plan, an intranet, access to ‘help’ facilities, up to date software, and educational and technical support for classes.

The challenge for the Australian school sector now is to make it happen.
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APPENDICES

APPENDIX 1: DATA COLLECTION

This Appendix provides a brief overview of the method used to collect data for the research and provides an overview of the cross-section of participants from whom the data was being collected.

A1 Data collection

Data was collected between June and September 2005 through the use of forty focus groups conducted in each capital city in Australia. The focus groups were organised using the following concurrent strategies:

- linking into the agendas of national meetings that involved key jurisdictional representatives from the government and non-government schools sectors around Australia;
- participating in national and state peak professional association conferences;
- working through key focus people in jurisdictions; and
- sending letters of invitation to attend one of the focus groups, signed by the Chief Executive of Teaching Australia, to the principal and teacher professional associations in each state or territory.

A2 Participants

The participants were drawn from a cross section of the government and non-government school education communities ranging from chief executives of government agencies through to system and sector officers at Commonwealth, national, state and territory levels; officers in teacher and school registration organisations; academics; representatives from principals and teacher professional associations; parent associations; and individual principals, in-school leaders and teachers from both primary and secondary schools.

Participants straddled a diverse and fulsome cross section of ‘content areas’ ranging from Maths to Music, Dance, Art, Design, English, Languages other than English, English as a Second Language, Science, and Studies of Society and Environment. Participants also included representatives concerned with cross-curriculum issues including special education, Aboriginal education, multicultural education, girls’ education and teacher librarians.
Table Two: Percentage of total participants according to leadership category

<table>
<thead>
<tr>
<th>Participants’ leadership category</th>
<th>Percentage of total participants</th>
</tr>
</thead>
<tbody>
<tr>
<td>Chief Executives: Government agencies</td>
<td>1%</td>
</tr>
<tr>
<td>System and sector leaders: ICT, Curriculum, Leadership</td>
<td>25%</td>
</tr>
<tr>
<td>School principals</td>
<td>22%</td>
</tr>
<tr>
<td>In School Leaders – Deputy Principals, Assistant Principals, Heads of Department, ICT Directors</td>
<td>16%</td>
</tr>
<tr>
<td>Association representatives/professional leaders</td>
<td>16%</td>
</tr>
<tr>
<td>Teachers</td>
<td>12%</td>
</tr>
<tr>
<td>Academics</td>
<td>8%</td>
</tr>
<tr>
<td>Adult students, Parents &amp; Industry representatives</td>
<td>1%</td>
</tr>
<tr>
<td>Teacher and school registration boards</td>
<td>1%</td>
</tr>
<tr>
<td>TOTAL</td>
<td>100%</td>
</tr>
</tbody>
</table>
A3 Focus group questions
The focus group questions are included in Figure 6.

Figure 6 - Research question:
How does educational leadership support learning with information and communication technologies (ICT) in Australian schools?

Gaining context
1. Could you say a bit about yourselves (individually or as a group) and briefly describe your work? What factors have helped you to include ICT into your work?

ICT leadership and positional leadership
2. In your experience, what types of educators, or who are leaders in learning with ICT?
   Scaffolding questions:
   a. What work do they do?
   b. What positions do they hold?
   c. How do they provide effective leadership?

Organisational strategies
3. What organisational strategies do you believe are seen in schools that are structured so that teaching and learning with ICT is supported?
   Scaffolding questions:
   a. What roles do school leaders play in contributing to these organisational strategies?
   b. In what ways is your school changing to accommodate ICT into teaching and learning?

Teaching and learning with ICT
4. How is teaching and learning with ICT supported through school leadership? What are the ways in which teaching and learning with ICT impact on students’ learning?
   Scaffolding questions:
   a. What practices are evident in schools that demonstrate ICT leadership?

Leadership attributes
5. In what ways are the attributes of school leaders changing to accommodate the integration of ICT into teaching and learning?
   Scaffolding questions:
   a. Do you think the integration of ICT into teaching and learning is reshaping our assumptions about educational leadership? If so in what ways? If not, why not?
   b. Do you think new forms of school leadership are required to foster teaching and learning with ICT? If so, why? If not, why not?

Future implications
6. What are the future implications for schools/systems leadership with the integration of ICT into teaching and learning?

Professional learning
7. What sorts of professional learning concerning the integration of ICT into teaching and learning would be beneficial for school leaders?
   Scaffolding questions:
   a. What sorts of support do school leaders require to foster teaching and learning with ICT?

Research question
8. To return to the research question, from your respective perspectives, how does educational leadership support learning with information and communication technologies (ICT) in Australian schools?

Anything missing?
9. Is there anything else you would like to say?
APPENDIX 2: ESSENTIAL CONDITIONS FOR TEACHER PREPARATION

The International Society for Technology in Education (ISTE) has developed a chart which provides an overview of the essential conditions necessary for teacher preparation to support the teaching and learning with ICT. These conditions are summarised below.

**Essential conditions chart**

This chart [below] provides guidelines for the NETS [National Educational Technology Standards] for Teachers essential conditions that should be in place for each phase in the teacher preparation process to support effective use of technology to improve learning, communication, and productivity (ISTE 2000 p7)

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**Figure 7**

**Shared Vision** – There is proactive leadership and administrative support from the entire system.

**Access** – Educators have access to current technologies, software, and telecommunications networks.

**Skilled Educators** – Educators are skilled in the use of technology for learning.

**Professional Development** – Educators have consistent access to professional development in support of technology use in teaching and learning.

**Technical Assistance** – Educators have technical assistance for maintaining and using the technology.

**Content Standards and Curriculum Resources** – Educators are knowledgeable in their subject matter and current in the content standards and teaching methodologies in their discipline.

**Student-Centered Teaching** – Teaching in all settings encompasses student-centered approaches to learning.

**Assessment** – There is continuous assessment of the effectiveness of technology for learning.

**Community Support** – The community and school partners provide expertise, support, and resources.

**Support Policies** – School and university policies, financing, and rewards structures are in place to support technology in learning (ISTE NETS 2000, pp6-7)
APPENDIX 3: WORKFLOW MODEL FOR INCORPORATING DIGITAL LEARNING OBJECTS INTO A LESSON PLAN

Some participants described the characteristics of a workflow a teacher follows for incorporating digital learning objects into a lesson plan. Figure 8 provides an illustration of the sort of workflows described.

Workflow for planning a lesson incorporating digital learning objects

- Identify student learning outcomes
- Investigate repositories of learning objects from which to select appropriate objects for the lesson
- Review potential learning objects
- Identify specific learning objects
- Familiarise yourself with the functionality and the breadth and depth of the learning object
- Plan out the lesson including the learning object
- Upload the identified learning objects into the school’s learning management system
- Plan contingencies for unforeseen circumstances
- Make the necessary arrangements for accessing computers, eg:
  - Book the computer ‘lab’ or the bank of laptops; and/or
  - Check computers have the necessary software eg plugins
- Conduct the lesson
- Review the lesson and students’ achievements.

Figure 8: Workflow for planning a lesson incorporating digital...
PART 2: CASE STUDIES

Overview of case studies

Participants valued case studies as a strategy to support them address issues concerning the integration of information and communication technologies (ICT) into teaching and learning. The Leadership and Learning with ICT research project collected three case studies in December 2005 to address different perspectives to leadership and learning with ICT:

- School organisation;
- Professional learning; and
- Models of leadership.

The case studies were drawn from four different schools: one from the government school sector in Canberra; an independent school in Brisbane; and two Catholic schools in regional New South Wales.

This paper provides a brief overview of these three case studies.

Leadership and school organisation

Somerville House in Brisbane, Queensland provided the context for the Leadership and school organisation case study.

The main characteristics of this case study are as follows:

<table>
<thead>
<tr>
<th>Focus</th>
<th>Leadership and school organisation</th>
</tr>
</thead>
<tbody>
<tr>
<td>School</td>
<td>Somerville House</td>
</tr>
<tr>
<td>Location</td>
<td>Metropolitan Brisbane, Queensland</td>
</tr>
<tr>
<td>Sector</td>
<td>Independent</td>
</tr>
<tr>
<td>Year levels</td>
<td>P-12</td>
</tr>
<tr>
<td>Student enrolment</td>
<td>1200</td>
</tr>
<tr>
<td>Gender</td>
<td>Single sex (girls)</td>
</tr>
<tr>
<td>ICT infrastructure</td>
<td>Heterogeneous:</td>
</tr>
<tr>
<td></td>
<td>Local Area network with fixed and laptop computers</td>
</tr>
<tr>
<td></td>
<td>Wireless and modem connectivity</td>
</tr>
</tbody>
</table>

Leadership at Somerville House is provided by the principal, heads of schools, ICT leaders, information technologies (IT) specialists and exemplary classroom teachers. All leaders at the school are working towards achieving the changes required to include laptops as a part of high quality teaching and learning at Somerville House.
The school is progressively introducing a student laptop program for all students entering Year 6 each year. The school leadership views their approach to incorporating ICT into teaching and learning in a highly connected way. The laptop program for students is coupled with professional learning for staff so that they can generate ‘best practice’ teaching and learning that maintains students’ high levels of academic achievements.

