

ITL Australia

Innovative Teaching and Learning

2013

a. Teachers observe other teachers' classrooms		Yes		
b. Teachers are expected to carry out team teaching.				
Class schedules are arranged to facilitate				
Time is scheduled in the school together (for lesson planning)				
There is a school schedule				
Dimension	Discipline Area	Learning Activity	Age	Code
Collaboration	Science	Eye Dissection	14	4
		Experiment, Film and Critique		
		Plant Cell Analogy	12	
Knowledge	Science	Contraception Podcast	14	
			12	

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ITL RESEARCH AUSTRALIA

2011-2012 Phase Two Report

This report focuses on the research data collected in Phase Two of the Innovative Teaching and Learning (ITL) Research Project in Australia. It includes interviews with Government Leaders and Site Visits to five NSW government High Schools in the Sydney and Hunter regions. Australia joined the global ITL research project in 2011, sponsored by the NSW Department of Education and Communities (NSW DEC) and Microsoft Partners in Learning (PiL) Australia. Some of the initial data has been reported in the global project report presented in Washington DC at the Global Forum in 2011 (www.itlresearch.com). The report provides an overview of the study methods, use of ICT by teachers and students, and provides examples of innovative educational activity from across the state. The supports and impediments for this innovation are explored in terms of systemic and school-based vision, and the impact of leadership, instructional methods and school context. The importance of individual teacher dimensions is illuminated through interview analysis and task exposition. This report includes exemplar case studies and learning activities and a copy of the Phase One Report.

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ITL Research Australia

2011-2012 PHASE TWO REPORT

1. STUDY METHODS

This report focuses on Phase Two of the ITL Study, the qualitative component of the study carried out in 2011-2012. This first section on study methods outlines the samples for the site visits and government leaders, prior to outlining the basic demographics for the site visit schools. For a full description of the global study methods, see www.itlresearch.com.au

1.1. Government Leader Sample

This group of Government Leaders interviewed for the project has a complex set of intersecting responsibilities for curriculum implementation, pedagogy, professional learning support and infrastructure support. More specific responsibilities of these Government Leaders included two with roles as general managers, three state office directors, three with specific roles in information and communication technologies to support teaching and learning, two with major ICT systems support roles, individuals with specialized roles in support of research and evaluation, and in managing innovation. All seven respondents would be considered highly competent portfolio managers, significant program leaders at the state level, and leading innovators at the state level

The 22 schools participating in the wider Innovative Teaching and Learning (ITL) study in Australia were all New South Wales (NSW) Department of Education and Communities secondary schools. On this basis it was decided that the Government Leader sample should predominantly comprise senior managers and policy advisors from the government sector in NSW.

Due to the ethical requirements of the research project in Australia, the personal information of the Government Leaders must remain confidential to the researchers and all identifying information has been removed in the reporting. However, it is possible to describe the numbers of respondents and the nature of their roles. Seven of the eight Government Leaders in the sample occupied roles in the NSW Department with significant state wide influence over key programs in schools but not actually involved directly in the day-to-day operations of schools. All seven had high level policy advisory roles including aspects of technology in teaching and learning, and supporting innovative teaching practices across the Department. Three had responsibilities for making direct contributions to policy formulation at the state and national levels in policy spaces relevant to the ITL study.

The eighth Government Leader was a senior administrator in a national authority selected to represent the views of the Federal Government on curriculum, pedagogy and assessment.

1.2. Site Visit Sample

For the site visits, six schools were invited to participate from the 22 New South Wales Department of Education and Communities schools participating in the wider Innovative Teaching and Learning (ITL) study. Due to ethical requirements of the research project in Australia, none of the schools are able to be named in the report and identifying features from the data have been removed for reporting purposes.

Two regions were targeted for the site visit component of the ITL Research Project - Sydney and the Hunter. These two areas were chosen for ease of access and also to represent metropolitan and regional schooling areas respectively within the state of NSW.

Of the three schools invited to participate in the Sydney Region, all three schools completed the survey component of the study with more than 60% response rate and then participated in the site visit component of the study. Of the three schools invited to participate in the Hunter region, only two schools had a response rate of over 60% and consequently participated in the site visit component of the study. All schools involved in the study are secondary schools (or high schools) in the public education sector, which generally cater for students in Year 7 (aged 12) to Year 12 (aged 17) organized into learning Stages 4 (Years 7 & 8), 5 (Years 9 & 10) and 6 (Years 11 & 12).

In the Australian context there has been an increasing emphasis on national literacy and numeracy standards, as opposed to standards testing carried out by each individual state. Therefore it is pertinent to provide a brief description of the National Assessment Program Literacy and Numeracy (NAPLAN) testing which has operated since 2009. NAPLAN is an annual assessment for students in Years 3, 5, 7 and 9 that tests the sorts of skills considered essential for every child to progress through school and life including reading, writing, language conventions (spelling, grammar and punctuation) and numeracy. The assessments are undertaken nationwide, every year, in the second full week in May and reported in September. Individual student reports include the student's achievement level in each domain compared with national standards and norms. However, at the school-level reporting is most often limited to a comparison of standards and average performance in reading and numeracy at each year level. School-level reporting often consider the

schools socio-economic profile using the national Index of Community Socio-Educational Advantage (ICSEA)¹.

In terms of ICSEA, the 22 ITL study schools in general serve less socio-economically advantaged communities. The national average ICSEA score for schools is 1000 and the NSW average is 1017. Only three of the ITL study schools had ICSEA scores above 1000 (the highest 26 ICSEA points above and the other two 13 and 17 above). The ITL study school with the lowest ICSEA score was almost 100 score points below the national average. Over a third of the ITL study schools had 50% or more of their students in the bottom quartile of ICSEA nationally and over a half the ITL study schools had more than 40% of their students in the bottom quartile. The best of the ITL study schools in terms of ICSEA had a relatively consistent distribution across of students across the four quartiles determined nationally.

In terms of Year 7 and Year 9 in reading and numeracy, there was only one instance where an ITL study school recorded an above average outcome compared with the national average (for one school in Year 7 reading). Approximately one-third of school-level outcomes in reading and numeracy were consistent with the relevant national average and two-thirds below or well below the national average. Average NAPLAN results were more often consistent and in a few instances above the average when compared with statistically similar schools on the ICSEA scale.

1.3. Site Visit Schools

There were five schools involved in the site visits, and researchers were interested in exploring the multi-layered learning community within each organisation. In this section, a description is given of each school who participated based on publically available information, such as websites, school reports and the My School² site which publishes results from national testing annually for each school in Australia.

School A – Sydney Region

School A is located in a newer sub-division in Sydney and was originally established in the late 1990s. It is a comprehensive high school serving Year 7 to Year 12 catering for academic high achievers as well as students with special needs. The school has first class facilities including a dance studio, fitness and music laboratories, drama performance space, modern science laboratories and a Trade Training Centre. The school highlights critical thinking and personal excellence, and links with their local community as their strengths. The school welfare programs incorporate leadership training, links with universities focusing on student mentoring and the

¹ See http://www.acara.edu.au/verve/_resources/About_ICSEA.pdf

² See <http://www.myschool.edu.au/>

Premier's Student Volunteering Program. 'Self-select' classes for talented students are supported by enrichment and extensive activities.

In 2011, the student enrolment was almost 750 with 50% girls. About 4% were Indigenous students and 14% with a Language Background other than English (LBOTE). The school socio-economic status was slightly below average (School ICSEA value was approximately 960, which was close to the Australian average of 1000). Attendance figures at the school are at almost 90%. The senior curriculum caters for all abilities and interests including university entrance and further study at TAFE. A wide range of vocational education and training (VET) courses provides opportunities to gain trade skills.

During 2011, there were about 55 teaching staff and 15 non-teaching staff employed at the school. At the time of our visit, there were a number of relieving teachers at the school in either casual or permanent part-time capacity. These teachers were generally younger, and were nominated as some of the more 'innovative' teachers to be involved in the research project. In comparison to other similar schools in Australia, the school results in national literacy and numeracy testing are generally average to below average.

School B – Hunter Region

School B is located in a picturesque bushland setting in the Hunter/Central Coast region. It is a middle-years campus, collaboratively created by students, staff and community to develop confident, socially responsible adolescents. Most government high schools in NSW cater for students from Years 7 to Year 12, and indeed this school was originally established as such a high school. However, it is now a campus serving Years 7 to 10. School B is recognised as a leader in delivering quality education, modeling the importance of professional learning on lifting student achievement and using effective, current educational practices to engage students and support them to achieve personal best in adolescence regardless of individual ability.

In 2011, the student enrolment was just less than 1000 (about 48% girls). There were approximately 8% Indigenous students and 6% students with a Language Background other than English (LBOTE). Student attendance rates were approximately 86%. The general socio-economic status of the school community was below average (School ICSEA value was in the 930-940 range, as compared to the Australian average of 1000). In comparison to other similar schools in Australia, the school results in national literacy and numeracy testing are average.

Innovative programs operate in modern, safe facilities. The whole child is developed by the building of strong, respectful relationships and the provision of responsive learning and wellbeing programs. The campus prides itself on being recognised and awarded for consistently providing an inclusive environment where students achieve personal their best. The school is part of the Innovative Schools Program, adding to their ability to develop students' talents and creativity, extend teachers' expertise and position young people for a bright future in a global world.

School C – Sydney Region

School C is a co-educational comprehensive high school situated in an established residential area in Sydney. The school serves students from Year 7 to Year 12. The school also supports satellite classes from a School for Special Purposes (SSP). The school is a strong community-based centre which values tolerance, embraces diversity, and inspires a commitment to lifelong learning. It is enriched by a multicultural student population of over 50 cultural backgrounds and there is a strong focus on personal learning for each student. This fosters an atmosphere where students extend beyond their current level of learning, challenging them to develop across a range of areas. In every subject across all years, there are enrichment programs from Years 7 to 10. The school has extensive middle-school partnerships with local Government schools. The school has received extra funding to increase student learning capacity in Literacy and Numeracy achievement.

In 2011, the student enrolment was a little over 700, with about 41% girls. There were approximately 2% Indigenous students and 65% students with a Language Background other than English (LBOTE). Student attendance rates were good at about 88%. The general socio-economic status of the school community was below average (School ICSEA value was approximately 950, as compared to the Australian average of 1000). The school has about 150 enrolments in Vocational Education and Training (VET) courses. In comparison to other similar schools in Australia, the school results in national literacy and numeracy testing are below average.

During 2011, there were slightly less than 50 teaching staff and 11 non-teaching staff employed at the school. The school has invested in Interactive Whiteboards in classrooms, one-to-one laptop learning program and video conferencing facilities enabling students to connect globally. They have partnerships with over 30 external organisations including universities, business, community and educational providers. This includes business mentoring, university bridging courses, civic participation and career pathways for tertiary study and future employment. The school is known for a higher than average level of innovation and participate in the Microsoft Partners in Learning program.

School D – Hunter Region

School D is a co-educational, comprehensive high school, catering for students from Years 7 to 12. The school has three support classes for students with an intellectual disability. The school has a focus on care, discipline and achievement.

In 2011, the student enrolment was about 860, with about 47% girls. There were about 9% Indigenous students and 2% students with a Language Background other than English (LBOTE). Student attendance rates were good at about 86%. The general socio-economic status of the school community was below average (School ICSEA value was approximately 940, as compared to the Australian average of 1000). The school has a high number of enrollments (about 250) in Vocational Education and Training (VET) courses, particularly in Management and Hospitality. There are currently a few students doing school based apprenticeships or traineeships. In comparison to other similar schools in Australia, the school results in national literacy and numeracy testing are generally average to above average.

During 2011, there were almost 60 teaching staff and 15 non-teaching staff employed at the school. Quality teaching and learning opportunities are provided by an experienced teaching staff. Staff strive to meet the needs of individual students to ensure that they reach their potential. There are strong links with the seven partner primary schools and a dynamic program for the transition of Year 6 students to Year 7 exists between the schools.

It has a long and proud tradition of student success in academic, sporting and cultural pursuits. The school draws from a diverse population and is strongly supported by the local community. With modern faculties the school seeks to ensure a comprehensive program of education for all students to give them the knowledge, understanding, skills and values for rewarding lives. School D is recognised for its participation and excellence in creative and performing arts, supportive welfare programs and high academic expectations.

School E – Sydney Region

School E is a specialist high school serving a diverse area of Sydney. Set in pleasant landscaped grounds, it features modern facilities and excellent resources. With an enrolment of approximately 1100 students the school draws 60% of students from the local area and 40% through selection on specific criteria. The school enjoys an excellent reputation in the community and has strong links with many community organisations. The students are provided with, and avail themselves of, an extensive range of curricula, co-curricular and community activities to enhance their learning experiences

In 2011, the student enrolments were a little more than 1100, with almost 60% girls. There were about 7% Indigenous students and 26% students with a Language Background other than English (LBOTE). Student attendance rates were good at about 88%. The general socio-economic status of the school community was below average (School ICSEA value was approximately 960, as compared to the Australian average of 1000). The school has more than 250 enrolments in Vocational Education and Training (VET) courses, particularly in the Creative Arts and Hospitality areas. There is currently 1 student completing a school-based apprenticeship. In comparison to other similar schools in Australia, the school results in national literacy and numeracy testing are generally average to below average. The school receives additional funding for teaching and learning activities.

During 2011, there were almost 80 teaching staff and 14 non-teaching staff employed at the school. The school has its main focus on improving student learning outcomes through the consistent application of quality teaching practices underpinned by whole-school, and targeted, teacher professional learning. The school has received recognition for Aboriginal education, curriculum integration of technology and teacher professional learning projects. Strong welfare and leadership programs and well-resourced technology facilities complement curricular programs. The school is known for a higher than average level of innovation and participate in the Microsoft Partners in Learning program.

2. INSTRUCTIONAL PRACTICES

This section summarises some of the instructional practices typified by the schools involved in the site study. Although the schools were invited to be part of the study given that they were seen to be ‘innovative’, it was evident that on a typical day that none of the schools were engaged in a high level of innovation for all of their classes. The visits predominantly took place in two faculties – Humanities (including English, History and Geography) and Science (although a few of the schools included Mathematics). The range of age groups were 12 -15 years of age (years 7-9), although some Year 10 classes were observed depending on the timetable of the teacher involved on the site visit day. Of the target classes observed, there was a mix of different types of classes (G&T, mixed ability, life skills).