**Leadership and professional learning**
The *Leadership and Professional Learning* case study examines the strategies that support teaching and learning with ICT employed at Ainslie School in Canberra.

The main characteristics of this case study are as follows:

<table>
<thead>
<tr>
<th><strong>Focus</strong></th>
<th>Leadership and professional learning</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>School</strong></td>
<td>Ainslie School</td>
</tr>
<tr>
<td><strong>Location</strong></td>
<td>Metropolitan Canberra, Australian Capital Territory</td>
</tr>
<tr>
<td><strong>Sector</strong></td>
<td>Government</td>
</tr>
<tr>
<td><strong>Year levels</strong></td>
<td>Primary: K-6</td>
</tr>
<tr>
<td><strong>Student enrolment</strong></td>
<td>375</td>
</tr>
<tr>
<td><strong>Gender</strong></td>
<td>Co-educational</td>
</tr>
<tr>
<td><strong>ICT infrastructure</strong></td>
<td>Heterogeneous:</td>
</tr>
<tr>
<td></td>
<td>- Local Area network with fixed and laptop computers</td>
</tr>
<tr>
<td></td>
<td>- Wireless and modem connectivity</td>
</tr>
</tbody>
</table>

Whole school and whole year approaches to professional learning are employed at the school. Leadership is seen as fundamental to ensuring the professional learning activities meet the differing staff requirements, and are in line with the school’s strategic plan. Leadership for incorporating ICT into teaching and learning at Ainslie School is provided in a collegial manner through team and individual approaches. The leadership is aiming to ensure ICT are in the hands of teachers and students. Inextricably entwined relationships and intersections are seen to exist at the school, between:

- the approaches to leadership, professional learning and strategic planning processes; and
- the developing physical infrastructure of the school.

The principal finds that a team-based leadership style assists her to manage her workload.
Models of leadership

Two co-educational K-10 Catholic schools in regional New South Wales provide insights into the models of leadership that can be used to support teaching and learning with ICT. Leadership models evident at St Mary’s War Memorial School at West Wyalong and St Anne’s Central School at Temora are outlined. The leadership the principals and teacher-leaders use to bring about change and to support and empower others to also provide leadership are highlighted in this case study.

Characteristics of this case study are as follows:

**Focus**
Models of leadership

**Schools**
St Mary’s War Memorial School (West Wyalong)
St Anne’s Central School (Temora)

**Location**
Rural New South Wales

**Sector**
Catholic

**Year levels**
Primary: K - 10

**Student enrolment**
St Mary’s War Memorial School: 150
St Anne’s Central School: 220

**Gender**
Co-educational

**ICT infrastructure**
Local Area network with fixed computers
ADSL connectivity

Shared, consultative leadership characterises the leadership at both these schools. The principals employ different leadership models depending on the context and outcomes required. At varying times they use participatory leadership and at other times, delegative leadership styles. These principals choose situational leadership approaches appropriate to the people, purposes, processes and outcomes to be achieved.

**Leadership pointers**

The school leaders in each of the four schools visited to collect the data for these case studies all provided some strategies from their experiences that others may find useful in their context. These pointers included suggestions such as:

1. Start with the pedagogy. Work on the pedagogy and the rest will follow … professional learning, infrastructure, content and services
2. Establish a whole school culture of learning
3. Ensure a whole school approach by including ICT across all key school planning and accountability documents including the strategic plan, pedagogy statements, annual reports and budget statements
4. Empower staff to participate in mentoring and coaching activities
5. Structure time within the school day and week for coaching, mentoring and experimenting with ICT
6. Keep the infrastructure reliable and robust, thereby relegating it to a 'non-issue'.

**Conclusion**

The three case studies collected as part of the *Leadership and Learning with ICT* project have focused on specific aspects of leadership that support teaching and learning with ICT. These examples are not exhaustive but they do provide some useful insights into the approaches, plans and experiences of the leaders in these schools.
Case Study 1: Leadership and school organisation

Somerville House
Brisbane, Queensland

Overview
Leadership and school organisational structures that support teaching and learning with information and communication (ICT) technologies provide the basis for this case study. Insights into the leadership models evident at Somerville House in Brisbane, Queensland are outlined.

Characteristics of this case study are as follows

Focus Leadership and school organisation
School Somerville House
Location Metropolitan Brisbane, Queensland
Sector Independent
Year levels P-12
Student enrolment 1200
Gender Single sex (girls)
ICT infrastructure Heterogeneous:
  - Local Area network with fixed and laptop computers
  - Wireless and modem connectivity
Overview
Leadership is provided by the principal, heads of schools, ICT leaders and information technologies (IT) specialists who are working towards achieving the changes required to include laptops as a part of high quality teaching and learning at Somerville House. The diagram below provides an outline of how the school leadership views their approach to incorporating ICT into teaching and learning. It highlights the inter-connectedness of the respective approaches and organisational structures within the school to support the introduction of a student laptop program coupled with professional learning of staff to generate ‘best practice’ teaching and learning, that maintains students’ high levels of academic achievements.

Diagram developed by Mr Mona Taimara in collaboration with senior staff at Somerville House.

Background
This case study commences with background information about the school and the community it serves. The reasons the school has decided to incorporate ICT into teaching and learning are outlined. The setting is provided to contextualise the leadership and school organisational structures employed at Somerville House.
School context

Somerville House is located in an inner city suburb of Brisbane, Queensland. It is an Independent, all girls P-12 school. Somerville House is owned by the Presbyterian and Methodist Schools’ Association (PMSA). It is both a day school and a boarding school, and has an enrolment of 1200 girls. The school opened in 1899 and it maintains and honours the traditions developed over its 106 year history. It aims to provide all students with challenging and varied programs of learning addressing the academic, physical, recreational, social and spiritual aspects of learning. Excellence in student achievement is highly valued.

Classes at Somerville House are provided within three sub-schools:

- Junior school (Years Preparation to 6);
- Middle school (Years 7 to 9); and
- Senior school (Years 10 to 12).

The teacher to student ratio without including members of the school leadership team is just under one to fifteen students. The school accepts Australian and full fee paying students from overseas. The school has a very stable staff, the majority of whom are women. Most staff members are fulltime and several staff members have or are studying for post-graduate qualifications: Masters of Education, Professional Doctorates or PhDs. A couple of staff are authors of English, mathematics and history school text books, used across Queensland.

A laptop program is being progressively rolled out at the school. The decision to commence a laptop program was taken under the leadership of the immediate past principal. In semester 2 2003 all Year 6 students were issued with a laptop. Each successive year since 2003 the Year 6 students receive a laptop: i.e. in 2004 both Year 6 and Year 7s had a laptop and in 2005, Years 6, 7 and 8 were using laptops. In 2009 all students in Years 6-12 will have their own laptop computer. That is, the school will be managing about 900 laptops plus the fixed networked and stand alone computers located within the school.

Under the leadership of the current principal, student learning has become the focus of the laptop program.
Motivations

The reasons for implementing a laptop program for students in Year 6 and beyond have developed over time at Somerville House. Reasons identified by the senior staff at Somerville House include the following:

- online learning approaches by teachers were hampered by lack of easy access to computers by the students at school;
- fixed computers locked up physical spaces;
- utilisation of ICT by students at the school during their ‘learning journeys’ through school is growing;
- educational content available on the Internet through a number of Australian and overseas content providers is growing;
- software available to teachers to assist in the delivery of online materials via computing and web based technologies are increasing;
- staff want to offer learning that includes access to the school’s intranet by students irrespective of location or time of day; and
- student-centred, life-long learning approaches underpin the teaching and learning at the school.

Incorporating ICT into teaching and learning through the laptop program is seen as one component of improving the quality of education provided to students at Somerville House.