School leaders in all schools asked a variety of teachers to be involved in the study, to incorporate the range of teachers which typified those at the school- some were strong adopters of technology in the classroom and some were more reluctant to engage in technology. For each site visit school, four teachers (two from each faculty) were interviewed and their target classes observed. In addition, a focus group session was held in each school, comprised of 8-10 students from the target classes involved in the site visit. The information which follows discusses typical classroom instruction before considering the ITL dimensions of student-centered teaching, extension of learning beyond the classroom, and ICT use.

2.1. Typical Classroom Instruction

In each of the high schools involved in the study, students attended school for five days per week for an average of six periods a day. Lessons were usually 50 minutes duration. Schools generally operated on a two-week timetable, where lessons were timetabled so that students would attend their allocated subjects for the minimum hours across the two week period. Subjects in Years 7 and 8 include English, Mathematics, Science, History, Geography, Technology, Languages, Personal Development, Health and Physical Education (PDHPE), Music and Visual Arts. In Years 9 and 10, students have compulsory subjects (English, Mathematics, Science, History, Geography, PDHPE) and are then allowed to take electives in the areas they choose (Drama, Music, Visual Arts, Technology, French, Japanese).

As part of the Digital Education Revolution (DER) policy implemented by the Federal Government in 2009, all Year 9 students in government schools in NSW received a laptop computer for use in their studies at school and at home. This policy changed the way that technology was accessed in high schools, and teachers were given varied support for this change to teaching and learning (dependent on the school they were in). In 2011, the policy had been in place for three years which meant that students in Years 9, 10 and 11 predominantly had laptops, whereas students in Years 7, 8 and 12 generally did not have them. Laptops were not funded automatically for teachers through the federal policy, so teacher access to laptops was also sporadic depending on whether the school had funds to provide laptops to staff. In addition,

funding was not provided to support staff in managing, or embedding within the curriculum, the use of laptops in the classroom.

Our Year 9 laptops, they came out this year, and I was petrified. I thought this class will be shouting and finding anything else to do. But, if you get off on the front foot it just becomes integrated to the classroom properly. [Teacher, School C]

The access to technical support also had an impact on the use of laptops within the school. In one of the schools in our site visits, only half of the students had their laptops because they were being 'imaged' by the technical staff who were not located at the school. The laptops had been gone for over a month and the students and staff were not aware of when they would be returned. This caused challenges for teachers who were accommodating students with computers and those without them within the same lesson.

The teachers interviewed across the site visit schools predominantly agreed that lessons should be student-centered and had an understanding of what this should look like, as the schools had been involved in initiatives based on the Quality Teaching framework, a focus in NSW DEC schools for the past nine years. Schools involved in the study were at different levels in terms of engaging in the Quality Teaching framework:

So it's really been my work with the Quality Teaching project that has changed my practice and has put me on the path of changing my practice more and more, as well as reading a lot about behaviour management... maximum engagement, maximum minutes. [Teacher, School C]

I'm really focused on Quality Teaching and looking at ways that we can develop and engage in teaching... it's really a powerful tool for self-reflection but also for improvement at every single level. Whether it's running a meeting in your faculty - what does a quality faculty meeting actually look like and feel like- then at the classroom level, what does that look like and feel like, not just for us, but for our students, too. [Teacher, School E]

However, there was discussion by many of the teachers about how it is easier to discuss in theory than to put into practice, particularly in those classes with challenging behaviours or learning difficulties:

[The vision of student-centered pedagogies] doesn't necessarily align with the current reality for many teachers. Though I believe that the majority of teachers would agree with the vision goals but there's a gap between the vision goals, and what reality is. [Teacher, School C]

From the students' perspective there was a substantial degree of alignment between typical lessons in four of the five schools where focus groups were conducted. In these schools, students reported inconsistent use of their laptops and other technologies depending on the subject, very little use of real world problem solving and limited use of student-centered pedagogies. In contrast, one school's (School E) students reported that teachers planned for students to use their

laptops consistently in all subjects and as a result the students had adapted to their use as the standard mode of practice.

2.2. Student-centered Teaching

In most schools students were normally not given the opportunity to improve their work after it was submitted for assessment. Some students did try to use feedback from previous assessment tasks to help them with future tasks. Students agreed that it would be useful for them to be given feedback before having to submit their work. Students in one school reported the regular use of peer assessment, facilitated by technology.

Traditional pedagogy and traditional assessment particularly pits students against each other. So it's competitive rather than collaborative. So the idea of developing assessments where students really rely on each other and the assessment really requires them to work collaboratively to do the best that they can or to get the best result that they want combines the competitive with the collaborative in a sense because they - the summative assessment is what matters to a lot of them. [School Leader, School E]

At this same school the students were able to participate in the development of assessment criteria for their projects. These students also commented that teachers regularly used 'track changes' to provide feedback to students to enable them to improve their work. One student commented:

They'll send it back to us; and then you know what to fix up on. (Student, School E)

Typically, students reported that they were not given much choice with regard to the topics or the types of tasks that they were required to complete; however, if they were given choice, it was generally from a restricted list.

Students often worked in pairs or in groups and they said that they valued the different opinions of their classmates. The types of tasks that they reported completing in groups included producing a news broadcast, making movies or animations, creating websites, making a volcano or a model of the reproductive system in science and creating musical or dramatic performances. Some students noted that there were times that they preferred to work alone and felt that they were more effective when they did so. One student stated:

If you're by yourself, if you get stuck then you don't really have anyone to turn to and go 'I don't know what to do'. But when you're working in a group you really have that other person to turn to. (Student, School E)

Students also commented on the value of group work in enabling friendships to form with students that are not part of their immediate circle of friends.

Teachers in most of the schools agreed that there needed to be a balance between having student-centered activities and also directed teaching strategies, depending on how the lesson goes on the day:

I think that as well as having that really detailed planning that the teacher needs to make sure that while the work is student-centered, that it's a mixture of explicit teaching where it's necessary and open-ended student directed work ... the teacher works with the

students' needs as they arise in the lesson which might mean not following the plan [Teacher, School C]

There was also a feeling that it was easier to do student-centered activities with students when the class were on task, and that it was more difficult with the students who were not engaged in learning:

It just depends how receptive the class is. I think it's easier to be teacher-centered if your students are unsettled. You can direct them back where you want them. [Teacher, School B]

However, some teachers believed it was up to them to engage the students, no matter what class they were teaching and what time of the day it was:

The students need to be at the stage where they are learners - and ready to learn. They don't always come in, even on a daily, or period by period basis, ready to learn because of whatever experiences they've just had, or their prior experience of the actual subject itself. But for me, one of my focus areas is - I need them to be learning how to be learners. That is, when I go into a room, it looks like students who are going to be really confident in asking questions, who are willing to have a go and to participate, whether they feel confident or not. So, they're taking risks in their learning, which I think is most powerful - rather than just effective - it's a really powerful experience of learning for them [Teacher, School E].

There was a general agreement that when revision for assessments was being done that it was more productive for students to focus on the teacher to learn the content. Even those teachers who used technology (such as Web 2.0 tools and music) to revise work did so in a way that used rote learning or lower level thinking approaches. A number of teachers said to the researcher in the corridors after the lesson observation that they were sorry they couldn't do an innovative lesson as they had assessments to prepare for, this was particularly evident in the Years 9 and 10 classes.

I just really believe, as a school, shift needs to happen so that teaching and learning is front and centre. That is our core business, that's what we're here for. We need to narrow our focus... Block out all else, all the peripheral stuff that you get caught up in at school, and put systems and structures in place so that we're always squarely focused on that because that's what needs to change. What's happening in the classroom with the teacher, day to day, and focus on that steadfastly. [Teacher, School C]

2.3. Extension of Learning beyond the Classroom

Students reported that they rarely experienced learning outside of the classroom, although some students were given the opportunity to create a website that was published and at one school students created a podcast by interviewing various community members on the topic of environmental sustainability.

Teachers did not discuss many opportunities to engage beyond the classroom, though when prompted some did use the Connected Classroom (a room set up in every NSW government school with facilities to video conference). A few of the teachers had utilized this connected classroom to organize experts to talk to classes on topics being studied, mainly in the Humanities.

Another initiative discussed was the opportunity to engage with primary schools which were linked with the high school, although this was often staff who provided the link rather than students.

[The gifted and talented students (GATS) from the surrounding areas] come here and the teachers from this school run various programs to promote the GATS program for our school with our partner primary schools. [Teacher, School B]

In School C, students were given the opportunity to create activities as a part of their class-work in Science which they then presented to one of the primary schools, which was an example of engaging outside the classroom and strengthening community links.

2.4. ICT Use by Teachers and Students

Students reported inconsistent use of ICT across different subject areas in most schools. They tended to use technology more frequently in Science, English and History, but very rarely in Mathematics. Students disliked having to carry laptops and books on the same days. They often used their laptops to research new topics and to create Word documents and Powerpoint presentations. They reported regular use of Moodle and Edmodo and blogging tools. However, the students reported that they disliked the multiple passwords required for some Web 2.0 tools. They also disliked the large number of blocked internet sites which regularly created an impediment to their internet research.

The students stated that they appreciated using Google as an adjunct tool to supplement the knowledge of the teacher. One student said:

Sometimes it's difficult for a teacher to be able to explain it in a way that you're able to understand; so if you go on Google there's heaps of sites everywhere and more than likely you're going to be able to find one that you can at least understand and relate to and be able to benefit from. It's kind of good to be able to do that. (Student, School E).

Interestingly, these students expressed an increasing lack of competency when researching in books in the library as they have become accustomed to using a search engine.

There are problems in regards to lack of resources, which Teachers deal with in different ways. One Teacher, for example, borrowed technology from other schools when she wanted to integrate film into one of her Year 7 units:

I've taught Film before - so, having them produce something in film - just even a short clip, or a couple of images - it's something that I really like to do but unfortunately, I don't have the technology, the media package, here but I will borrow from outside. But it's also quite a lengthy teaching process, to actually teach Film-making. But I think quite a few of these students are quite interested. [Teacher, School E]

The use of technology was questioned when it was used for the 'sake of it', and the purpose of the activity was simply replicated in regular classroom activities:

With the senior students, they had already been using Edmodo as a mode of really communicating with their teacher and getting some feedback ...we were having ongoing conversations and feedback. While that was a really valuable and valid experience, I just found the conversations were very similar to the conversations we were having in the classroom, anyway.[Teacher, School E]

There were also some problems experienced at the schools given that there is a strict internet protocol in place which blocks students from accessing a range of sites including social media and any sites with 'flagged' key words. This causes frustration for the students when they want to access information, but also for the Teacher as although they have access from their teacher log-in, the student log-in for their school laptop can block the site. One teacher said:

The whole 'blocking' I guess for me is my barrier. When I find something online I think... this is fantastic. I give it to my students...Blocked, blocked, blocked! [Teacher, School C]

The students in School E reported that the teachers required them to bring their laptops to school every day, whereas at other schools students felt they had to bring their laptops and books and they were unsure of when they would be using each of these tools. These students did recognise that there were times when they were more effective learners without using their laptops, for example, when drawing diagrams in Maths and Science. Some students also argued that they should be given a choice over whether they could use the laptop or not, as they felt that they learned information more efficiently through the process of handwriting.

Nevertheless, although teachers and students have varying levels of access to technology, there are pockets of innovation happening in each of these schools. A teacher at one school gave a window to the wealth of technology she is embedding within the classroom for her students:

The interactive white board came this year in my room and with that I use SMART Notebook. With my Year 10 and 11s I use Edmodo and the Student Response Network. We've used Xtra normal. We've used GoAnimate. We've also used Adobe Presenter. We've used Adobe Captivate. PowerPoint, we use that quite often. Microsoft OneNote we use a lot and also the Adobe Acrobat Pro where you make Adobe portfolios and PDF worksheets where they fill things in. So OneNote and the Acrobat are the ones we use the most. We've also used Google Earth. I started using Spelling City with the Year 7s. We've used Glogster. We've used Popplet. (Teacher, School C)

It is becoming more common for classrooms in Australian high schools to have at least a data projector, if not a SMARTboard, in each of the rooms. Those schools which were interviewed discussed raising funds to get more data projectors into the classrooms, some schools were putting in large computer screens to their classrooms and then linking their computers directly into those.

We're a little bit limited in terms of just having a data-projector in the classrooms and not so many of the interactive whiteboards in this particular faculty. But even there, I know - and everyone has articulated, too - that it's a really powerful engaging tool. Just having the visual stimulus, the oral stimulus, the audio stimulus - it's great to be able to access this technology, rather than having just reproductions or posters blu-tacked on the board, which can also be really effective - or overhead projectors that are just black and white. [Teacher, School E]

3. LESSON DESCRIPTIONS

This section of the report describes indicative lessons from the schools included in the study. Innovative lessons are reviewed first prior to the consideration of more traditional lessons. The discipline areas covered include Science, English and Humanities

3.1. Sample 'Innovative' Lessons

Science Lesson

The first 10 minutes of the lesson were held in the regular classroom which had a SMARTboard. Desks were organized in 6 columns and 5 rows, and students were sitting in gender-based pairs. The teacher gave instructions about the lesson which would be taking place in the computer lab, next door to the classroom. The teacher gave out a worksheet with details about the lesson and overviewed the task. He used the Smartboard to demonstrate the dissection of a frog, using an interactive simulation created on Notebook software. He then demonstrated the websites which students would use to investigate parts of the digestive system. After checking for understanding, the class moved next-door to the computer lab.

The computer lab had 30 computers for students to use, but the task was a pair activity so the class only used 15 of the computers. The students self-selected pairs, most were in same sex groupings. Students had the lesson to complete the worksheet, which consisted of three parts. Firstly they needed to do the simulated dissection to prepare for the lab session next period where they would dissect a real rat. Secondly, they needed to use the given websites to research a given part of the digestive system (each group were given a different section in a cooperative jigsaw task). Lastly, the pair needed to create a 1-page word document which they would use in a later lesson to present their section of the digestive system.

The goal of the lesson was to explore the digestive system. The class was a Year 7 class (12 year olds) in a class of self-selected 'hard workers'. Even though they had committed to work hard in the class, there was still a range of abilities in the class. The predominant structure of the lesson was a paired activity. For the first task, the simulated dissection of the frog, some of the students were off-task as the simulation took a while to load, but once it started the students were engaged in the task. The teacher supported the student progress and behaviour of the students, who were mainly self-directed for the task. He also circulated providing in-depth guidance to help their investigative skills and formation of the document in their own words. The students worked at their own pace and made shared decision on how to present their work.

The teacher had clearly thought through how to give students the experience and knowledge necessary leading up to the dissection of the rat in the lab. He used information from multiple sources and engaged students through interactive activities. Students made choices within the task about progress - they needed to self-regulate to complete all elements of the task and the document by the end of the lesson, ready to make the presentation of the jigsaw task on the digestive system. At the end of the lesson most students had completed the task. The teacher reviewed the task and foreshadowed what would be required for the next lesson.