Leadership

Leadership of change characterises the work at Somerville House. Changes are occurring across the organisational structures, systems and culture of the school. These include moves away from teaching and learning that is solely content based, to inquiry based learning where critical thinking is fostered. Individuals, committees and units within the school provide educational, organisational and ICT leadership across the school.

The leaders

The principal provides leadership to the staff, students and the broader school community. Key people, committees and groups also provide leadership. Organisationally, the senior leadership team within the school is comprised of the Principal and nine other senior staff including the Heads of Schools, the Director of Studies and the Director of IT. The introduction of the laptop program at Somerville House was endorsed by the School Council and they continue their commitment to that decision.
Principal

The principal has been at Somerville for nearly two years. She replaced the previous principal who retired, having been at the school for sixteen years. The previous principal initiated the planning for the introduction of the laptop program. In 2003, he set the expectation that all staff at Somerville House were to be computer literate. He included a requirement in their enterprise bargaining agreement that they had to be able to demonstrate their capacity with the Microsoft suite of products.

The new principal commenced work in 2004. She is leading a change to the philosophical approach underpinning the ICT deployment program at the school: moving the program from a ‘hardware-management’ implementation model to a pedagogical, teacher driven approach. She holds a pivotal role leading, coordinating and facilitating organisational, physical and pedagogical change processes across the whole school. She employs different leadership models depending on the context and outcomes required. She chooses the leadership approach appropriate to the situation, people, purposes, processes and outcomes to be achieved.

The organisational structure leadership model is collaborative, delegated, shared and exercised at different levels, across the whole school staff. She has established a Curriculum/ICT committee and two subcommittees to develop a cohesive approach to curriculum development and teaching and learning at the school. She is actively encouraging staff to engage in both formal and informal professional dialogues about teaching and learning. The principal manages conflicts as they arise so that the overall directions of the changes are maintained, while giving staff the opportunity to air and discuss their views.

The principal sets expectations that all staff at Somerville House ought to engage in processes of reflection and improvement. She proposes that the use of laptops is to be seen as a tool to support a range of innovative and exemplary teaching practices. She models the use of ICT in her own work and regularly communicates with staff via email as well as personally. Newsletters are published online each Wednesday, and parents have access to these newsletters through a password protected space on the school website or they can register to have the newsletters emailed to them. This website also provides comprehensive public information to current and prospective parents.

Heads of Schools

All three Heads of Schools are responsible for working with their teachers to prepare and implement the school laptop program. The Head of the Junior School has led the introduction of the laptop program with the year six teachers since 2003. The laptop program entered the Middle School in 2004, and in 2007 the Senior School teachers will be involved. The Head of the Senior School is currently planning strategies to support teachers of students in years 10 to 12 who will enter the senior school with four years of experience of using laptops as an integral part of their learning.
Prior to the introduction of the laptop program, the Head of the Junior School had been supporting staff include ICT into teaching and learning. The Year 6 teachers involved in the initial deployment of laptops were interested in learning more about how to include ICT into their classroom practices. To support initial professional learning requirements, the school purchased external support from the company Futurekids to provide a planned program of computer literacy using coaching approaches with these staff. The Head of the Junior School, in collaboration with the Curriculum Application Support Services unit, is now supporting teachers developing understandings about ICT and authentic learning, constructivism and the roles of formative and summative assessment.

**Director of IT**

The Director of IT provides ‘technical leadership’ to the school. He provides oversight for the extensive infrastructure and technical requirements of the school and participates in the senior leadership committees within the school. Somerville House currently employs five IT technicians who manage the rollout and refreshing of laptops; provide troubleshooting support; manage the servers and undertake planning for the anticipated rollouts of laptops to occur progressively across the middle and senior years from 2006-09.

**Curriculum/ICT committee**

A Curriculum/ICT committee has been established by the Principal to review curriculum, assessment and teaching and learning processes, with a view to providing leadership for continuing reform to pedagogy that includes the integration of ICT into teaching and learning. The Curriculum/ICT committee has two subcommittees reporting to it: the Curriculum Frameworks and Teaching and Learning subcommittees.

The Curriculum Framework subcommittee is in the process of developing a P-12 Curriculum Framework for the school. The Principal invited a staff member to chair this subcommittee in July 2004. He sent an email to all staff seeking expressions of interest for participation on this subcommittee. The aim of the subcommittee has been to develop a Framework through ‘collegial collaboration’. Similarly, the Teaching and Learning subcommittee is developing a statement of pedagogical processes that encourage student engagement and reflective practice.

**Professional support**

An organisational unit called the Curriculum Development Unit comprises two support staff whose full-time roles are to provide teachers with technical and pedagogical support on ‘just-in’ time and longer term bases. In addition, they are introducing the school’s intranet to teachers and are undertaking the programming requirements associated with this project.
**Teacher-librarian**

The teacher-librarian assists staff with sourcing online materials for their professional learning including online academic journals. She also assists staff locate sound online materials to support their programs of learning. As teachers increasingly move their programs to the intranet, she is able to view these and prepare materials in the library to support their work.

**School change**

The integration of ICT into teaching and learning is a fundamental part of the whole school redevelopment processes occurring at Somerville House. The school has a vision for ‘anywhere, anytime’ learning. The leadership of the school recognise that change takes time and they employ planning, school budgeting and professional learning as key parts of their change processes.

**Strategic plans and policies**

The vision for integrating ICT into teaching and learning through the laptop program has been to make education at Somerville House available at any time and from any location. The incorporation of ICT into teaching and learning features in all Somerville’s planning and accountability documents. Since 2004 the strategic planning of the school has focused upon incorporating ICT into teaching and learning. All junior school staff include ICT as an integral component of their planning documents. Staff recognise that the integration of ICT across the curriculum has to occur in ethical and appropriate ways.

The school Prospectus promotes the technology program, indicating it is aiming to prepare students for life in the 21st century by:

- promoting engagement through student-centred learning;
- active participation by students in their construction of knowledge;
- accessing information anywhere, anytime where parents, teachers and students are part of an interconnected learning community; and
- providing opportunities for higher order thinking through an emphasis on comprehension, analysis and interpretation of information.

The 2004 Annual Report integrates reporting about the laptop program into key aspects of school life rather than referring to it separately. This approach highlights the laptop program is an accepted and integral part of school life; rather than a stand alone program.

Planning for the infrastructure required to support the implementation of a laptop program began over five years ago. The Director of IT indicated that this length of lead time before commencing the rollout of the laptop program was necessary in
order to consider the ICT issues and options in detail, so that considered decisions about the required infrastructure could be made. Managing the laptop program is now an ongoing process of planning, action, review and reflection.

The Information Technology Services unit at Somerville House has developed Service Agreements that are signed commitments between the Director of IT Services and the respective Head of Schools. The purpose of the Agreements is to define the services provided and not provided by the Information Technology Services unit. The Agreements identify performance targets for service delivery and summarise the responsibilities of both the parties to the Agreement. These Service Agreements commit the partners to working together collaboratively, as a team in a mutually beneficial relationship with a ‘high degree of integrity, trust and satisfaction between both parties’.

This Agreement includes the following statement:

It is our mission to provide ongoing, improving support for technology to other departments at Somerville House, to ensure reliable, secure and responsive services for consumers of technology, and to build anytime, anywhere education.

To support the technical implementation of the laptop program, staff at Somerville House have developed a Laptop Handbook for use by students, parents and staff. This Handbook commences with an overview of the philosophy underpinning teaching and learning at the school. It states that:

Using laptops in our teaching programs helps us to develop confident young women with a sound understanding of the world, capable of navigating the complexities they will face in their studies and professional lives once they leave school.

This Handbook also provides:

- logistical information and ‘safe use and handling’ advice;
- the expected prior knowledge of ICT software the students are expected to know and be able to use;
- library information including online research strategies for students;
- advice on safe Internet use for parents;
- physical health and safety aspects of using the laptops for students;
- the school’s loan laptop policy and its terms and conditions; and
- specifications and details about support locations and availability within the school.

Somerville House has developed internal policies and processes to maintain the integrity of the IT infrastructure at the school. Any additions or changes to the IT infrastructure including the addition of peripherals (eg data projectors, scanners and
printers) must follow the Request for Change policy. The purpose of this policy is to ensure that any changes to the IT system are made in deliberate and planned ways so that the infrastructure remains secure, robust and reliable. Any requests for change go through the IT Services Desk and are analysed from technical and curriculum perspectives before being approved. The curriculum impact of a proposed change is analysed by the staff in the Curriculum Application Support Services unit.