Humanities Lesson

This lesson was an Elective class for students in Year 9 (average age of 14 years old). There were 11 students in the class, all girls. Some class members were missing due to a school performance on that day. The class was held in the Drama Room- which is an larger than usual room with no desks or chairs. Students were mostly sitting or lying on the floor. At one end of the room there were a number of drama blocks, which can be used to sit on or alternatively could be used to create scenes for plays and improvisation often used in Drama classes. There were also lights and mirrors in the room. A data projector was mounted to the ceiling. There was a costume room which was located adjacent to the larger Drama room.

The lesson was one in a series of lessons where students were working on an extended task, which was the major assessment task for the term (a term is usually 10 weeks). The task was emailed to students by the teacher and involved students working in small collaborative groups. They were given a stimulus (choice of a Beatles song) and were asked to plan an performance based on their particular performance strengths. As a small group they had to tape, edit and then submit their product through TeacherTube (an educational version of YouTube). In the task they needed to consider audience, perspective, design, music, performance and how these would all fit together. They also needed to work on a 'pitch' to market their video using PowerPoint.

Students were not only required to work on their own video, but also to contribute through peer feedback to all class videos. Each of the students had a copy of the criteria for the task, and they needed to critique each other in response to these questions and give feedback. Feedback was sent back to each group with the teacher also copied in, and then feedback would was considered and implemented. This peer feedback system was done through email.

This particular lesson being observed was situated after student groups had filmed their performance and had approximately 2-hours video of their performances to edit into a short video. Student groups were working in small groups on iPads using iMovie to edit their video. There were 5 iPads being used, students were mostly sitting or lying on the floor collaboratively working on the iPad. Two of the students had their Netbooks which they were using.

Before the lesson the teacher had emailed students questions based on the criteria for the assessment. Students were allocated other groups videos to watch and then provide feedback. Once feedback was collated, it was then emailed to the the teacher and the group who had made the video.

Most of the groups had completed a draft of their performance. Some groups were watching other groups' videos and giving feedback, some groups were working on further drafts of their videos. The task involved a high level of collaboration, with each group member integral to the performance. All students were on-task and engaged for the whole lesson. The iPads were a new addition to the class, but the students said they had found them easy to use and that they were excited about producing a video which would showcase their performance skills on the Internet.

English Lesson

This lesson was held in a computer lab. There were 17 computers in the lab located on benches against 3 of the walls and a smart board at the front of the room. There were tables set up in the middle of the room (6 rows and 5 columns). There were 18 students, 12 girls and 6 boys, and on average they were 14 years old. Students mostly sat in pairs, some same gender and some mixed. Every student had their own personal net-book computer. There was also a television and a networked printer available in the room.

The goal of the lesson was to teach students how to give a good speech, in preparation for their assessment task which was due the next week where they had to give a speech. The class was a mixed-ability group and the lesson was for Year 9 English. The dominant activity structure for the lesson was a teacher-led presentation - which consisted of a PowerPoint presentation. The PowerPoint included videos showing examples of good and bad speeches. During the presentation the Teacher had a discussion with members of the class about each element they needed for a good speech.

Following the PowerPoint presentation the Teacher overviewed the task students needed to complete. He had emailed the task to students before the lesson. Students needed to create a NOTA (Web 2.0) presentation in collaborative groups on tips for public speaking. The NOTA file is public file which is shared with the class online on their netbooks. Students have access to the file at school and at home if they have access to wireless to connect their netbook to the internet.

Students were sitting in the class at separate desks, working with students across the room as they each had access to a copy of the same file and were able to communicate online to collaboratively complete the task. As a group, they all needed to decide how to present the information most effectively. They needed to think about the stimulus given in the presentation and develop their own resource, using information from multiple sources.

As the students completed the task, the teacher circulated the room giving in-depth guidance and support to students. At completion of the task, students needed to add the teacher as an author to the file so that he could access the file to give comments and feedback. The NOTA presentation was also made for the purpose of receiving feedback from peers.

3.2 Example 'Traditional' Lessons

Science Lesson

This class was held in a large dual-purpose room. Half of the room consisted of tables in 4 rows, while the other half was taken up by 6 laboratory benches with gas and water facilities. The 10 students (6 boys and 4 girls) entered the classroom and sat individually in the rows of tables and chairs, with at least one chair between them. The classroom side of the room was equipped with a laptop connected to an interactive whiteboard, with internet access. At the back of the classroom two iPads were set up for a group activity. The lesson was 60 minutes long. The teacher started the class by requesting that all students take a seat and then referred them to the IWB. On the board was a timer counting down from 5 minutes and four cloze sentences. The students were required to copy the sentences into their books and to fill in the blank words. The questions related to concepts covered in the previous lesson, electrostatic forces. The students worked quietly while the timer ran down. Then the teacher called on individual students for their responses to the cloze sentences and wrote their responses on the IWB.

While the students were completing the cloze exercise the Teacher explained to the researchers that the class members were generally below average for the grade level (Year 7 – 12 yr olds) and that they required a structured learning environment to keep them 'on track'. She explained that the goal of the lesson was to continue to revise the topic that they had just finished, which was 'Forces', and in particular to focus on the vocabulary of the topic in preparation for the end of year test. After completing the cloze exercise the teacher took approximately 5 minutes to explain the structure of the lesson. The students were split into 4 groups (2 groups of 3 and 2 groups of 2), determined by the teacher. Each group was then directed to one of four workstations set up around the classroom. The groups were directed to one particular workstation to begin with, but were directed that they would be rotating through all of the activities as the lesson progressed, spending about 10 minutes on each activity.

The first activity involved the students in using the IWB to play a 'hangman' type game using a web-based application. Prior to the lesson, the teacher had set up the activity so that the words that the students guessed were all taken from the topic of 'Forces'. The students were keen to play the game although they found it difficult to be patient and to take turns when touching the IWB. The second and fourth activities involved students completing a worksheet related to the vocabulary of the topic and associated definitions. The students sat in small groups and generally helped each other to complete these tasks. The third activity involved the students to use the two iPads. They used an application that required them to use earphones to listen to words, and then they were required to write the words. The application then gave them a score which was recorded on a class record sheet which was also on the table.

As the student groups rotated through the activities, the teacher moved between the groups, encouraging the students to stay on task and helping them when necessary. For the first 20 – 30 minutes of the group work section of the lesson the students were generally on task, however, for the last 10 minutes the students were becoming unsettled and were often

moving to groups other than their own. Finally, the teacher ended the group work component of the lesson and asked the students to return to their seats and to glue the revision sheets into their exercise books. She then checked that each student had done so and then gave the class information about the next lesson and the revision work that they would be doing in that lesson. Students then packed their bags and the bell rang for the end of the lesson.

English Lesson

This class was held in a standard classroom with 4 rows of tables and chairs. This was a Year 10 class (average age of students: 16 years) which, the teacher explained, was mixed ability at this grade level. The class was held after a break, and students kept entering the class as it progressed.

The 18 students (9 boys and 9 girls) entered the classroom sat mostly in pairs. The classroom was not equipped with ICT, but the teacher had accessed a projector on a trolley for the lesson, which he hooked up with his laptop and projected onto a whiteboard at the front LHS of the room, which was mounted next to a Blackboard. As this was a Year 10 class, most students had a Netbook (small laptop) for their schooling. However, students were told they wouldn't need the Netbook today as there was a worksheet to fill out. A number of students had iPhones but did not appear to be using them for the lesson, they were checking messages and texting in lesson.

The teacher's stated goal was to revise literary techniques (figurative language) before the upcoming exam. He also wanted students to understand the definition of tone. The lesson was 50 minutes long.

The teacher spent 10 minutes at the start of the class trying to set up the equipment (the speakers were humming and not working properly). He then showed a PowerPoint presentation, which showed segments of popular songs which had figurative language (similes, metaphors). Throughout the presentation he stopped and sought class interaction with questions about the quotes from each song (ie What was Katy Perry trying to say? Was it effective? Why?). The teacher organised the content according to techniques used in the lyrics.

During the presentation students were asked to fill in a worksheet where they wrote in the examples from each song. Students were then asked to work in pairs. The teacher projected a list of words onto the screen through a Youtube video and students had to categorise the words into 8 different emotions on the worksheet. Although it was a pair activity, each student needed to write the words on their own sheet showing a low level of collaboration.

There was a brief class discussion where students were asked to think about examples of figurative language in songs they knew and liked, building on the examples given in class. Due to the time taken to set up the projector, the class ran out of time to complete the activity.

Science Lesson

This class was held in a large dual-purpose room. The front of the room was set up as a standard classroom with 3 rows of tables and chairs, and the back of the room was taken up by 6 laboratory benches with gas and water facilities, which were not used during this lesson. This was a Year 9 class (average age of students: 14 years) which, the teacher explained, was below average ability for this grade level.

The 12 students (7 boys and 5 girls) entered the classroom and sat individually or in pairs in the rows of tables and chairs. Soon after the lesson began those students sitting in pairs were split up and worked individually for the remainder of the lesson. The classroom end of the room was equipped with a laptop connected to a short-throw data projector and a whiteboard, with internet access. Each of the students had a netbook (i.e. a small student laptop). The lesson was 60 minutes long.

The teacher's stated goal was to provide students with information about wind turbines. This is one of a series of lessons on alternative energy sources. The teacher started the lesson by referring the students to a task projected onto the whiteboard. The task required students to access a website on their netbooks to gain information and play an animation concerning the use of wind turbines as an alternative energy source.

The students worked individually, with the teacher constantly moving around the room, supporting and encouraging their progress and behaviour, throughout the lesson. There was no evidence of student collaboration or self-regulation during the lesson.

There was no class discussion concerning what students had learnt about the use of wind turbines as an alternative energy source at the conclusion of the lesson. Observations of student activity suggested that two boys completed the task set, including writing answers to questions from the website about wind turbines. There was little evidence that other students, despite teacher encouragement and urging, progressed beyond viewing the animation on the website.

4. STUDENT EXPERIENCES AND OUTCOMES

This section reports on the common themes and important variations found across five student focus groups, with each group from a different school. The focus groups ranged between 6-10 students, with a mix of genders and year groups participating at each school. The students invited to participate were from the target classes of the teachers involved in the study.

4.1. 21st-century Skills

Across the five sites students reported using technology at school, but there was uneven use across subject areas within a school, with mathematics identified as the subject with the least amount of technology.

There was considerable consistency across four of the school sites, as reported by the student focus groups, but at one other school the students described multiple 21st century learning experiences. Their experiences will be described below.

The students in School E described how they had undertaken an interdisciplinary project involving HSIE, English, Science and Mathematics. They were also involved in projects that extended beyond the classroom in the form of a podcast production incorporating interviews with local community members, and in collaborative activities involving peer and self-assessment. In terms of using technology students in this school were active in building individual websites although they reported a lot of student collaboration as part of the process. These students also made films which were critiqued by their peers before loading on to Youtube. The students at this school also created brochures in several different subjects and said that they liked the opportunity to be creative and to use different forms of language, for example, persuasive text.

In mathematics, the students in this innovative school learnt about trigonometry. One of the students explained the lesson:

We started by getting real-life examples – for example, the Eiffel Tower – and seeing how tall it was. Then we could find out how long the shadow was and what the angle was from where we were standing, at the end of the shadow. We used Google Earth to find all these measurements. And then our major project for that subject and term took 4 or 5 weeks to put together. (Student, School E)

This student recounted how their teacher allowed the students to create their own challenging problems to solve. In Music the students used the software program 'Finale' to compose music.

Further creativity was evident in this School in Art, where students were to take a famous artwork and change it using Photoshop so that it was still recognisable but had their own style

incorporated. Students at this school reported innovative student use of an interactive whiteboard, involving students working collaboratively in a whole class setting to deconstruct a poem.

In terms of real world problem solving and extension beyond the classroom, students at this school completed a problem solving exercise involving interviews with Wildlife Rangers and Aboriginal Elders to gain multiple perspectives on an environmental issue such as pollution. Students were expected to synthesise multiple views and come up with a realistic solution.

4.2 Other Student Outcomes

Students in School E reported high satisfaction levels with their school and the exposure to various learning opportunities, many of which extended learning beyond the classroom and incorporated ICT use. The students in this focus group spoke with enthusiasm for the varied tasks that they had completed, more so than the students from the schools with more traditional pedagogies.

5. TEACHER LEVEL: SUPPORTS AND BARRIERS TO INNOVATIVE TEACHING

This section draws from the interviews with 20 teachers across the five schools. There is a particular focus on teachers' perceptions of the factors that facilitate innovative instruction and the challenges they encounter which constrain their innovative teaching. The key themes explored in this section are Professional development and learning, ICT support, teacher collaboration and barriers to innovation.

5.1. Professional development

In NSW government schools Professional Development (PD) days are designated as part of the school year. Generally schools will have one day before the commencement of Term 1, the first day of Term 2, the first day of Term 3 and the last two days of Term 4 to conduct professional learning sessions with staff. In addition, throughout the year there are opportunities for staff to engage in professional learning, although this also requires staff to be released from class which increases the cost of the PD opportunity and limits the number of staff who can be involved. All NSW government school teachers have access to an online professional learning management system called 'PL@Edu' where staff can access online courses and can log the hours they have spent involved in professional development which will contribute to their accreditation by the NSW Institute of Teachers (the state-based teacher standards authority which requires certain hours of accredited PD to be logged by teachers).

For the schools involved in the site visit, there were a range of PD opportunities for teachers to be involved in. In general, professional learning opportunities were directed by the School Leadership team and the School Plan, aligned with the stated goals the school is aiming to achieve over a 3-year period. Some schools also had access to added funding for PD, depending on if the school had been targeted for state or national-based programs.

Most of the Schools involved in the site visits had a strong focus on professional learning, which would be above that of the average school. There were a wide range of initiatives within the schools, ranging from staff meetings, faculty meetings, and teacher collaborative learning groups which were embedded in day-to-day practice. Teachers spoke of whole staff meetings, for example, where the Principal asked particular teachers to share examples of best practice. There were also a number of external professional learning opportunities, which staff could self-nominate to attend.

School-wide Professional Learning & Development

The schools in the study had a professional development program in place aligned with their school plans, and professional development was generally planned a year in advance for the 'gazetted' professional learning days. In addition, schools had in-house professional learning and also booked in external speakers/trainers to deliver whole-staff training in the afternoons, usually aligned with particular areas of needs identified by the staff or in the school plan.

In a number of the schools the school leadership team, led by the Principal, were encouraging other staff members to present to the whole staff during staff meetings, to promote those staff involved in continued professional learning within the school and also to acknowledge staff who were doing innovative things within the classroom or who had expert knowledge to share. A number of examples were given of young staff who were sharing their use of software (OneNote), Web 2.0 tools (Edmodo, Animoto, Masher) and learning management systems (such as Moodle) in the classrooms, so that other teachers could be encouraged to adapt and use in their own teaching.

Other topics of professional learning highlighted in the interviews included first aid, early years literacy, grammar workshops, literacy programs, use of SMARTdata (software used in Australia to track national testing outcomes for each student/class/year/school and to assist in planning to address learning needs). A number of these focus areas were not just one session, they were held over a period of time with follow-up to see how teachers had embedded in practice.

We've had presenters in for middle-years literacy and for grammar workshops... they haven't just been one session. It's been run over a couple of weeks and we've had to bring in evidence of how we've used what we learned in class as well. [Teacher, School B]

Accelerated Literacy was a 36-hour training program and a lot of it had an action research model, where you then have to implement it and you had a lot of feedback and observations. A lot of collaborative work was going on - team teaching and team programming or even delivering lessons as well as refining things together. So, it went for a whole year for the training and then the practice for another six months or so. [Teacher, School E]

The whole staff meetings were also used as opportunities for faculties to share what they were learning about in their meetings with the wider staff group, so that cross-curricular interests may emerge or for a whole school focus on technology being brought to the school.

At our fortnightly school meetings all the faculties take it in turns to show how they have been using technology in their faculty. I think on the whole that's really good school support, and sharing of ideas. [Teacher, School B]

Faculty-focused Professional Learning

Most of the schools had faculty meetings in separate discipline groups [ie English faculty, Mathematics Faculty, etc] on a regular basis, which is typical in Australian high schools. This practice is generally focused on administrative tasks, curriculum issues and/or student pastoral matters. In a number of schools, teachers reported that the faculty meetings were changing focus, with a professional learning session embedded as part of the school goals for improving pedagogical practice. This has been a particular focus since the DER laptop scheme was introduced to Year 9 students, which has since extended to Years 10 and 11 in most cases where it has been operational for over three years. Colleagues, who are teaching students in these more senior years, are generally supporting each other in the use of ICT and sharing resources through this means.

We do have regular fortnightly faculty meetings and there are always programming and curriculum items on the agenda. This year we have been going through a process of re-evaluating our programs. And actually tomorrow the English Faculty are having a development day where we are going through all of our programs, and looking at how we can include technology and various tools into the programs. This is why I am doing a presentation to the rest of the Faculty today on the Web 2.0 tools that I love. So that way, when they go and have a look at the programs, they'll be armed with a bit more knowledge about what they can include. [Teacher, School B]

External Professional Development Opportunities

Staff also discussed opportunities to go off-site to complete courses during the school year. These included courses with the English Teachers Association, specialist discipline-focused courses on marking for the Higher School Certificate (the leaving examination for NSW), Photoshop, Blogging, Moodle, and E-portfolios.

There were mixed feelings about these courses and how useful they were for staff:

I feel very reluctant to go to courses outside of school because I hate leaving my classes, that's my core business, that's my special sacred time with them. The maximum engagement for maximum minutes, they can't be engaged when I'm not there. So if you're going to take me out of class, I need to know it's going to be valuable.[Teacher, School C]

Teachers found that some of the best types of professional learning were when they had the opportunity to put what they had learned into practice or when they were able to watch other teachers in different contexts.

I think I can still probably benefit from seeing what other people are doing. It would be really good to go for example to another school and see how they do it or even go to another classroom of another teacher and see how they do it. Because I think as teachers there's not a lot of time for you to go and have a look at what other people do. [Teacher, School C]

Teachers who have gone to external courses in NSW government schools are generally required to come back to the school and hold a learning session to pass on what they have learned to their colleagues in a particular faculty or within the wider school community. However, teachers had some concerns about bringing back courses focused on technology, in particular, as they often required technical support from within the school to action.

The one that should have been the best PD failed, which was the Moodle one. Technology failed that day because everybody was trying to get onto Moodle, and the server just couldn't cope and it shut down. I was really looking forward to that one. [Teacher, School B]

I find that when I go to a course - if it's literacy it's good but if it's a technology one I usually find that I know it already. I'm one of those people that are pretty quick, I like exploring it myself rather than someone telling me how to do something and I find that a lot of the stuff I go to which is focused on the technology, it's not focused on teaching [Teacher, School C]

Every Staff Development Day has at least one session on ICT, whether it's a new program or just how to use basic web tools. I don't often find them that useful. Because really, you've got about 50 people in a room with varying levels of interest - and that includes myself. So generally speaking, that's a bit of a washout. [Teacher, School C]

Some of the most valuable professional development opportunities reported by teachers are those that foster collaboration between staff members within the school:

I've found I've gone to lots of courses that have given great ideas but ...it's the two or three hours that you then go and spend to plan and change so that it gets implemented that makes the difference. Second to that I would just say that the other thing that's made a difference has been collaboration. Not individual professional learning, but making changes collaboratively as a result of professional dialogue and discussions. [Teacher, School C]

That was really fantastic to be able to go and be part of the whole school environment and go into other people's faculties to see what was happening. Also, to have a discussion with them about what needed to be happening, in order to really focus on engaging students [Teacher, School E]

The other type of professional development which was rarely mentioned by teachers was social networking. For those that were connecting with other teachers in online networks, it was evident that they were finding current ideas to try in the classroom and felt supported by the network:

I bounce off a few teachers' here at this school but I've got a really large professional learning network on Twitter. I speak to the DER guys quite a lot online and we bounce ideas off each other. I talk to teachers I've never met before, but we exchange ideas and I read their blog and they read mine [Teacher, School C]

Within each school, there was also an opportunity to get involved in smaller groups of staff working across the whole school on areas identified as target areas. This was particularly evident in Schools B, C, D and E.

I'm in the Quality Teaching and GATS team and we meet fortnightly and talk about how we can include more of the dimensions of Quality Teaching in all of the programs across the school. We code the assessment tasks and then send them back to the Faculty so that they can improve them. Then they have more of the dimensions in them so that they can rate quite highly in quality teaching. [Teacher, School B]

5.2 ICT-related support

There were a range of responses about ICT-related support depending on the school-level of support provided for staff and on the level of expertise of the staff member in the area of ICT.

At a school level there are issues in terms of the laptop support. I think it's because there are a lot of laptops and there's only one person fixing a lot of things ... a lot of teachers get quite frustrated when they need something they can't get it fixed. So they just go, well I can't do it, I give up. [Teacher, School C]

Bob (the Technical Support Officer) is absolutely brilliant with me. I don't know what he's like with the other staff, but I could highly recommend him in terms of support. He's just amazing. He's mapped my hard drive for me. [Teacher, School B]*

Generally speaking, even those schools with good technical support staff were still not being supported to embed ICT into their teaching and learning. One of the schools making the most progress in this area had staff working on teaching and learning portfolios, who were also proficient in technology. These staff members spent time with other staff across faculties, team-teaching and helping them to embed technology into their teaching programs and units of work.

*We have three quality teachers who are the * team and they spend one term with each faculty. They will have scheduled lessons so each of them have six lessons a week where they're in team-teaching with a variety of teachers within that faculty and they're meant to be assisting and modelling best pedagogical strategies [Teacher, School C]*

There were also staff who were using ICT in the classroom who were willing to share what they were doing with colleagues:

We've got Jess, who you'll speak to, whose portfolio includes technology and every Thursday after school this term she's been running a gaming course and I've been going*

to that all of this term. We're really just playing Xbox, and things like that, and looking at how that can be used in the classroom to support literacy and numeracy. [Teacher, School C]

In one of the schools where there was a high usage of laptops in Years 9 and 10, technical support was sufficient and there was a lot of support given by school executive to support the staff. Technology was not just embedded into teaching and learning, it was also used by some teachers to manage assignment submission and to give feedback:

I was sceptical of the students even having laptops. When the government suggested it, I thought, is that really something that's going to be useful? It has helped me to, first of all just to manage the students' work. So I receive homework via e-mail. It goes straight into a folder on my laptop for the student, and I've been able to keep tabs on each student's progress. It really helps me to get feedback back to them. It's far easier to mark one task at a time, e-mailed by a group of students, rather than collecting a book and trying to just rifle through that in one night and get it back to them. So I've actually found, in terms of administration and organisation, it's been excellent. [Teacher, School C]

5.3 Teacher Collaboration

In the high schools involved in the study, teachers generally get periods off class during the week to prepare lessons and resources (on average one out of the six lessons per day would be for this purpose). Depending on the school timetable, these times may allow collaboration with colleagues for common planning time, but more often than not teachers are on differing schedules.

Teachers in this study reported that their faculty usually met fortnightly, and in most cases this meeting would include planning time for teaching. Usually this would happen before or after school. Generally once the term begins, teachers reported that it was difficult to fit in time to meet with colleagues as everyone had differing class schedules and other responsibilities within the school which impacted on their availability. His comment from one teacher sums up the general picture within NSW high schools:

In this school and in the faculty that I'm in there is certainly a culture of open discussion and collaboration, and it's supported from the ground up... However at this school and in my faculty that I've just come into, like my last school, like most places I've seen, I think there's very little collaboration between teachers. Even within the one faculty, you have teachers effectively working in silos. Where they come in each day, do their own work, change their own lessons, create their own resources and go home. [Teacher, School C]

However, within each of the schools there were emerging groupings of staff who were collaborating, particularly in their use of technology. Generally the younger staff were showing

some of the software and tools that they knew to some of the more experienced teachers, who were struggling with technology.

I have a couple of young staff members and they're using technology ... Jeff's into it. He's tried a few Moodle things. I'd say his style of teaching is very different to mine! I've still got to be dragged kicking and screaming out of the Dark Ages. But it's those old habits that you reign in and I guess you go back to a default position every now and again. When all else fails, that's where you go. [Teacher, School B]*

5.4 Barriers to Innovative Teaching

There are a number of challenges to developing and implementing innovative practice which were brought up during the site visits by teachers. One of the biggest barriers raised was the issue of time, particularly for those teachers who had difficult classes to teach:

It's all about time. The time that I spend researching resources that I want for my [Year 9 low ability class], I don't spend as much time as that on the rest of all of my classes combined. You've got to be organised with those guys. If you're not, you're in trouble, because they'll find you out very quickly...like today I have the websites written down, but I want them to go and find them. So if they get stuck, I write the addresses on the board and direct them, or tell them it's the third one down on your search or whatever the case is. But you've still ...got to go through the sites and make sure they're appropriate. [Teacher, School B]

This quote captures the frustration of one teacher who is struggling to develop literacy skills with his students in a crowded curriculum, and doesn't want to take time out of their learning time to teach ICT skills:

My only concern or reservation is that... with classes like my year eight class that are so far behind, I don't want to be using new software and technologies where I have to spend a huge proportion of my time with them teaching them the software, when I've got so much I desperately need to bring them forward in with their literacy. [Teacher, School C]

However, another teacher (in the same school) commented that if students can see that you are putting in time and effort, then they will engage in the activity:

I have seen students, when they see a deliberate and committed approach to using technology in class, they switch on. I think that goes for any teaching practice. I think that if they see preparation and they see commitment, they see diligence, then they're just going to warm to it and engage... after a while they get it, if the teacher keeps coming back with work for them. No matter how rowdy, no matter how apathetic they seem, if the teacher keeps coming back they eventually get in line. Because they realise that it's not something that's trying to be forced upon them. It's something that is there to help them. [Teacher, School C]

One of the issues identified by teachers in a number of schools was the need for technical support when conducting PD focused on technology and the embarrassment when the technology PD does not go to plan. This is one of the complaints about use of ICT in the classroom, and so when teachers are asked to learn about a new software program and there are 'technical difficulties' during the workshop it is difficult for teachers to have the confidence to use it in a classroom situation.

I'm the one that has to be prodded along. There's a bit of inertia there. I try to do it as a leader of the department. You've got to get out there. One of the unfortunate things is that when we've done technology in our extended staff meetings, three times in a row, the technology has failed us. So then [the teachers] say, oh, I'm not using technology! Even in the situation where I was at my desktop, I had even done it with my laptop, everything was working... perfect, brilliantly. I go to show people, it didn't work. [Teacher, School B]

While technology is an absolutely fantastic and powerful tool which I think plays a vital role in each of those things, I know the times when technology has failed us - things haven't switched on, or things haven't worked. Like last period the sound didn't work, for example, so I didn't get to the main part of the lesson on time - all the things that I wanted to do. [Teacher, School E]

There seemed to be a link between use of ICT and teacher collaboration in a number of schools, and some of the Head Teachers interviewed felt that if they had time to collaborate and share more, teaching practice could be improved:

I think another barrier to ICT use is lack of collaborative practices. Because if that was happening more the use of ICT would be more embedded because we'd be much more sharing our skills, abilities and ideas about how to invest...I've got this member on my staff who's been involved at a state and regional level in terms of embedding SMART Boards in Teaching and Learning. If I can get more collaborative practices happening, one of things I've asked her about doing is training on what she knows [Teacher, School C]

Teachers on the whole felt that they needed the support of the School Leader and appropriate resources provided by the school in order to deliver innovative lessons. All of the teachers interviewed felt there was some commitment in the school aims and vision to innovation, but the driving forward within the school essentially came down to the passion and commitment from the leaders of each school.

I think there are different ways we can tap into people but it's absolutely critical that we've got leaders who are really supportive- leading and directing innovative teaching and learning - because I know that's one of the things that really excited me and really pushed me to finally make a move from a different school. [Teacher, School E]

6. SCHOOL LEVEL

Five School leaders were interviewed in the qualitative component of this study. Two of the School Leaders interviewed were Principals and the other three School Leaders were Senior Executive members of the school. This section reports their views on school goals, innovation and ICT

6.1 School Leadership

All school leaders stated that they were aiming to develop a shared vision and focus for all staff and students; a vision which would be compatible and would be supported by the community.

If I can take our best teachers and say to everyone else, this is what we need to do, that would be my vision. To just keep building that capacity, so that all of our kids have amazing teachers and amazing lessons, every single day. [School Leader, School E]

All leaders were conscious of the need for open communication with key stakeholders, but they also acknowledged the difficulties in doing so. One of the School Leaders talked of driving the vision from underneath to the people at the top, which wasn't conducive to getting things to change quickly. Without support from the whole school leadership team, individual leaders can often struggle to promote a clear vision.