**Budgets**

All students involved in the laptop program are required to pay a ‘technology levy’ which pays for the lease of a laptop computer, the associated software, insurance, warranties and the technical support and services provided by the school. The laptops are leased and are refreshed on a three year cycle. The laptop levy is separately itemised on the school fees structure.

Funding for professional learning to support the introduction of the laptop program and to support staff develop confidence in incorporating inquiry-based methods of teaching and learning with the laptops, is recognised by the principal as an important budget requirement. Both in terms of funds and time allocated, professional learning to support the integration of ICT into teaching and learning in 2004 absorbed over a quarter of the available funds and time. Allocations in the same period to support professional learning for leadership and management at the school absorbed 17 percent of the available funds.

**Professional learning**

Professional learning is recognised as a key component of bringing about change at Somerville House. Considerable professional support is provided to build a culture of learning among the staff at the school, and to support teachers incorporating ICT into their teaching and learning. Professional conversations about issues and policy directions are explicitly promoted by the principal. She makes this clear in formal, written information to staff and in the organisational structures she has established to enable the school community to go through planned improvement processes.

The *Curriculum Development Unit* provides ongoing technical and pedagogical support to teachers. The two teachers in this unit also act as role models to both students and staff. They use different professional learning and support approaches with staff depending on their levels of expertise and confidence. They run in-school and after school workshops with staff on pertinent issues at the time. They recognise that while some teachers are happy to experiment and explore with ICT, others feel they need to have their ‘hands held’ throughout their learning processes. They build their professional learning approaches around each teacher’s prior knowledge and the program they are aiming to offer. Coaching approaches are used with staff to provide them with support as they include ICT in their teaching and learning. Choosing the time to let staff ‘go’ and work independently of the *Curriculum Development Unit* is one of the dilemmas this unit faces. Staff at Somerville House recognise the benefit to their own work, these two full-time staff members provide.
Staff across the school are also supported to attend local, national and international conferences and to participate in professional forums. The staff in the Curriculum Development Unit are supported to attend conferences to upgrade their own skills and understandings about issues and resources that can assist in the integration of ICT into teaching and learning by staff at Somerville House. Staff are actively encouraged to commit to professional activities outside of Somerville House, including being active members of professional associations.

The school recognises the benefit of drawing on external expertise and on school-based research to inform their work. In 2006, the school will be employing the assistance of academics from local universities to assist them through the next stages of the change processes.

**Infrastructure**

Somerville House has spent considerable time planning and implementing a secure, reliable and robust infrastructure. It is managed in-house, by the staff in the Information Technology Services unit. A help desk is available on site, and provides support during school hours between 7.30am and 4.00pm and between 8.00am and 4.00pm during school holidays.

The school has opted for wireless technologies and an application service provider (ASP) model. The IT infrastructure supports laptop, desktop and PDA access within the school as well as home access. Connectivity over the wireless network is 11 to 54 mbps. Dial up modem and ADSL access are also supported. Single sign on and authentication have been part of the school's planning from the commencement of the laptop program.

Parents lease a computer from the school which is provided to students with preloaded operational and educational software. The school has defined its own specifications for the laptops which are provided by a commercial computer company. Standardisation of the specifications by the school has been important in order to enable them to support and manage the system and to keep it robust and reliable. The laptops are loaded with 60gb of hard drive space, 512mg of RAM, have integrated Bluetooth and a 56kbps modem. The laptops are fitted with a wide screen and a DVD player. They weigh about 2 kilos. Students are provided with a custom designed backpack or bag on wheels to carry the laptop.

The school uses a mixture of open source and proprietary software, browsers and plugins, and employs open standards such as LDAP. Both Windows and Linux operating systems are used to support the enterprise, application and web servers. The school provides file, print, email and access to an intranet for curriculum and assignment delivery. Collaboration tools including chat, shared calendars, shared files and discussion threads are provided through the Moodle learning management system.

The IT infrastructure supports interoperability between the administration, curriculum and library requirements of the school via the school’s intranet. The
school is developing its own repository of learning objects and online teaching and learning materials for access by the staff over time. External access by parents, students and teachers is supported. Files are metadata tagged to enable federated searches. All IT systems are backed-up, first to servers and then to tape. The tapes are then housed off-site. This system enables a reliable disaster-recovery program to be enabled.

**Teaching and learning with ICT**

Teaching and learning at Somerville House is committed to achieving excellence in students' learning outcomes. Throughout its history Somerville House has placed an emphasis on discipline and the values of Christian-based ethics, tolerance and the recognition of the worth of each individual. Prefects provide leadership to students across the school. Somerville House has a tradition of providing a broad, general education with music, the performing arts and sport being highly valued. There is a commitment across the school to achieving excellence in students' learning through providing academically challenging and varied programs of study. To continue to achieve and maintain the tradition of high quality student outcomes at the school into the 21st century, the school is moving away from traditional modes of information provision to more inquiry-based, authentic teaching and learning approaches, which include ICT as appropriate. The laptop program is providing a catalyst through which to focus the changes to teaching and learning practices at Somerville House.

**Equipment and physical layout**

The school maintains its usual classroom organisation with wireless deployed throughout the school. Students in years 6, 7 and 8 take their laptops to all classes. Classrooms vary with some rooms able to be used as flexible spaces and others set up in more traditional configurations. The school has science laboratories, music rooms and computer laboratories. Security cupboards are provided in Year 7 classrooms for the storage of laptops when they are not in use. Some classrooms are fitted with data projectors and some interactive whiteboards are being trialled. The library houses several fixed computers, also for student use.

**Induction**

Somerville House provides all parents and students enrolling at the school with a written summary of the expected prior knowledge of computing skills students require in order to participate in class. Students at all levels within the school are expected to have a basic understanding of how to operate a computer and navigate with an operating system. They are expected to be able to undertake research using the Internet and to use word processing and graphics packages, both open and proprietary. These students are also expected to be able to use open and proprietary desktop publishing and multimedia packages to support their learning.
Integrating ICT into teaching and learning

Teachers in Years 6, 7 and 8 are incorporating ICT into teaching and learning in a range of ways. Electronic resources such as digital learning objects, webquests, robotics, videos, clay-mation and online databases are all used as appropriate, as part of the teaching programs. Students present their assignments electronically and can access their learning requirements through the school intranet.

Teachers are encouraged to plan their teaching activities according to the type of ICT integration identified by the staff: incorporating electronic resources; using the Internet for researching and evaluating information; communicating with others; participating in global communities; and constructing digital information and products. Teachers are being supported to revise their teaching and learning programs so that they support critical inquiry, creative thinking, participation in learning, communication and reflection.

The school's intranet provides real time and asynchronous online learning opportunities for staff and students. It includes a ‘my subjects’ space where teachers can specify assignment tasks; a glossary that provides lists of definitions; chat and forum spaces for synchronous and asynchronous communications between students and between students and teachers; polling facilities; questionnaires; quizzes; journals; and lesson pages.

Both the Junior and Middle Schools are aiming to support integrated approaches to curriculum and teaching and learning where higher order thinking, holistic learning, critical thinking, problem-solving and life-long learning are promoted. Students are being supported to be in charge of their own learning and to construct their own meanings of their learning by undertaking authentic learning activities that include outcomes-based tasks and reflective approaches to learning and assessment. Formative as well as summative assessment practices are encouraged.

Currently some subjects are incorporating ICT into their programs more so than others. In Years 6, 7 and 8, ICT is being included in English, mathematics, science, studies of society and environment and drama. Students indicate they see the inclusion of ICT in their studies as an accepted part of a 21st century education. They indicated they believe it is important to learn to apply ICT meaningfully, appropriately and ethically in their learning and such learning is important in preparing them for their lives on leaving school.
Leading the integration of ICT into teaching and learning

Key leadership strategies emerging from this case study include the following pointers:

1. Start with the pedagogy;
2. Allocate plenty of lead time for planning;
3. Establish and maintain organisational structures that support dialogue and participatory decision-making;
4. Document policies and procedures and regularly review plans;
5. Ensure professional learning with ICT is relevant to teachers’ practice and is not simply skills-based;
6. Encourage staff to join professional networks;
7. Ensure the initiatives have sufficient resourcing;
8. Personnel are important: get the right people into the right jobs and then get out of their way;
9. Provide support for teaching and learning, curriculum development and technical, infrastructure developments;
10. Have patience;
11. Predict potential problems;
12. Build connections inside and outside the school;
Participants

The following staff and students at Somerville House contributed to the development of the leadership and school organisation case study:

Ness Goodwin - Principal
Jackie McGregor - Head of Senior School
Mona Taimara - Director of IT Services
Amanda Rablin - ICT Integration Coordinator
Jessica Gramp - Multimedia Curriculum Developer
Tim Smetham - Year Teacher & Music Teacher
Arna Bennett - Head of Junior School
Nicola Silva - Mathematics Teacher
Kirk Williamson - Head of Middle School
Gary Butner - Director of Studies
Olivia Sisson - Mathematics, Science and IT Teacher
Rae Kelly - English, Studies of Society & Environment and Drama Teacher
Nicole - Student
Sally - Student
Laura - Student
Hei Yan - Student
Rebecca - Student
Case Study 2: Leadership and professional learning

Ainslie School
Canberra, Australian Capital Territory

Overview
Professional learning that supports teaching and learning with information and communication technologies (ICT) provide the basis for this case study. Insights into the professional learning strategies and the roles of leaders at Ainslie School in Canberra are outlined.