6.2 School Goals & Commonality of Vision

All school leaders described their focus as being fundamentally related to teaching and learning. School Leader B summed it up in the quote, '*At the centre of everything that we do is teaching and learning*'. Many mentioned the NSW Quality Teaching Model as an underlying supportive framework for the improvement of pedagogical practice. Leaders also recognised the importance of quality relationships with staff and students and they felt that an increased focus on collaborative practices for staff and students might help to foster such relationships.

There is a lot of collaboration. That is something that we have built up as a school culture for a number of years. Faculties work quite strongly together. [School Leader, School C]

The need for teachers to maintain high expectations for students and to encourage higher order thinking was a common expectation and concern across all School Leaders. All leaders did acknowledge the inconsistency between their vision for the school and the daily reality of teachers' lives. There was recognition of the lack of time that teachers have for planning, particularly when they have to deal with significant classroom management issues. It was often seen as very difficult to turn a disruptive class around so that they are engaged in learning.

We had a problem with one of the classes. They're a massive discipline issue...My argument was, bring it back to teaching and learning. Create a positive classroom environment and try and engage them in technology. [School Leader, School A]

6.3 School-level Innovation: Supports and Challenges

There were a range of school-level innovations being implemented in the sites in this study. In School C teaching staff were considering the development of an integrated curriculum for Year 7 in order to increase student engagement. At this school there was a technology blog for staff written by fellow teachers to enable timely sharing of new resources and ideas. The use of electronic rolls had forced teachers to take laptops to class and staff were now collaborating using Web2.0 tools such as Google docs. The school was using social media to make connections beyond the school into the wider community.

One of the major barrier to effective ICT integration was seen as relatively older staff. One school leader felt that they had to ‘push some of the older teachers into the 21st century’. At some schools the staff were in ‘survival mode’, dealing with significant classroom management issues that not only left little time for planning, but also left staff feeling disheartened if they did make attempts to plan innovative lessons that were subsequently poorly received. In the face of these challenges champions of innovation and ICT can find it difficult to set achievable goals, particularly if the school executive is not supportive and if there is a lack of collaboration in the school between the teachers both within and between faculties.

One school leader described a long term approach to professional learning, which he/she believed helped teachers to be less resistant to change.

We also have presentations at the staff meetings by the faculty on what they are doing in technology. It is not what they teach. It is common approaches. It is about that sharing. [School Leader, School B]

This leader could not articulate any significant barriers to effective ICT integration or pedagogical reform, indicating a positive mindset with a clear focus to improve the intellectual quality of student work. This leader also focused on providing students with explicit quality criteria as a road map for their learning, with the ultimate goal that the students would gain sufficient knowledge to teacher others.

In School D the school leader described a systematic approach to pedagogical improvement. At this school they regularly used peer observations conducted by teachers, with a view providing feedback on teaching to improve pedagogy. This leader also had a positive view of the school and its potential to change, but did acknowledge the tension between the push for 21st century learning and the increased accountability brought about by the Federal government’s focus on National standardised tests.

6.4. ICT at the School Level

There are clearly differences within schools in terms of the access to computers and support for teachers and students with ICT. The school leader in School A expressed frustration with the level of ICT infrastructure and support within the school. There was a significant barrier in terms of lack of access to computer labs with only 45 computers in the school and 20 in the library. Although students in Year 9 to 12 had personal laptops, the use of these tools were hampered by inadequate wireless networks in some parts of the school and slow turn around for laptops requiring maintenance. This last factor meant that students were sometimes de-motivated to use and rely on the technology.

Overall, most school leaders expressed considerable satisfaction with current levels of ICT infrastructure and support, particularly the funding from the Federal government's Digital Education Revolution. They viewed the rapid deployment of ICT tools as an opportunity for providing innovative and engaging pedagogy aimed to develop 21st century skills.

7. STATE GOVERNMENT: SYSTEM LEVEL

This section reports the responses of government education leaders interviewed in July and August 2012 about the transformations in teaching and learning in NSW secondary schools, especially those relating to the use of information and communication technologies in teaching and learning at the time of the ITL study.

All 22 of the ITL study schools in Australia were NSW government secondary schools so the decision was made to interview seven senior officers from that sector in policy advisory, administrative and system development roles to more fully understand the policy environment in which the ITL study schools in Australia operated. The eighth respondent was a senior bureaucrat from the national curriculum, assessment and reporting agency and a key policy advisor to the Australian Government to provide a broader point of reference on the factors influencing the ITL study schools in Australia.

Government Leader Responses

Government Leaders in NSW were mindful of the broader policy environment and the demands these placed on schools. The pressures of globalisation and rapid and continuous technological change were seen as demanding more from education systems nationally and internationally to get the most out of their expenditure in education. It was clear they saw high quality schooling as integral for Australia in finding and making the most of new economic opportunities, and achieving greater social equity and environmental sustainability. Several Government Leaders saw these demands translating to systems and schools through the twin goals of excellence and equity ('raising the bar' and 'closing the gap' in outcomes), especially in terms of mastering the foundation skills in literacy and numeracy. One Government Leader noted the critical importance of these goals to building a just society for all Australians and referred to the Melbourne Declaration on the Educational Goals for young Australians³ as the best articulation of what is being sought for young Australians.

As a nation Australia values the central role of education in building a democratic, equitable and just society—a society that is prosperous, cohesive and culturally diverse, and that values Australia's Indigenous cultures as a key part of the nation's history, present and future.

(MCEETYA, 2008, p. 4).

³ Ministerial Council on Education, Employment, Training and Youth Affairs (Australia). (2008). *Melbourne declaration on educational goals for young Australians*. Melbourne : Ministerial Council on Education, Employment, Training and Youth Affairs, <http://nla.gov.au/nla.arc-93985>

This respondent described The Melbourne Declaration as

“ ... almost like a Magna Carta for us as educators in this country that sets out really, really well what we should be on about as educators ... quality schooling for all, and the contribution schooling makes to the personal, cognitive and other growth of the student.”

Key policy advisors around curriculum in the Department were very mindful of getting the basics right, referring to the fundamentals of literacy and numeracy, carefully noting that this was not an end in itself but a platform to facilitate deeper and more diverse learning.

We need the basics but we have to go way beyond the basics 21st century learning cannot be achieved through relying on the basics.

Government education leaders in NSW acknowledged the potential contribution of digital education to schooling outcomes and national productivity. They explicitly mentioned Digital Education Revolution (DER), the \$1.2 billion investment to better integrate technology into teaching and learning supported by the Australian and State and Territory governments.

The NSW Department is focusing on three areas: infrastructure, effective administration, and teaching and learning including what was referred to as the collaborative side. One respondent noted from the NSW Department's evaluation of the DER⁴ the Department knew:

If you don't get the infrastructure right – the wireless networks into all schools, the technology support officers and the tools like the laptops – you are not going to be able to get technology integrated into teaching and learning.

Factually, under the DER a total of 463 NSW Government secondary schools (including the 22 in the ITL study) have benefited from \$70 million investment over three years in wireless connectivity. The 1:1 laptop per student initiative has also helped position senior secondary students in Government schools in NSW to learn with technology. With the support of the National Secondary Schools Computer Fund, students from Year 9 to Year 12 have all been issued highly specialised laptop computers including a comprehensive educational software suite to support their learning.

Another 63 thousand Year 9 students were provided with one-to-one laptops in 2012 under the DER. The total impact now captures over 230 thousand students in Years 9 to 12 and over 25 thousand secondary teachers. However, several of the respondents noted that the great majority of the Year 7 and Year 8 classes involved in the ITL study would not have one-to-one access to laptops and may in fact have limited access to ICT during class time, certainly far more limited than more senior students. It was also suggested that students in the junior secondary years often perceived this as a significant, and strongly felt, disadvantage to their learning.

Government Leaders with responsibilities for the roll out of computers and underlying infrastructure were careful to emphasise that the focus should be on reform in teaching and

⁴ <http://www.dec.nsw.gov.au/about-us/how-we-operate/national-partnerships/digital-education-revolution/rrql/research>

learning with the role of technology to ‘support learning’ rather than technology per se. Professional learning and curriculum support were seen as essential for teachers to transition their practice. These were seen as the *real game changers*. There is a risk that coming to terms with new technology can be a distractor for teachers and school leaders, moving emphasis away from quality teaching and thinking about what is known and valued in terms of education. Change is one thing and sustainability another.

Technology can actually divert attention from quality teaching at times. The absolute essential is pedagogy. The skill is around how to use particular types of technology to enhance learning for our students. Technology has a pretty good superficial impact but for deep learning and really high quality teaching, technology needs to be used as a tool.

For example, several of the government education leaders recognised collaborative learning as critical to modern schooling but in spite of high expectations and significant investments in building connected learning platforms, collaboration tools and virtual learning spaces, they are still not in common use.

The bulk of learning is collaborative. We have not quite got that right but there are solutions that are on the verge of going to scale. If they do and we are watching, we are going to see real change in language learning, extension Maths or subjects where there is scarcity of teachers and student numbers.

It was clear that NSW system officials are looking for more and better ways for students to learn flexibly and independently, both face-to-face and online. It is anticipated that more of the work done by students will be personalised and task and project based, and it can be presented in ways that has meaning to the students. This opinion was shared by the technology specialists who are working to provide better and more flexible access to technology to support learning for individual students and support teachers with more options and in making better choices about what software and approaches make a difference.

Equity is less of an issue if we can support any learning, anytime, from anywhere. Whether they are high flyers or not, technology should be able to support students improving their learning. There is now weight behind the philosophy of personalized learning that provides the opportunity to really fine-tune what it is we might be doing with individual students and give the teachers the technology to do that. The technology is granular enough to do that.

Centrally, the technologists are working on building an integration platform where schools can pick their own tools from vendors and ‘plug in’ to central data and support services rather than depend on centrally provided software, changing what the department does as an organization. Schools or individual teachers can pick a particular software tool from a provider, and ask for it to be linked into and use centrally held data and services.

If they register with the centre, we get visibility for the first time over what public schools are using particular software. The benefits are that the system can then strike enterprise agreements because we can actually see the demand determined by local schools. We can

add the data (from schools) to the enterprise warehouse to see what products are getting results and feed this back to schools.

Supporting and empowering schools through these types of school-focused innovations is sympathetic to the broader devolution to schools agenda in the public education at the time of the ITL study. The Australian Government through its *Empowering Local Schools* initiatives and the NSW Government *Local Schools, Local Decisions* reform will see more decision making authority over staffing and resources devolved to local schools and communities of schools, and a significantly diminished role centrally and for regions over the next decade. Schools are already anticipating significantly less support for curriculum and professional learning, and the system is placing more reliance on information and communications technologies to maintain and improve educational standards.

Education Leaders emphasised that, with less central support, teacher professional learning will need to rely more heavily on online platforms. The Pathways for Learning, Anywhere, anytime – a Network for Educators (PLANE project)⁵ was cited as an example of the new type of professional learning platform being developed for teachers and school leaders. PLANE is the soon to be launched online educator community, networking space and virtual world providing accredited professional online learning focusing on the use of multi-media resources, ICT skills development, collaborative tools, game-based-learning and peer coaching and other professional learning opportunities. The project is managed by a consortium consisting of the government, catholic and independent schools sectors in NSW, and the Council of Deans of Education NSW together with industry partners Adobe and Microsoft.

PLANE is even more exciting than we imagined when we put the bid together. I think it will go national and certainly become a collaborative workspace for teachers with great potential.

When asked about the dissemination and uptake of technology in teaching and learning, Government Leaders felt confident that it had a degree of traction but were concerned about its uneven nature. Where there was strong leadership pushing the uptake of technology and learning across the school, it was thought more likely that the effects would be school wide. However, it was more generally thought that good examples of technology in teaching and learning existed in small pockets, with individuals or small groups of teachers, more than with schools.

We have a bit of a challenge. My perception is that it's pretty patchy. If you went into schools and you had one or two really exceptional operators you would be doing pretty well because they could be sharing it across their schools. In some other environments, it would not be as evident as we hoped.

What was clear from the interviews was the Government Leaders' strong commitment to capacity building and evidence-based practice as the pathways for change. Education Leaders also stressed the importance of sharing stories and experiences with their colleagues to distill the wisdom of

⁵ <http://my.plane.edu.au/>

outstanding principals and teachers. Research, scholarship, nous and common sense were all emphasized as important ways to build capacity. Linking remuneration for principals and teachers to achievement scores was not seen by any of the Government Leaders as a helpful direction for the system to take.

The systems role was seen as supporting change from the grassroots up. Education Leaders were concerned about chronic underachievement in parts of the system and saw improvement in teaching and learning as the crucial but most challenging area of reform for many NSW schools. The young people in NSW secondary schools were seen voracious users of technology but too often not for educational purposes. The next steps in the digital education revolution were seen as moving beyond devices, viewing technology as an enabler and focusing on how students can learn more effectively, flexibly and in more personally meaningful ways with technology.

8. CONCLUSION

In all the schools, both innovative and comparison, we found pockets of innovation, but the general lack of a whole-school focus and impact. In many cases there was at least a surface level of technology being applied and in particular this was evident with younger, less-experienced teachers who were able to use technology in a range of ways but to different degrees.

Teachers were conscious that innovative teaching was not only about computers, the internet and the like, but the interviews seemed to focus on ICT benefits and issues. It was suggested that the use of ICT in lessons has the potential to be ground-breaking in some ways, such as simulation, but perhaps only for teachers and classes who are competent users.

Teachers expressed a need for expert assistance in the implementation of ICT in lessons. The lack of timely and effective technical assistance was commonly seen as a limiting factor in the effective implementation of computers and other ICT in the classroom.

Teachers raised the issue of computer and internet use being time consuming, both in lesson preparation and start-up time within lessons. It was suggested by teachers that the adoption and implementation of ICT in teaching was 'all about time' and that students, of whatever ability level, need to have a commitment to academic work within the lesson for the use of ICT to be effective. One might ask, however, whether student commitment is more a requirement for ICT lessons than for any other type of lesson.

Students recognised that there was an unevenness in ICT levels of use across different subjects, and raised the related issue of need to carry both a computer and books around the school on most days. However, when the collected ICT beliefs and practices of teachers were compared by discipline, teacher differences were small and not significant.

Students saw the lack of choice in task setting and approach to problem solving as a deficiency in innovative teaching with ICT. However, the more frequent opportunity to work cooperatively in pairs or groups was seen positively by students.

Although most of our schools involved in the study were community focussed, learning beyond the classroom was not common practice at the class level. School leaders seemed more involved beyond the school, raising the question of how important teachers see this component of innovative teaching. Alternatively, perhaps teachers see this practice as advantageous, but lack the ingenuity or resources to initiate appropriate activities.

The perceived 'more innovative' schools in our study were generally in lower socio-economic areas with low-average literacy and numeracy scores in the national testing program. Even more particularly, the site visit schools were those that have undergone significant change, mainly owing to the drive of the school leadership. It was also the case that most of these schools, particularly in the Sydney region, had access to additional funding from the State government to lift their performance, allowing an increased focus on teaching and learning.

APPENDIX A: CASE STUDIES

On the basis of site visits and survey data, two of the site-visit schools which were seen to be more innovative were chosen for a more in-depth examination. In this section we expand on some of the more innovative practices collected during site visits, through observations of classes, interviews, collection of learning activities and student work, and further exploration of the programs operating in the schools. Given the small data set and ethics requirements, we have taken care to ensure that individual schools cannot be identified.

CASE STUDY SCHOOLS – ITL DIMENSIONS

See ‘Appendix C’ for detailed reports on the two Case Study Schools.

Detailed reports on the two case study schools⁶

The two case study schools have a notable number of similarities and some differences. They are briefly described here in comparison with the teachers at the total group of 22 schools, across three regions of NSW included in the ITL study. In both cases a high proportion of teachers responded to the survey, suggesting a good representation of teacher views at the school. Each school is in one of the two targeted regions for site visits: School 1 is in the Sydney metropolitan region and School 2 is in the Hunter region. The descriptions are based on variables related to teacher beliefs and practices concerning innovative teaching practices across the whole sample of schools.

Teacher characteristics

Teachers at both schools were comparatively younger and less-experienced than the total group, particularly the teachers at School 2. Both groups of teachers had participated much more in ICT professional learning opportunities than the total group, but teachers at School 1 had participated in more general professional learning much less than the total sample, while teachers at School 2 had participated much more than average. The teachers also differed in use of ICT: those at School 1 used ICT a little more than average, while those at School 2 used it a little less.

Student ability and engagement

School 2 teachers rated their students about average in ability while those at School 1 rated their students as lower than average ability. However, School 1 teachers considered their students used ICT much more than average, although their ICT skill level was only average, while School 2 teachers considered their students used ICT only slightly more than average but that their ICT skill level was higher than average. Given the above, it was interesting that School 1 teachers believed their students were less engaged with ICT than the average, while School 2 teachers believed theirs were engaged with ICT very much more than average.

⁶ To enable back references to more general information about each school, the school identifications used in this section are those used earlier in the report.

Tasks set

The nature of some of the tasks set by teachers at the two schools also differed. Although there were only small differences between the two schools on student use of self-regulated learning (School 1 being slightly lower than average and School 2 average), School 1 was higher on use of extended tasks and extended communication, while neither school was very different from average for fostering global citizenship.

Overall

On the three intermediate summary measures: there was one major difference between these two schools. School 1 teachers rated connected learning as more important than School 2 teachers who rated it as average. Teachers at both schools rated use of student-centred pedagogy and ICT integration as more important. On the key overall summary variable created, ICT teaching practices, both schools were above average, particularly School 1 whose teachers were well above average.

SPOTLIGHT ON INNOVATIVE PRACTICE

CASE STUDY SCHOOL ONE

Some of the programs operating in the Case Study School One are illuminated below, through the eyes of the school leaders and teachers involved in the study. Some of the key areas of interest resulting in innovative practice in this school were: teacher collaboration across discipline areas, action learning projects on e-learning, strong support from school leaders, individual mentoring of teachers and a focus on involving students as researchers.

Action Learning

Action Learning projects have evolved within the school that have built in sustainability measures. Some teachers stay on the team for a year as projects are worked on, and then new teachers join in each year. Essentially the focus at the moment is on e-learning - marrying e-learning pedagogies with assessment processes. So the focus of the project is looking at using technology and ICT-based - either Web 2.0 tools or things that are on the laptops. To engage students in authentic and ongoing self-assessment and peer-assessment processes. To have students use that same technology to provide ongoing and sustained feedback to students to improve the quality of their work.

On the ground, that looks like a group of about eight teachers generally who have lots of professional learning. A facilitator comes in, and spends whole days with the team, talking about Action Learning and about evaluation. They also talk about what e-learning looks like, what quality assessment formative and summative assessment practices look like. Teachers are given academic readings and resources are shared with the team that has been developed in school. The idea is that the teachers involved come up with a research question, then develop a whole range of resources and test a whole lot of things in the classroom with students. So the most recent iterations is that Teachers have been trialling different approaches to self and peer assessment through ICT and teacher feedback in their classes.

Some teachers have used tools like Edmodo to submit things like Word documents where the students use track changes and comment boxes to really refine and refine and refine their work. They can see the development of the different iterations over a period of time. E-portfolios using Adobe Acrobat Pro 9, the webcams performances in particular have completely changed the way that students refine their performance pieces because they get to see themselves in a third person. Another tool used is Google Earth and students are also using a range of self-selected technologies to present what they do in the classroom.

Cross-disciplinary Approach

In a secondary school it's really easy for faculties to become 'silos' and they only really know what everyone else in that faculty does. So all of the Action Learning projects that are developed at the school have had people working cross KLAs so that they really build capacity in terms of understanding not only the landscape of learning for students. So they get this concept of continuity when a child moves from one class to another class throughout the day.

The other thing teachers do is they learn from the skills and the expertise and the knowledge of colleagues that they wouldn't usually interact with. The process for cross curriculum development across curriculum units was that there are lots of similarities in different syllabuses that teachers are completely oblivious to when they teach in a secondary school. So they developed this idea of getting teachers together who shared a class - or classes. So teachers are involved across multiple classes - the idea was that those four teachers would identify a core concept that came organically from their syllabus.

It's not something that's imposed artificially on what their syllabus is asking them to do. So they did lots of professional learning where they were unpacking their syllabus outcomes, explaining to their colleagues what that meant, what it looked like. What it looked like as a Teaching and Learning program on the ground. Then through lots of really rich dialogue the group identified the key concept that all of those four teachers on a particular class were happy to teach.

Then to ensure that integrity of their syllabus was maintained they developed a unit of work that hooked into this core concept but really developed student skills and knowledge in that particular subject area. With the view that the students completed a rich task that required them to bring skills and knowledge from each of the four subjects involved.

So an example was a unit around indigenous culture, the students as a rich task created a film. So in English they were getting an understanding through picture books of what visual components they might consider in their filming. In history they were looking at the content because it was around this concept of first contact in Australian history. In art they were looking at 4D film - 4D artworks and filmmaking and in music they were looking about how to include sound in their film to enhance the quality of their final product.

So the process wasn't about someone else giving teachers a unit of work and then them teaching it across subject areas- it was about teacher ownership of that

process. The school has been using this process for the last four or five years. They feel it makes a massive difference in terms of teachers getting a rich understanding of what happens across the school and learning from each other.

Outcomes from Action Research Project in e-learning

The outcomes the school is seeing are through the analysis of student work samples, particularly those samples of students who are using ICT to engage in quality self and peer assessment and teacher feedback processes. They feel that the quality of work that students are producing is way beyond what they were producing without it. They have compared classes who are involved in those processes with work samples of classes who aren't involved. Comparing work samples of the same students - something that a student might have produced earlier in the year compared to what they've produced later. The evaluation team have had a look at e-portfolios where there are iterations of tasks, for example there might be 10 versions of a piece of writing that a student has submitted incorporating feedback given by peers.

In that way the quality of what students are producing is enhanced, as it should be, because they're getting feedback. The students say in the focus groups that they're much more engaged they find the work far more interesting and they find the work more challenging. They say that it's hard, and that it takes time, but they like it more. So the pay-off for teachers is that the classroom management issues are reduced. The submission rate of assessment tasks has increased and they're saying that the kids are getting right into it.

Student collaboration is an outcome that the kids talk about it a lot in the school. They get an opportunity to really work with other groups. Technology has opened that up, for example, students who might be creating a wiki together or creating a film together or they might be self and peer assessing a performance that they've seen. All of those processes really require them to collaborate in a really genuine way to feel that what they are contributing is important and is authentic and makes a difference.

The offshoot of that are the relationships that students have in the class are transforming. It's not that they didn't used to do group work in classes, but it possibly didn't happen as consistently. Students did not feel as strong a purpose as they do now. They say thing to teachers like, 'I can't let the team down', because a lot of the work that they're doing is going out to broader audience than just the teacher. They also feel a sense of responsibility to make sure it's the best quality that it can be.

Other outcomes include increased engagement, collaboration, and improved quality of work. Certainly literacy, and in particular their digital literacy, has improved really significantly. So there's also a bit of a misnomer out there that all kids know how to use all technologies and they're digital natives and it's intuitive. Some of the software is highly intuitive and some if it's not at all. Really basic things like using Word document and peer assessing using track changes and comment boxes. When it was first introduced to Year 9 not one kid in the class had ever used track changes or comment boxes. Now kids talk about that across the board because it happens in lots of places. Even things like some of the film making stuff - kids use Facebook at lot but they don't necessarily blog or they don't necessarily operate in online spaces in the way that happens at school.

A few years ago a wiki was set up for a Year 7 class, who were working on a cross curriculum project. They automatically started just chatting with each other, saying things like 'hey, what's up?'. So we had to really set boundaries with them around the purpose of this particular space. The audience for this space, the context needs to be taken into consideration. So that concept of digital literacy and digital citizenship are the other two things that are coming through. Particularly where they're working in spaces that are collaborative online, in different capacities.

Support from School Leaders

One of the aspects highlighted by staff is that to be innovative it is important to have the support of school leaders. This section highlights the approach of a leader in an innovative school, from their perspective.

I don't ask any staff to do anything that I don't do myself. So they know that if I say, I'd really love you to be involved in this Action Learning project you're going to work really hard, I'm not going to pretend for one minute that it's not going to be a lot of hard work but I'm going to be there with you. I'm happy to come in and team-teach with you and I'm happy to help you develop resources, my door is always open.

I'll be doing it with my own class and I'll be learning as we go. You'll be provided with stacks of support. So teachers know that they can come and talk to me and I'll work with them individually or I'll be in there with them - I'll release them for a whole day to work with myself or to work with a consultant and I, or to work with each other. So I think generally teachers are willing to take risks because they know that I talk to them about risk taking as an opportunity to learn.

If some things don't go wrong - don't go right - I never see it as failure because the process is really about investigating what works best. You're not always going to find the best way to do something immediately. So lots of what we've done, iterations of the Action Learning projects - there are bits that every year we go, you know what, that didn't work as well as we wanted it to so we're going to change the way we're doing it. Or that bit really seemed a bit superfluous, we didn't really need to do that. Let's not just think about what we're going to do on top of what we do now, but what we don't need to do.

So I think we've got a school culture of risk - calculated, careful risk taking is really supported. I would hope that teachers would say they feel really supported and they feel like they're given lots of professional learning, lots of support, lots of time to do the things that they want to do. As I said, I teach a class so I have to be always two steps ahead. I reckon my credibility rests on what the kids in my class say happens in my classroom. Staff here know that I'm not going to say, can you please do something, and then delegate it, and not be in there with them.

Individual Mentoring of Teachers

The School Leader, and some other staff members and consultants, have been mentoring individual teachers through access to additional funding the school has been given to release staff. This has involved the school applying for teaching grants and other funding opportunities.

On three days a week for the last term and this term - time was spent working with individual teachers to provide them with professional learning at their point of need. So they made a time for their mentor to either come into their class or they made a time with them to spend the whole day, for example to help them develop a unit of work. They might want to work on a particular assessment task. They might just want to be shown a range of Web 2.0 tools. One of those involved in mentoring other teachers had the following thoughts:

My job was primarily for them to say, this is what I want to do and this is what the syllabus or my program asks me to do. I really want to marry the technology with that. So my thing with teachers is always, if you're going to use the technology I want to know that the technology enables you to do something that you wouldn't be able to do without the technology. So if you're going to say to me that you're going to do it on the interactive whiteboard I'm going to say, why can't you do it in a normal whiteboard? Or if you're going to do it on the internet - why on the internet and not on something else?

So I'm always challenging them to think about what does the technology involved. We don't want to use it just for the bells and whistles. What does it allow you to do that you can't do without the technology? So the individual support that I give teachers looks really different according to who the teacher is and what they're looking for.

The teachers who are mentoring others are part of a School Action Learning team - who then become experts. They are either mentoring teachers or they are presenting their findings at school development days. All of that gets built into the school plan. So the school is working from individuals, to teams of teachers, to the big picture.

Humanities Beginning Teacher Example

An example was given of a second year teacher who was really reticent to use technology in his class because there seemed to be a misunderstanding out there that if you're 'GenY' then you would just pick it up and go with it. So he was always worried that something would go wrong, that if a laptop doesn't work, what was Plan B? So he has had a mentor working with him this year to develop a unit of work and an assessment task which goes towards student summative assessment, though it is really a formative task in nature. What the students are developing throughout that process is informing what he's teaching and it's also informing the learning process. The idea is that they've got a real life scenario where they have to look at the concept of foreign aid and how money in Australia is disseminated across the world.

The teacher has worked with the mentor over a sustained period of time to develop a range of case studies that are embedded into a OneNote file that's rich with multimedia - graphs and pictures and video. The students have a scaffold where they need to analyse each of the case studies and make a decision based on real-life criteria for foreign aid dissemination and then they have to write a media release. So in terms of changing his practice, it's been about developing his confidence and developing his skills. It's been about convincing him that the technology allows him to do something that he couldn't do without the technology, because all of these things in the OneNote file are integrated and hyperlinked. There's a whole standalone package essentially for the task that is being piloted - he can see that students couldn't do the task without the technology.

There are a couple of reticent teachers in that faculty and next year it's going to be rolled out across every Year 10 class. It will have been tested and all the glitches will have been ironed out before then. So part of the process is about giving the task, which has had a lot of time invested by the teacher and mentor, every chance to succeed.

PDHPE Faculty Example

Another example given was a Year 10 PE class who had just done their fitness unit. Ordinarily the school do a fitness assessment with each student where they do the 'beep test' – that means they put on a tape and run back and forth until they can't breathe. This year a mentor from the action team has worked with teachers in that faculty. As the mentor didn't have the software expertise, the school brought in a consultant to teach the faculty some software applications to conduct the assessments.

So the faculty and action team leader did the training together and developed the PDHPE unit which now has kids working in groups looking at the different components of fitness - strength, flexibility, endurance. They do research on each component, do a self-assessment for their own levels and then they're put into groups with other students who want to develop that particular component of fitness.