Characteristics of this case study are as follows:

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Background
This case study commences with some background information about Ainslie School and the community it serves. The reasons for incorporating ICT into teaching and learning are outlined. The setting of the school is provided to contextualise professional learning employed at the school and to highlight the role of leadership in facilitating that professional learning.

Community context
Ainslie School is a primary school (K-6) located in north Canberra. Canberra is the nation’s capital city and the seat for the Australian Government. Work for a large percentage of the adults living in Canberra is in the Australian Government agencies and associated industries, education, defence and health. The ACT has a population of almost 310,000. In 2004, almost a fifth of the population was under fifteen years of age. Although the population of Canberra is highly mobile, the suburbs feeding Ainslie School tend to be among the more stable in Canberra.
School context

Ainslie School is a government primary school and is part of the Australian Capital Territory (ACT) Department of Education and Training (DET). Ainslie School was established in 1927 and was the first school built with Federal funding. Its buildings and fittings are symbolic of its early 20th century origins. The main school buildings have historical significance to Canberra and have been placed on the ACT and Australian Heritage registers. The heritage conditions placed on the school mean that making changes to its physical structure is subject to additional building conditions in order to preserve its character. Wireless technologies have been deployed across the top floor of the school to avoid drilling holes into and through stone and brick walls half a metre thick. In 2006, the school received approval to make significant upgrades to the infrastructure of the buildings. These changes are planned to incorporate ICT into teaching and learning spaces.

Ainslie School maintains history and traditions through second and third generations of children attending the school. A special relationship exists between Ainslie School and the Australian National University School of Music for its K to 6 music program. Japanese is the language other than English taught at the school and the school maintains a sister school relationship with the Tsubai School in Nara, Japan. Over the past three years the school has maintained a strong focus on literacy and numeracy.

Ainslie School takes pride in maintaining a strong sense of community. Its priority enrolment areas are from the northern Canberra suburbs of Reid, Braddon, Civic and adjacent parts of Ainslie. The school draws children from families from a wide range of backgrounds at both ends of the financial and education spectrum. In general, the school has a tolerant community who are concerned about the experiences of the full breadth of students and their families forming the school community.

The principal has been at Ainslie School for three years. The school has a capacity of 375 students, and while some students attend from outside the priority enrolment areas, these enrolments are limited as the school is regularly at its capacity. The school has a total staff of thirty-nine including several part-time teachers and administrative and support staff. The staff includes:

- an Executive Team comprising the principal, a deputy principal and two executive teachers;
- twenty-five full and part time teaching staff; and
- ten full and part time administrative and support staff.

Leadership at Ainslie School occurs through electronic and the consultative structures established at the school. Electronic communication between the principal and staff, and between the school and parents, is becoming an accepted part of school life. Consultative structures and processes occur between the different teams in the school. All members of staff form part of a team: either a year
level team or a support staff team. The teaching staff are members of either an early years (K-1); middle years (2-4) or senior years (5-6) team. Each member of the Executive Team is a member of one of these teams. The principal meets with the staff members who are not members of one of the teaching teams.

Meetings of the different teams are strategically planned as follows, to enable input and consultation on school decisions:

- The Executive Team meets each Monday morning;
- Staff meetings are held each Monday afternoon;
- Curriculum meetings are held on Tuesday afternoons as required; and
- Year level team meetings occur once a week on a Wednesday.

The Governing Council of the school and the Parents and Citizens Association (P&C) are highly supportive of the directions being taken at Ainslie School.

**Motivations**

The integration of ICT into teaching and learning at the school has emerged from the school focusing on two inter-related priorities:

- improving the quality of students’ learning outcomes; and
- doing so in a learning environment that is consistent with providing a contemporary 21st century education.

**Leadership**

Leadership at Ainslie School is fundamental to ensuring whole school and whole year approaches to professional learning at the school. Leadership for incorporating ICT into teaching and learning is provided in a collegial manner through team and individual approaches. The leadership is aiming to ensure ICT is in the hands of teachers and students. Inextricably entwined relationships and intersections exist between:

- the approaches to leadership, professional learning and strategic planning processes; and
- the developing physical infrastructure of the school.

The Principal and the Executive team provide the strategic leadership for the planning of the school’s professional learning activities. Several concurrent professional learning strategies are used throughout the school each year.

**The leaders**

In 2005, key staff members and groups who provided leadership in professional learning to support the embedding of ICT into teaching and learning at the school were:
The Executive Team of the school includes the Executive Teacher who provides ICT leadership to staff.

**Principal**

The Principal provides leadership to the whole school community across the full range of her responsibilities including the professional development of all staff. Working in collaboration with the Executive Team, the Principal sets the culture and tone of the school. She sets clear expectations of all staff that they provide high quality teaching and learning programs. She considers ICT as an integral part of teaching and learning activities and leads and facilitates strategic planning processes with the staff and broader school community concerning the beliefs and values underpinning the teaching and learning at Ainslie. The Principal promotes and models a learning culture at the school by:

- using ICT in her own work and with her work with staff;
- doing a lot of professional reading herself;
- linking into her own local and national professional networks; and
- involving outside experts as required.

The Principal learns her own ICT skills. Her work at Ainslie Primary is consistent with the ACT DET *Learning Technologies Plan for ACT government schools and preschools 2004-06*, which articulates the responsibilities the ACT DET sees school leaders have in relation to teaching and learning with ICT. According to this *Plan*, principal responsibilities include:

- determining the priorities for development in their local settings;
- establishing and maintaining shared visions concerning the integrating of ICT into teaching and learning, information literacy and curriculum and management practices within the school;
- developing shared understandings across the whole school community;
- managing ICT professional learning; and
- ensuring a well-integrated ICT infrastructure is established and maintained (2004, p8).

**Executive team**

The Executive Team at Ainslie School provides leadership to the school community. It comprises the principal, deputy principal and two executive teachers. Each
member works with his or her respective year level team. This team meets each Monday morning to address whole school issues. In relation to ICT, this team plans strategic approaches to supporting teachers as they incorporate ICT into teaching and learning. Consultation points and decisions made at the Executive Team meeting held each Monday morning are conveyed to staff through the weekly whole staff meetings held each Monday afternoon. Consultations, discussions and feedback to the Executive Team occur through year level team meetings, which occur each Wednesday afternoon. An Executive Team member is also a member of a year level team.

**Executive teacher**

One of the executive teachers provides strategic and pedagogical leadership in embedding ICT into teaching and learning. He is a member of the Executive Team and also provides leadership to a year level team. This staff member works collaboratively with the externally funded *Learning Technology Officer* to provide ICT leadership across the school.

**External support**

From Term 2 to the end of 2005 the Centre for Teaching and Learning in ACT DET funded a *Learning technology officer* to work with the staff, both individually and in teams. This person is an exemplary teacher with high quality interpersonal and ‘adult educator’ skills and has some technical expertise. She worked at Ainslie School one day per week in Terms 2 and 3 and a few hours per week in Term 4 2005. Her role at Ainslie was to work alongside staff to professionally support them incorporate ICT into their teaching and learning. This officer attended the end of Term 1 staff planning days to support staff with planning their following term’s work and to assist staff include ICT into their learning activities. She worked in a range of capacities to support staff: as a demonstrator; team teacher; coach; mentor; and presenter at staff and team meetings. She also provided advice and assistance to school support staff.

**ICT Committee**

The ICT Committee within the school has responsibilities for implementing the strategies for improving ICT skills and access of staff and students identified with the *School Development Plan*.