The group conducts research and then creates a podcast that's like an instructional video about what the sorts of exercises are, or what the sort of tasks you can do, to build that particular component of fitness. They've had a blog set up so that they can talk to their teacher and talk with each other about what the learning process is as they go through. Then the idea is that they present that to the class as a podcast. It's just a three to five minute podcast about what the component of fitness is, how you build it and then they run through the training session of exercises that are on the podcast.

The kids who are doing the task really get a strong sense that they are engaging in a real-life activity, that is innovative and engaging, and they have to develop skills in collaborating. The task links really closely with the outcomes of that syllabus. The submission rate for the assignment has gone through the roof and student engagement has improved dramatically. Even the teachers who thought it sounded too hard to accomplish are getting on-board. They were given heaps of support and professional learning was provided for them, the e-learning action team wrote simple guides for the faculty staff to give to the students on how to create and use the software.

The staff feel that the task has changed the way that they're delivering their content because they can see that this technology enables them to do things with the kids that they can't do without the technology and they're getting lots of support. Now that they've seen the benefits and the kids are really engaged, they are really excited

about it! Some of the previously challenging students have done some of the best work.

Students as Researchers

Another project underway at the school is a 'Students as Researchers' project. They are looking at the idea of authentic student voice and empowering students to have a greater say in what pedagogy looks like in their school. Students are sources of data. The school has already done lots of work where they've gathered student voice through focus groups, surveys, observations and analysis of work samples. The students themselves are analysing work samples. The school is using a framework which looks at cognitive, effective and operative components of learning and then marrying that framework with the peer and self-assessment and teacher feedback processes of ICT.

Focus groups based on the e-learning project asked questions such as: What peer assessment worked? What self-assessment worked? How do you know it made a difference? What else would you like to see happening in classroom? The students actually coded all of that information from the focus group sessions, presenting a summary for the school leaders on what works best for students and what they would like to see less of. The next step is for students to be collectors of data. The school has an EOI process for students to put their hand up to say, 'I'd like to take on a role as a researcher of education in this school'. They're going to be gathering data through video of class - sections of class or lessons. They're going to analyse those videos, they're going to interview the teachers of those classes, they're going to interview student focus groups from those classes. To do that, the action team are going to be spending lots of time talking to student researchers about what does quality feedback look like? What does quality self and peer assessment look like? What does e-learning pedagogy look like as opposed to traditional pedagogy?

So that they've really got a sophisticated understanding of what it is they're looking for. With a view that they're then going to feed that back to teachers through professional learning and that will guide what's happening across the school in terms of those processes. The vision is that a broad range of students will be involved – across Years 9, 10 and 11. They will capture footage of a lesson that they would be in ordinarily. Then they have a better understanding of the context when they interview the teacher and interview the focus groups. They might be paired with people who aren't ordinarily in their class because then it becomes a bit of a fish bowl exercise...where they have a different perspective. Students chosen will need to be on top of their workload, so if there's content that they miss out on then they're going to have to sign a contract to say they'll catch up on it, but we want to facilitate that and help them. The school is also investigating using Edmodo as a

learning platform across the whole school so that students will be able to access the sorts of things that they've missed in those lessons to minimise the disruption to their learning. One of the ways around that would be for them to be in a class that they would ordinarily be in, so they're not missing out on something.

As the School Leader said,

There is a real culture in our school - we work together and we've got something to learn from everyone. The culture of the school - partly because we work on it - is that the students are really accepting and non-judgmental of each other. They embrace the concept of diversity so I guess it flows over into what they do in the classroom.

CASE STUDY SCHOOL TWO

Some of the programs operating in the Case Study School Two are illuminated below, through the eyes of the School Leader and Teachers interviewed. Some of the key areas of interest resulting in innovative practice in this school were: school strategic planning, use of technology, professional learning and strong support from school leaders.

School Strategic Planning

The school strategic plan has driven change in the school and is now moving to a focus on learning through great teaching. That will build on the reciprocal relationship between students and the staff around the concept of who is actually doing the learning, and who is actually doing the teaching.

The school has divided that up to an area that looks at student leadership, resources, existing programs and building IT capacity. Under student leadership, that process is about connecting students into their local community. One of them is about the 'Take three initiatives' which is about taking care of spaces - for example, pick up three pieces of paper! It is really that simple. Another focus is around establishing a group of students who are 'digital mentors', if you like, for teachers as well as for their colleagues, their peers within the classroom. And then the school are expanding an idea about transition. There was a past program focused on middle years that was focused on strengthening the transition in the learning continuum from Stage 3 up to Stage 4. There was a strong focus on literacy in the past, and the school continues to focus on literacy.

The school is implementing the international computer driver's license for Year 7 so they will actually pick up Certificate One in that. That's just the side of looking at how to embed technology coming in to the school. In underneath that, is still focus on teaching and learning. The school has also been a part of an initial start-up program within the region on linking teaching to the use of technology, around assessment rubrics. A team developed scaffolds that showed developmental levels in a range of Web 2.0. They chose particular Web 2.0 tools that the students were interested in using and took some time to build the scaffolds on the age-wise reporting scale.

The other area being explored is how to better engage children in their learning through choice and that's a project that has been done within the LOTE area. Students are involved in decision making around choosing assessment tasks, how they are going to be marked, and peer assessment. They are aiming to build choice within the curriculum. Some teachers see this as a threat because There is no external assessment linked to the activity.

Another focus under the teaching and learning has been to encourage innovative teachers. One teacher has been using the Edmodo site to 'mirror' Facebook and to engage students in a higher level discussion around the things that they are covering in their English area. So if this teacher comes across an article in the newspaper or in YouTube or something like that, they post it on to the site so the students can look at them. There is evidence that the quality of the conversations that is coming through the Edmodo link and the final product of their writing is at a higher level. It's much better thought out.

Staff are now at the point where they will be using OneNote set up every subject area for use on the Years 9 and 10 computers, instead of text books. So there will be scheduled professional learning, probably at the end of the year, to make sure that OneNote is something that teachers are comfortable using. OneNote professional learning has also been a part of the professional learning for faculty days. There are still concerns about the quality of the work that the kids are doing on the technology. What does it actually look like? What does a piece of quality work really look like when they are doing it using their laptops?

Increased access to technology

In the next twelve-month to eighteen-month cycle the focus will be on what's happening for the top-end students. There is currently a Microsoft project operating that's weaving a lot of these things together. The tag for that is the 'Responsible use of technology'. The reason that it is called 'Responsible use of technology' is because the school spends so much time sorting out problems around Facebook and text

messages and all of that sort of stuff, because no one is actually teaching kids how to use technologies out there responsibly.

There has been a refurbishment of the library and funds contributing to making technology accessible to as many parts of the school as possible. That has been something that has really made a difference to staff access and student access. Every permanent staff member now have access to their own laptop, along with Years 9 and 10 students also having a personal laptop. Options are being explored as to whether digital capacity can be grown. For example, becoming a lead school in Microsoft IT. This would entail having four teachers trained as trainers in the Microsoft software, so that they can actually accredit students as well as staff to industry standard in the software usage, which would then mean that they could then become a training centre for other schools.

The DER laptops were seen to be absolutely brilliant for this particular community by the school leadership team due to increased access to technology. Two or three years ago, due to the low socio-economic community the school draws on, there was only 40% access to the Internet for students. Now there is access for all students. The initial funding from the Federal government was instrumental in getting the one-to-one computer program operational. The next level of support came with state based funding, in the form of support for the infrastructure and technical issues. The school found the DER team to be absolutely brilliant. The School Leader said:

With anything that's new, sometimes when you go to use it you drown in it, but then you step back and you have the courage and the confidence to take it one bit at a time. All of the things are in place for you to be able to use. So speaking from this particular school site, we couldn't have done it without the financial injection of the federal area. We couldn't have done it without the injection of the support from the state. Stuff that we are actually doing with Microsoft is icing on the cake and we get to see samples from the other schools so that we get to see what they are doing.

The agenda around management of schools is going to be interesting. But I think we need to make sure that we are still the part of bigger system that allows the big national interest projects to go ahead. And it really is in the national interest to have people who are literate and numerate and very technologically solid.

Professional Learning

A new initiative in NSW schools is the establishment of beginning teachers' mentors, to support the early career teachers. This has already begun at this school and will incorporate support for Head Teachers in understanding what's happening to early career teachers and the new requirements for accreditation. The mentoring process involves teaming up people informally with somebody to learn about how they can improve practice. This is tied directly to the teaching and learning. So it's not just about being expert at using software or devices. It's what it looks like in the classrooms.

With professional learning something that is not working as well as anticipated is online learning. Although some teachers like web-surfing to find things in terms of YouTube, we don't get a lot of enrolments in the online courses. And that's where a lot of the professional learners want to go because the people can afford it. But they are not into it. Teachers want to engage and enjoy the social side of learning, which means sitting down, talking to somebody, initially working through something. The School Leader further explained:

It is very much around strategic goals. It is about getting the kids in and engaged and making sure that the learning happening in the classroom is the best that it can possibly be, with the technology that they have in their own area. But in terms of the challenges in there, it is the jam-packed agenda. ..you never know what's coming from that corner. And it's just got to be dealt with. We are trying to protect the teaching and learning time and we are trying to protect the formal professional learning time, too.

It has to be tied in with the school plan. It has to be tied in with something that's going to give support not just to the teachers, or the teachers who are involved, but to their colleagues. It has to be something that is shared. I am not into one of those courses where one person goes there and doesn't turn up for two days of the course. It's a waste of money.

So, professional learning has to be linked with the targets. It has to be looking at the focus on the teaching and learning. And it has to be also something that can be reported back and shared. It's not about building silos, it's about building capacity across the whole school. If we have an opportunity to send one person out there, then I have to look to see whether there is an opportunity to have one person from each staff room and then when it comes to trying to pull everything together, we use the opportunity of the faculty day. On the faculty day we are actually working through a focus area which is what is happening with the technology at the moment. I wouldn't have done a faculty

technology day three years ago because they'd have nothing to share. That's what we're up to.

I have seen teachers become a lot more engaged in what's happening. Feeling a little bit more in control of their learning, this is a good thing, having a bit more choice. Some of them are particularly challenged because they know that they don't know and then also with the kids who don't bring their laptops. I am seeing increased confidence in students. And I have seen the real threads of the focus on the responsible use of the technology. We see the students out in the playground with their laptops at different times, and you are just wandering about having a bit look at what they are doing. Some of them aren't working. Some of them are looking at some clip that's appropriate to something they are doing in their class. You can see what they are up to. But I am seeing that happening. A lot more than what it was in the past. You don't see a child with a book out. They are getting...obviously...that shift in their focus.

But the other take...we've also got kids who say I can't do this all day. I have got to go and do something different. That's what I have been encouraging, that responsible use of the technology, but also taking responsibility of their learning and wellbeing.

There are three faculty areas being targeted and the driving focus is getting rid of the use of textbooks. Moving a particular faculty beyond the lines on the textbooks and extending the idea of e-portfolios so that when the students are finished here on this campus, they have a collection of work samples on their laptop that shows what they can do and understand. To facilitate these changes the School Leader has negotiated with two of the Head Teachers to do a role swap next year, to get a fresh perspective on the faculty area.

Support from School Leadership

The School Leader talked about the type of community that was being encouraged at the school which she felt encouraged teachers to feel supported and to share their ideas:

I am amazed at the courage of the staff to take on different things, with absolutely outstanding commitment, the commitment that the vast majority of them have to doing the right thing by their students just blows my mind. And I think that the responsibility is back on myself, and the leadership team within the school, to make sure that we continue to support that and we appreciate it and we recognise that if we don't keep nurturing teachers and recognising what they are doing, then it'll stop.

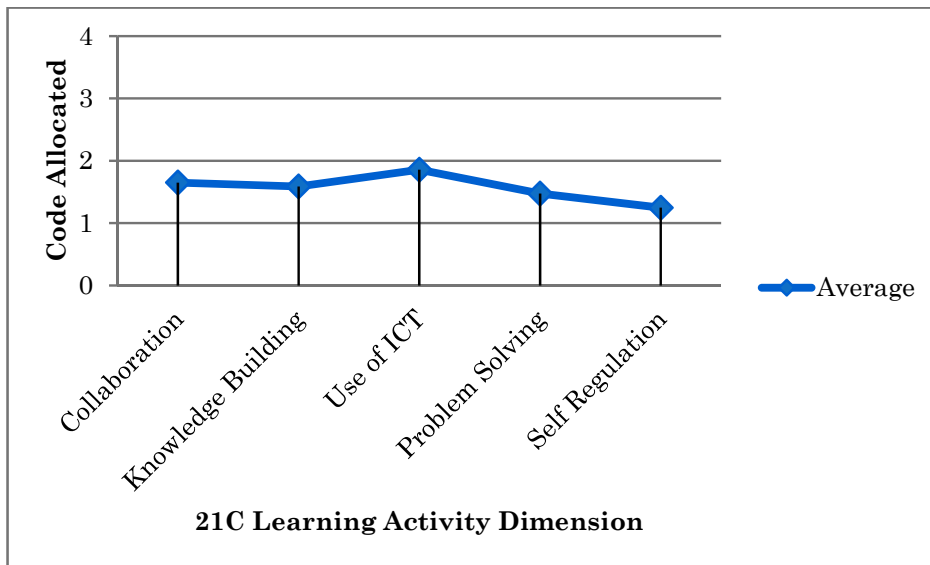
I think a lot of the key to our success is the openness. There is no conversation that can't be had with me. There is no conversation. And I have even wondered what the legacy is going to be when somebody else comes and doesn't have the same sort of style. How's that going to be for staff? But, it all depends on us being able to talk to each other, and to being open to those ideas, and people feeling willing and be listened to when they put forward ideas. They see things happening. Another key to this is something that is really simple, and that is the layout of the school. Not the length of it...the windows. You just can't hide! Even if you hide I will be walking around and I'll check if you are doing the right thing...that's what it's all about. That's about the respect we have for each other. That's about everyone being able to say 'Well, that wasn't a good lesson, but here is what we can do about it!'