**Professional learning**

Professional learning at Ainslie School is highly valued across the school community and is taken seriously. Evidence of the importance placed on professional learning at the school can be seen in the school structures in place to support professional dialogue; the funds allocated to professional learning; and in the coherence between professional learning approaches and the whole school goals. The Principal with the Executive Team have established multi-layers of professional learning to support staff include ICT into teaching and learning.
Organisation

Professional learning is seen as an ongoing process throughout the year. Consultative structures to support the development of shared understandings among staff about educational issues and to support a culture of learning have been carefully developed and built over time at Ainslie School. Professional learning is a specific and substantial funding line in all Ainslie School budgets.

Planning for the professional learning of staff at Ainslie occurs in the year prior to its implementation. Professional learning activities are identified to be consistent with the goals and strategic directions of the school, which are identified collaboratively by the staff. These goals and directions are reviewed annually. The school goals are hung from the ceiling above tables in the staff room to keep all staff reminded of their whole school goals throughout the year.

One of the purposes for establishing year level team meetings that are structured following the staff meetings and Executive Team meetings is to enable staff to be able to have meaningful dialogues with a small number of colleagues working in similar year levels, about issues such as embedding ICT into teaching and learning. These structures enable staff to discuss issues, raise concerns and have purposeful input into the decision-making processes of the school.

All new ICT initiatives are trialled a term earlier than they are implemented across the school. Initiatives are trialled by the ICT leaders in the school: an Executive Teacher and another teacher. When teachers raise practical issues concerning ICT implementation in staff and team meetings, these teachers are positioned to be able to provide ICT leadership to their colleagues.

Multi-layered professional learning approaches

At Ainslie School, several different professional learning strategies are planned and employed concurrently. Over the past three years these strategies have included:

- the principal and three staff members visiting the Victorian Navigator Schools;
- involving the Learning Technologies Officer as an in-school coach to work alongside staff;
- bringing in academics and other high quality external experts to work intensively with staff on teacher release professional learning days;
- creating a learning community among the staff of the school by regularly providing them with articles to read and discuss;
- requiring all staff to include ‘embedding learning technologies’ into their Personal Pathway Plans;
- allocating each staff member a Personal Pathway Plan mentor;
- funding whole staff attendance at annual conferences such as the Computers in Education Group ACT (CEGACT);
• allocating time in staff and team meetings to share ideas of practice;
• building a culture of reflection by encouraging staff to review and reflect on their practices;
• building teachers’ confidence in their own use of ICT by using email to communicate information to staff; and
• supporting staff to develop the language of ICT in teaching and learning through formal and informal conversations.

The principal provides professional leadership and models professional practice with the school community by writing and publishing articles for a national professional association. She networks nationally and internationally with other educators and utilises those networks to contribute to the professional climate at Ainslie School.

**Strategic plans**

Ainslie School is part of ACT DET. The school community works to ensure there is coherence between system, school and personal plans. The ACT DET Learning Technologies Plan for ACT government schools and preschools 2004-06 is underpinned by the premise that schools will develop their own learning technologies plan. The ACT DET Plan acknowledges the important place educational leaders hold, in creating the vision and encouraging staff to explore innovative teaching and learning practices which include ICT, both within the ACT DET system and in schools.

Ainslie School has a School Development Plan 2004-2006 which was developed collaboratively by staff, with the leadership of the Executive Team. It identified five focus areas for 2005, one of which was to:

*Embed learning technologies in learning and teaching across the school.*

From the five focus areas identified in the School Development Plan, staff agreed to three whole school goals as Professional Pathways goals. All staff in 2004 and 2005 have ‘embedding learning technologies’ in their Personal Pathways goals. Similarly, the principal’s appraisal goals are consistent with the whole school goals. This approach to appraisal has been powerful in encouraging staff to include ICT into their teaching and learning.

Ainslie has summarised its beliefs and practices concerning teaching and learning in two key documents:

• *Beliefs about teaching and learning at Ainslie School: ‘a whole school approach’*; and
• *Teaching and learning practices at Ainslie School.*

These documents are colour-coded in purple to indicate their status within the school. Both these documents indicate that learning technologies or ICT are important for students to be able to connect with and challenge the world beyond the school walls.
The School Development Plan identifies strategies for including ICT into teaching and learning. These strategies include:

- Ensuring ICT are embedded in teaching and learning across the school;
- Maintaining and updating the school’s ICT plan;
- Ensuring ICT networking, electrical, security and safety issues across the school are addressed;
- Facilitating professional learning of staff; and
- Actioning the whole school literacy goal on embedding multi-literacies in learning, with a focus on digital texts.

The Executive Team recognises that strategic plans need to be dynamic. At the end of each school year this Team facilitates review processes with the school community of the key strategic directions of that year, to inform planning and actions in the following year.

Teaching and learning with ICT

Ainslie School has a commitment to enhancing and supporting learning, including through the integration of ICT across all learning areas and year levels (K-6). Inquiry-based learning focused upon authentic activities underpins the teaching and learning at this school. There is an iterative relationship between the professional learning strategies (outlined above); the beliefs, directions and priorities underpinning teaching and learning practices; and the ongoing development of the IT infrastructure of the school. Investment in the people of the Ainslie school community informs the budget directions of the school, all of which are directed towards improving students’ learning opportunities and outcomes. Providing leadership for the integration of ICT into teaching and learning however is not without its challenges, some of which are noted below.

Beliefs, directions and priorities

Inter-connectedness between the school goals and students’ learning underpins the directions of teaching and learning at Ainslie School. In addition to the whole school goal of embedding learning technologies into learning and teaching across the school (outlined above), in 2005, Ainslie School had the following two further whole school goals:

- Improve student outcomes in writing and develop a whole school approach to the teaching of spelling through writing; and
- Improve the literacy outcomes of underachieving students, particularly underachieving boys.

Through the school review processes, these goals have been maintained in an adapted form for 2006, to maintain students’ current achievements and to meet identified areas of improvement for specific groups of students.
Connections are made between the priorities of literacy, numeracy and incorporating ICT into teaching and learning, including:

- Supporting students to create multimodal texts with ICT;
- Supporting students’ development of multi-literacies with ICT; and
- Fostering high order thinking skills across learning domains.

Approaches to literacy and numeracy over the past three years at Ainslie School seem to have been successful, with students’ achievements progressively improving in the annual standardised literacy and numeracy tests administered with Years 3 and 5 students.

**Infrastructure**

The school's beliefs about teaching and learning underpin their approach to the ICT infrastructure requirements. The school started from the belief that high quality ICT must be in the hands of teachers and their students.

When the current principal arrived at the school almost three years ago, the staff made the decision to remove the old, donated Macintosh computers and replace them with new student computers. Each classroom and the library now have computers linked to a student network and the Internet. Banks of laptops are also available for student use. Some of the local area network (LAN) within the school is supported with wireless technologies. New laser printers have also been bought for the school.

Data points have been installed into classrooms and the computers have been moved into classrooms from the corridors. Data points have also been installed in teachers’ workspaces. Two computers have been put into the staff room. The principal believes it has been good to have computers in the staff room as there is ‘passing help’. It also assists the many part-time staff at the school who do not get workspaces or individual computers provided by ACT DET.

Staff at Ainslie School have not opted to purchase interactive whiteboards at this stage. While some staff see them as exciting and engaging tools for students, since the school is about to undergo a major refurbishment, it has not been thought wise to purchase the interactive whiteboards before internal classroom spaces have been refitted.

The principal recognises the fundamental importance of having easy and ready access to technical support. ACT DET provides its schools with a limited amount of external technical support. Ainslie School receives two technical trainees from Canberra Institute of Technology (CIT), who are funded by ACT DET and work at the school one day per week. This allocation however, is not sufficient to meet the demands of the school and so Ainslie also pays for one day per week additional external technical support from its own budget. While the school also has a couple
of teaching staff who are confident to troubleshoot problems, it is the view of the Executive Team that teachers should teach, not fix computers.

**Budgets**

The school community places an emphasis on supporting the whole school goals with budget allocations for professional learning, technical support and ICT machines and equipment. Staff are regularly surveyed to set priorities for funding of ICT initiatives. Funding the development of people to support students learning underpins the priorities placed on professional learning at the school. Professional learning funds are kept in school accounts, separately from the school’s operating accounts to ensure that the funds remain allocated to support the professional learning requirements within the school, and so that they are readily available for their identified purposes.

**Challenges**

Some of the future challenges recognised by the Executive Team at Ainslie School include:

- Ensuring that whatever ICT initiatives are undertaken at the school fit with the articulated Ainslie School beliefs about teaching and learning;
- Maintaining and further developing shared understandings about learning and teaching;
- Keeping up to date with the developments in new technologies;
- Maintaining sufficient ICT technical support; and
- Continuing to plan and develop building upgrades and refurbishment plans that take into account teaching and learning with ICT.

**Leading the integration of ICT into teaching and learning**

Key leadership strategies emerging from this case study include the following pointers:

1. Develop a team-based leadership style that will assist you to handle your workload;
2. Foster staff commitment to developing a vision for ICT in teaching and learning;
3. Develop and maintain shared understandings about curriculum and the integration of ICT into teaching and learning;
4. Work on the pedagogy and the rest will follow … professional learning, infrastructure, content and services;
5. Empower staff to participate in mentoring and coaching activities;
6. Structure time within the school day and week for coaching, mentoring and experimenting with ICT;
7. Put computers in staff rooms, learning support rooms and anywhere else that makes their access easy to those for whom they are intended;

8. Build a professional learning culture that includes researching and trialling new technologies in classrooms before purchasing them;

9. Foster a culture of reflection and review;

10. Ensure there is coherence between all the major school strategic, budget and accountability plans and documentation;

**Participants**

The following staff at **Ainslie School** contributed to the development of the leadership and professional learning case study;

Jo Padgham - Principal
Case Study 3: Models of leadership

St Mary’s War Memorial School, West Wyalong, New South Wales
St Anne’s, Temora, New South Wales

Overview
Models of leadership that support teaching and learning with information and communication technologies (ICT) provide the basis for this case study. Insights into the leadership models evident at St Mary’s War Memorial School at West Wyalong and St Anne’s Central School at Temora are outlined. These two co-educational K-10 Catholic schools are located in the Canberra-Goulburn Archdiocese in regional New South Wales (NSW). The leadership which the principals and teacher-leaders use to drive change and to empower others to also provide leadership are highlighted.

Characteristics of this case study are as follows:

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Background

This case study commences with some background information about the schools and the communities they serve. Their reasons for incorporating ICT into teaching and learning are outlined. The settings of each school are provided to contextualise the models of leadership employed.

Community contexts

St Anne’s Central and St Mary’s War Memorial Schools are located in regional New South Wales and are about 70 kilometres apart. The major industries are farming of wheat and livestock. The townships of West Wyalong and Temora each comprise about 4000 people. The surrounding districts in a thirty kilometre radius of each
township make each community about 7000 people. Over the past several years both communities have been heavily affected by drought, reducing family incomes and making the school fees for some families difficult to pay.

In 2005, the West Wyalong population grew again as a result of renewed gold mining in the district. The Temora community’s economic viability has also improved recently with the establishment of the Temora Aviation Museum and with the monthly flights of historic aircraft housed at the Museum that bring tourists to Temora.

**School contexts**

St Mary’s War Memorial School and St Anne’s Central are both well established schools, with considerable histories and traditions. The schools’ staff include full-time and part-time teachers and are both relatively stable. St Mary’s has an enrolment of just over 150 students and expects that number to increase in 2006. St Anne’s has an enrolment of 220 students, and also expects that number to increase in 2006. Both schools offer distance education to supplement the curriculum offerings available at the school. Distance education is provided in a traditional manner with print materials posted to students at the schools.

Both schools gained a new principal: St Mary’s in 2002 and St Anne’s in 2003. On arrival, each principal faced declining enrolments and felt the need to establish productive relationships with their school communities. These principals initiated consultative processes involving the broader school community to review, analyse and evaluate the local issues of concern and to develop proposals for solutions. The incorporation of ICT into teaching and learning across K-10 was identified as a potential solution to some of the issues identified in the review processes.

**Motivations**

Incorporating ICT into teaching and learning was identified by the principals and school communities of both schools as a way of improving the quality of education provided. Several reasons for this were identified including that ICT was seen as a way to:

1. engage students more fully in their learning;
2. enable teachers to better cater for different students’ learning styles;
3. provide the mechanisms to broaden the curriculum offerings available; and
4. enable the schools to overcome small class sizes, particularly in the secondary years of schooling by clustering together online.
Leadership

Shared, consultative leadership characterises the work at both schools. The principals hold a pivotal role coordinating and facilitating work across the whole school. Key people and groups (e.g. Learning technology specialists and the schools’ Governing Councils) also provide leadership to the school communities. In both schools, the principals have ensured they have the support of their broader school communities and of the Catholic Education Office (Canberra/Goulburn Archdiocese).

While shared, consultative leadership characterises the overall style of leadership employed at both schools, the principals in these schools are able to employ different leadership models depending on the context and outcomes required. At varying times they use participatory leadership and at other times, delegative leadership styles. These principals choose situational leadership approaches appropriate to the people, purposes, processes and outcomes to be achieved.

The leaders

The principals at both schools provide leadership to the staff, students and broader school communities. Specific ICT leadership is provided by two teachers identified as Learning technology specialists. External leadership is provided by the Learning technologies and library services coordinator from the Canberra/Goulburn Catholic Education Office. Principals and staff acknowledge the important role that this officer has played in assisting them to establish an online Agriculture technology course, and in supporting teachers to learn how to integrate ICT into their teaching and learning.

Principals

In their different ways, both principals set the culture of their schools by making it clear that integrating ICT into teaching and learning is a priority within their respective communities. They provide supportive learning environments for staff and students; ensure an annual allocation of funding; foster a commitment by staff and the broader school community; foster and enable professional learning; and monitor developments and resolve conflicts as required. They facilitate strategic planning processes that meaningfully involve members of the school communities and ensure that ICT is integrated into teaching and learning practices and the associated accountability documents.

The principals see ICT as part of their own work practices and set similar expectations of their staff. They encourage risk-taking in their staff and have established environments in which innovations involving ICT are valued. They foster environments in which teachers and students are able to provide leadership to their school communities, and both principals acknowledge they are learners themselves and seek support and advice as they require it, to ensure they can make the best decisions they can.
Teacher-leaders

A teacher in both schools is identified as a Learning technology specialist. This position requires the two teachers involved to provide leadership to the school community and to role model high quality teaching and learning with ICT. Their role also involves some technical troubleshooting during the times when support is not available from outside the school. These teachers each receive a small amount of time release to undertake this role and also demonstrate a personal commitment to providing new learning opportunities for students.

The Learning technology specialist has been instrumental in developing and delivering an online Agricultural technology course for both schools. He has written the course and undertaken the liaison between the NSW Board of Studies concerning the assessment and reporting requirements. He also teaches the course to students in both schools and provides support to the facilitating teacher at St Anne’s.

The Catholic Education Office provides remote and local support to the Learning technology specialists and provides advice, support and professional learning as required.

Teacher-librarians

In each school the teacher-librarian holds a unique role in relation to supporting teaching and learning with ICT. Both schools housed a pod of computers in the resource centre for students’ use.

At St Anne’s, the teacher-librarian provides support to students and staff accessing online materials. At St Mary’s, the teacher-librarian is also responsible for the development of the annual Country Area Program (CAP) submission which provides funds for teachers’ professional learning.
Students

Students’ technical skills are recognised at both schools. At St Mary’s, older students are ‘buddied’ with younger students to support them with learning how to use ICT. Professional learning about how to use software such as Kahootz was conducted at St Mary’s by the Learning technologies and library services coordinator from the Catholic Education Office. Students and teachers both attended these sessions. This approach positioned teachers and students as learners together, and provided support for teachers by developing student-leaders among the students in their class.

Catholic Education Office

High quality external professional support is provided regularly to staff in both schools by the Learning technologies and library services coordinator from the Catholic Education Office. Her work was recognised by the staff and principals in both schools as necessary to enable them to integrate ICT into teaching and learning. Her skills in ‘scoping’ software solutions suitable for the schools leading teachers through processes of learning supporting the teachers as required and providing them with the confidence that they could ‘do it’, were all recognised as fundamental components contributing to the changes being implemented. The Learning technology specialists at both St Anne’s and St Mary’s referred to this officer as their mentor. She visits both schools approximately three times per term.

Infrastructure

St Mary’s War Memorial School at West Wyalong and St Anne’s at Temora form part of a network of fifty-five Catholic schools linked together on the Canberra/Goulburn Archdiocese Catholic Education Office wide area network (WAN). There are shared resources across the WAN including myinternet/myclasses, which are available to both these schools.

Technical support is also provided by the Catholic Education Office. This ‘technical leadership’ is provided on the basis of one day a week to one day a fortnight for each school. Principals and the learning technology specialists commented that these visits were important for ensuring the infrastructure remained reliable and robust.

St Mary’s and St Anne’s, like the other schools on the WAN, are connected to a central set of servers housed in the network service provider TransACT in Canberra, 370 kilometres away. The schools are connected by ADSL connections of 512 kbps to the school and 128 kbps out from the school. At each school there is a Linux server that provides a range of services. The major service being that of a firewall off the Internet. There is also a secure tunnel from each school to TransACT.

There are local area networks (LANs) at both schools. The online Agricultural course is managed through the learning management system, Moodle, which is housed on a server at the Catholic Education Office.
The bandwidth is of a suitable speed to support teaching and learning. A robust technical infrastructure in which teachers, students and parents have confidence is a precondition for incorporating ICT into teaching and learning, and the teachers and students in both schools have confidence in the hardware and software they use.

Teaching and learning with ICT

In 2004, the staff at St Anne’s decided to ensure the use of ICT was integral to all learning areas. As a result the staff agreed to trial online delivery of learning materials in the secondary key learning areas of English, mathematics, science, history and geography. Similarly at St Mary’s, over the past few years, teaching and learning with ICT has been promoted across all year levels and key learning areas. ICT is now considered fundamental to the teaching and learning being undertaken across all year levels K-10 in both schools.

Equipment and physical layout

Different models of teaching and learning with ICT are used. The available personnel and the existing physical layout at each school influence the models of teaching and learning employed. The schools both have:

- a computer laboratory;
- computers in classrooms; and
- computers in spaces next to the library.

St Mary’s War Memorial School also has one interactive whiteboard (an Active Board) which is housed in the school’s common room. St Anne’s has decided to put their available funding towards continuing to increase the computer to student ratios rather than to purchase interactive whiteboards.

Both schools have located a computer laboratory next to a classroom with glass walls. This layout enables a teacher to supervise distance education learning with print materials or other non-ICT based activities, at the same time as other students are undertaking activities on computers. Teachers of older students are required to be able to concurrently support teaching and learning by students studying different subjects in the same class.

Online learning

Teachers incorporate ICT into their teaching and learning in different ways. Some teachers build into their learning programs research from the Internet; others include the software Kahootz and The Learning Federation learning objects into their class activities; some use learning objects from overseas sources that are available freely online; others use the interactive whiteboard with resources available on the Internet.

One strategy developed collaboratively by both school principals and key teachers
within each school has been the establishment of a full year online Agriculture technology course to meet the Stage 5 NSW syllabus requirements. The class sizes for this subject at St Mary’s were not large enough to support offering the subject only within that school, and St Anne’s was not able to offer the subject at all, albeit the school is located in a farming region. The course forms the 100 hour Agricultural Technology component of the Technology and Applied Science Key Learning Area. The online course developed at St Mary’s leads students through a range of knowledge and skills for meeting the outcomes of the Stage 5 syllabus requirements.

Students in Years 8 and 9 at both these schools are enrolled in the course which is taught, assessed and reported upon from St Mary’s. The Learning technology specialist at St Mary’s has developed this course and teaches and assesses it for the students located in both schools. The teacher at St Anne’s supervises the students at that school while they undertake the course.

Students in both schools are required to take responsibility for their learning. They are able to move through the course at their own pace to meet all the required learning objectives. The online course provides the students with a summary of learning outcomes to be achieved, guided activities for each lesson, timelines for completing their learning activities and assessment requirements; resources to assist students in their learning; and a chat forum so that students can discuss issues with each other and the teacher.

**School change**

ICT integration has been a fundamental part of whole school renewal at both schools. Changes at the school have been driven by the school principals who have both engaged passionately with their broader school communities in making changes at their schools. The principals have enlisted the support of the staff and have gained the commitment to these changes by involving and regularly communicating with the parent communities. Both principals recognise that change takes time and they employ planning, school budgeting and professional learning as key parts of their ICT change processes.

**Strategic plans and policies**

The incorporation of ICT into teaching and learning features in both schools’ strategic plans. These schools recognise that ICT has to be integrated into all key learning areas K-10, in ways that promote collaboration, resource sharing and academic excellence.

At St Mary’s the whole school strategic plan includes the following outcome for 2006-08:

> use of technology to enhance teaching and learning will be emphasised.

Strategies identified for 2006 to achieve this outcome include:
• evaluating current staff expertise and needs;
• up skilling staff by using peer tutoring techniques; and
• acquiring resources.

To assist in a coherent approach to incorporating ICT into teaching and learning, St Mary’s has a documented whole school matrix which cross-references:
• the ICT outcomes students are to develop at different stages of learning;
• the software that can support the development of those outcomes; and
• the NSW syllabus outcomes that are achieved.

St Mary’s also has a School Wide Pedagogy Document, which includes ICT outcomes directly related to the vision and whole school pedagogical principles being promoted at the school.

St Anne’s whole school Strategic Plan for 2005 included trialling the Stage 5 online Agricultural technology course and developing online units at Stage 4. In 2006 St Anne’s plans include further developing their online components of their teaching and learning and putting online all Year 7-10 assessment tasks for students. In addition, the Information and Communication Technology Policy at St Anne’s states that all students K-10 should have regular access to technologies as part of their teaching and learning. St Anne’s has several other school policies concerning the integration of ICT across the school including:
• Internet Policy;
• Computer Development Plan;
• Staff ‘Acceptable Use’ Policy for Technology and the Internet; and
• Student Internet and Computer User Agreement.

St Anne’s Annual Report includes a section addressing learning technologies in teaching and learning.

**Budgets**

Both schools have limited budgets. They plan their infrastructure costs on a three year cycle. The schools have flexibility in what they can purchase and from where they purchase these goods. A mixture of new machines supplemented with recent recycled computers are purchased. The lack of cost for software licences and upgrades makes open source software highly attractive to these schools. Members of the respective school communities assist with activities such as building and installing computer-suitable furniture. Both schools specifically budget for professional learning of staff. St Mary’s receives Country Areas Program (CAP) funds which are seen as vital for enabling the school to meet the professional learning costs associated with the incorporation of ICT into teaching and learning.
Professional learning

Most of the professional learning for the staff at both schools is conducted at the school. Some specific professional learning occurs at regional meetings. Usually professional learning on a regional basis is about a specific issue or piece of software (eg ICT literacy or how to use learning objects).

The principal at St Mary’s actively encourages peer tutoring and also encourages teachers to visit other schools and sites to gain insights into how they can improve their theory and practice. Time at staff meetings is allocated to teachers specifically sharing pedagogical practices about how to include ICT into teaching and learning.

All staff at St Anne’s maintain a log of the professional learning they have undertaken during the calendar year on myinternet. Teachers at this school are encouraged to hold professional conversations formally and informally about strategies that support teaching and learning with ICT.

External support from the Catholic Education Office is highly valued by both schools. Train-the-trainer models of professional learning are provided by this officer in face-to-face sessions.
Leading the integration of ICT into teaching and learning

Key leadership strategies emerging from this case study include the following pointers:

1. Share the leadership responsibilities by supporting and developing staff as ICT teacher-leaders;
2. Know your numbers: staff; students; money and equipment;
3. Establish a whole school culture of learning;
4. Ensure a whole school approach by including ICT across all key school planning and accountability documents including the strategic plan, pedagogy statements, annual reports and budget statements;
5. Foster professional dialogues between and across staff, students and parents;
6. Seek external support when and as required;
7. Involve the whole school community in planning and implementing the incorporation of ICT into teaching and learning;
8. Encourage mentoring and peer to peer learning through both formal and informal means;
9. Keep an eye on the ‘bigger picture’ while tending the local issues;
10. Keep the infrastructure reliable and robust, thereby relegating it to a ‘non-issue’.
School participants

The following staff at St Mary’s War Memorial School at West Wyalong and St Anne’s at Temora contributed to the development of this case study.

St Mary’s War Memorial School – West Wyalong

Ms Patricia Mangelsdorf – Principal
Mr Andrew Maley - Learning Technology Specialist

St Anne’s – Temora

Mr Terry Kennedy – Principal
Mr Mark Schmidt - Learning Technology Specialist
Ms Michelle Jamieson - Year 6 teacher

Catholic Education Office support

Dr Michael Gaffney - Head of Education Services Archdiocese of Canberra & Goulburn Catholic Education Office
Ms Christine Masters - Learning Technologies and Library Services Coordinator, Canberra & Goulburn Catholic Education Office
Ms Thea vanOs - Learning Technologies and Library Services Coordinator, Canberra & Goulburn Catholic Education Office
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