APPENDIX B: LEARNING ACTIVITIES AND STUDENT WORK

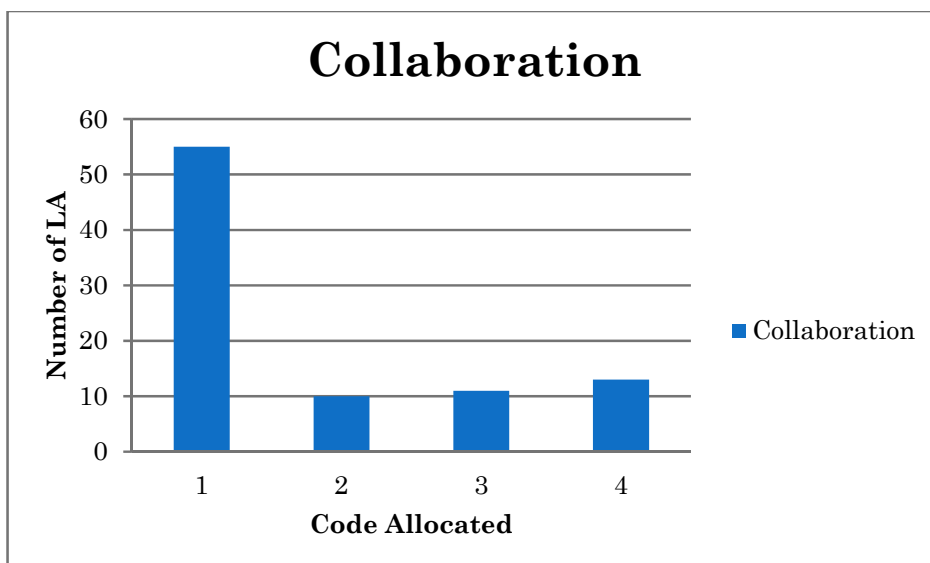
Schools involved in the site visits were also invited to participate in the collection of Learning Activities and Student Work. This involved the school leader nominating teachers in the Humanities and Science areas to collect examples of learning activities which they were implementing during the data collection period with their target innovative classes. Teachers were asked to select activities which were reflective of the work that they would normally do with their class. The tasks could be single-lesson activities, homework tasks or longer projects that students were working on over a sequence of lessons. In addition to collecting learning activities, teachers were asked to submit de-identified pieces student work along with each task to show how students responded to the learning activity.

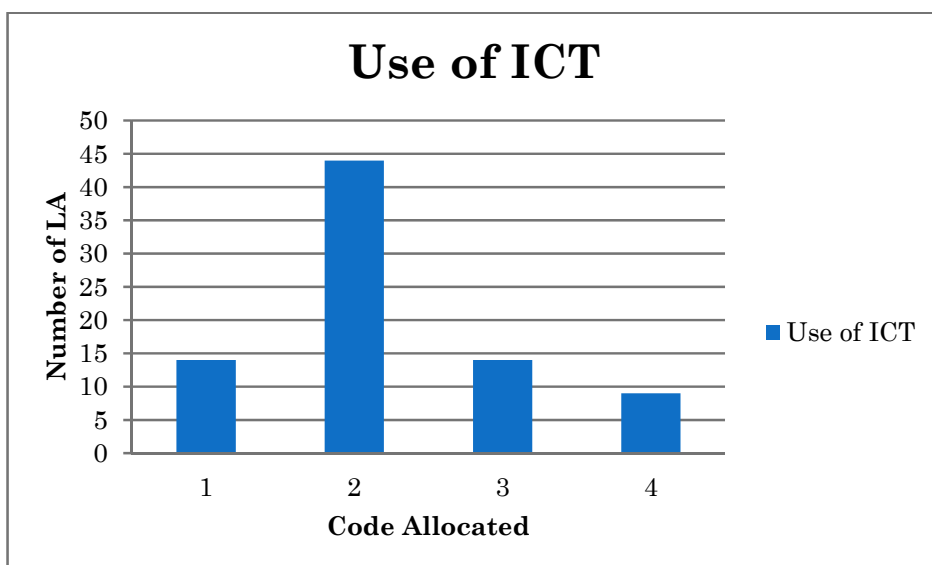
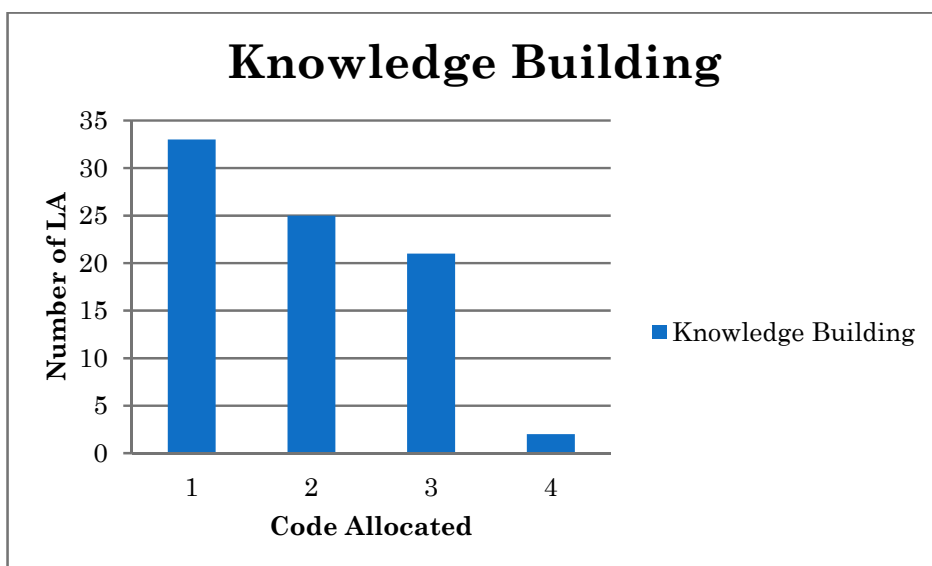
In each of the sites, eight teachers were invited to participate (four from the Humanities disciplines and four from the Science disciplines). Due to some teachers being away, and the demand in some schools for teachers outside these disciplines to participate in the project, some schools nominated teachers from other discipline areas such as Creative Arts and Mathematics. Although teachers were asked to submit four learning activities, each with six examples of students work, not all teachers submitted the required activities. In addition, some learning activities submitted were not complete, and so were not able to be coded for inclusion in the study. Due to the small number of schools included in this report, and the ethical requirements to de-identify findings, only the discipline area rather than the school has been identified.

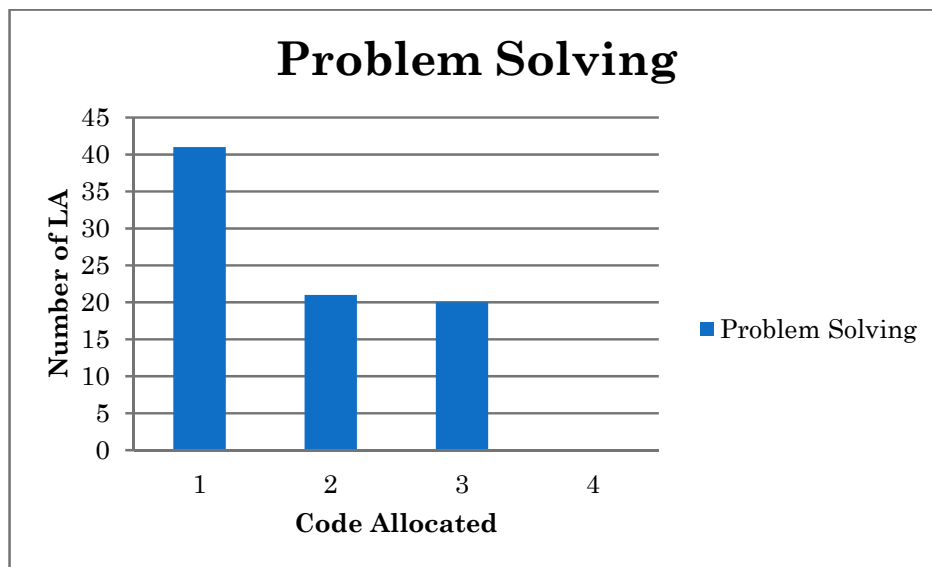
In total there were 97 learning activities (59 Humanities and 38 Sciences) included in the study, along with 559 examples of student work (345 Humanities and 214 Sciences). These samples of LA and SW were coded using the ITL Dimensions (see itlresearch.com for more detail) by expert teachers from the Humanities and Science disciplines. See the graph below which shows the mean code for each ITL dimension across the 97 learning activities and also individual graphs showing the distribution of codes for each ITL Dimension (Collaboration, Knowledge Building, Use of ICT, Self-Regulation and Problem Solving & Innovation).



Distribution of Codes for Learning Activities (LA) by each ITL dimension:







Examples of exemplary learning activities in each of the ITL dimensions are included in this section of the report. A number of the student work examples are digital, so have not been included in this written report.

Learning Activity Exemplars using the ITL Dimensions

Dimension	Discipline Area	Learning Activity	Age	Code
Collaboration	Science	Eye Dissection Experiment, Film and Critique	14	4
Knowledge Building	Science	Plant Cell Analogy	12	4
Use of ICT	Science	Contraception Podcast	14	4
Self Regulation	Humanities	Storyboards	12	4
Problem Solving and Innovation*	Science	Letter to the Prime Minister: Current and Alternate Energy Sources	14	3

*None of the Learning Activities submitted were coded at 4 for the ITL dimension Problem Solving and Innovation, so an exemplar has been provided of Code 3.

Please note the following examples are the teacher generated learning activities, and spelling mistakes or errors are part of the sample document so could not be amended.

Collaboration Learning Activity

LEARNING ACTIVITY

ITL Research Project Learning Activity Cover Sheet

*Please fill in one of these sheets and attach it to EVERY learning activity you submit. Choose the learning activities that you feel **provided the best learning opportunities for students**.*

Title of Learning Activity

Eye Dissection Experiment, Film and Critique

What skills, concepts and content knowledge did you hope students would learn or demonstrate when they completed this learning activity?

Skills required by the NSW Science Syllabus (5.8.4, 5.14 and 5.22.2)

5.8.4: humans

a) describe the role of, and interaction between, coordination systems in maintaining humans as functioning organisms

5.14: A student undertakes first-hand investigations independently with safety and competence.

5.22.2: working in teams

a) identify the specific roles needed when working in a team

b) match the tasks to the team members according to the requirements of the task and the skills of the individual

c) negotiate and allocate individual roles to members of the team

d) accept specific roles in a team while planning and conducting investigations, communicating information and understanding and solving problems

f) accept personal responsibility for maintenance of a safe working environment for the team

h) evaluate the process used by the team and effectiveness of the team in completing the task.

Background Information and Description of the Learning Activity

This activity was completed by a mixed ability year 9 class part-way through a 'body systems' unit.

This task was completed for students to not only identify a structure related to the functioning of the human body (the eye) but also to participate in a group in completing an activity and then evaluate their own and other groups practices to improve future practice.

Prior to completing this activity students had been studying the nervous system as a part of the overall unit 'Body Systems.' As a part of this unit they had studied information on stimulus-response pathways, types and functions of nerves and also the parts of the eye and how these structures are related to sight. The task was designed to allow students to kinesthetically support the information they had already learnt.

The task included the following:

- An outline of the task - given to students and discussed
- A demonstration of an eye dissection, identifying key structures of the eye and reference to safe practices in the lab.
- Group work to complete the eye dissection (video recorded using Lenovo's for later use)
- Video recording shared between groups for critique of experimental method
- Critique completed by groups and given back to original group as feedback

Prior to the lessons students were emailed the task outline.

Lesson Sequence Outline:

Lesson 1 & 2

Students opened the task outline and it was discussed in detail, as were the expectations and critique method to be followed. Teacher demonstration of appropriate method to complete the dissection was carried out, and key structures were pointed out to students. Students were also directed to a website which showed a cow's eye dissection for further reference during their experiment.

Students collected equipment and once their stations were appropriately set up and they had identified their roles and responsibilities they received the cow's eye. Once they were ready to dissect they began recording their experimental method. They were required to safely dissect the eye and identify key structures of the eye to the camera.

Following the dissection students were required to safely pack away all equipment and then discuss what they saw and the experimental method followed.

Lesson 3&4

Groups shared their experiment video with another group and this group completed the

critique for it. This critique was then returned to the original group as feedback for future experiments.

The students were also required within the criteria to perform a self-assessment of their group after observing the way another group functioned in an experiment. This was the final part of the critique task.

Did students study multiple subjects while working on this learning activity (for example, literature and history or science and math)?

- ☒ No, students studied one subject
☐ Yes, students studied two or more subjects

Did students work in groups on any part of this learning activity?

- ☐ No
☐ Working in groups was *optional*. Please describe below the work that students did together.
☒ Working in groups was *required*. Please describe below the work that students did together.

Experimental work and critique work

In completing this learning activity, did students use technology (for example, computers or digital cameras)?

- ☐ No technology was used for this learning activity.
☐ Students *could* use technology for this activity
☒ Students were *required* to use technology for this activity

If students used technology, please describe what they used it for.

Filming of experiment and watching the film to critique it

What criteria did you use to make a judgment about the quality of students' work on this learning activity? *Please attach all available grading criteria and rubrics.*

Yes, criteria is as follows and was given to students prior to completing the dissection

Outstanding: Group works at an outstanding level with all roles and responsibilities identified and carried out efficiently. Group communicates efficiently and remain on task for the duration of the experiment. All key structures of the eye are identified during the dissection. Each group member carries out the experiment following the experimental method in a safe and effective way.

High: Group works at a high level and most roles and responsibilities are carried out efficiently. Group communicates most important information and remain on task for the majority of the dissection. Most key structures of the eye are identified during the dissection. Each group member carries out the experiment following most steps of the experimental method in a safe and effective way.

Sound: Group works at a reasonable level with some roles and responsibilities identified and carried out to a sound standard. Group communicates some important information to each other and remain on task for some of the experiment. Some key structures of the eye are identified during the dissection. Some group members carry out the experiment, however some steps are missed or not performed correctly. Some safety issues are noticeable.

Basic: Group works at a low level and roles and responsibilities are not clearly identified or carried out. Group does not communicate most information to each other, and remain off task for the majority of the experiment. Limited identification of structures of the eye during the dissection. Many steps of the experiment are missed, and there are several safety issues present in the experiment.

Limited: Group does not work well together. Roles and responsibilities are not identified at all. Group does not communicate with each other throughout the experiment. No key structures are identified during the dissection. The experiment is not carried out appropriately and many safety issues are present.

Were assessment criteria given to students before they submitted their work?



Yes



No

Did this learning activity involve multiple stages or interim products, such as a rough draft and a final version or laboratory notes and a research report?

☐ No

☒ Yes. Please describe below.

- Discussion of experimental method
- Demonstration of eye dissection
- Viewing of eye dissection on the internet
- Completion of eye dissection (while filming)
- Critique of another groups eye dissection experiment
- Self assessment of own experiment
- Feedback given back to the groups and discussed.

Length of learning activity

☐ a. Completed in a single class period

☒ b. Completed in 2-4 days

☐ c. Required one week or more to complete

Please list any verbal instructions you gave to students.

All instructions were emailed to the students however further information was discussed in the class. Verbal instructions included instructions on how to carry out the experiment, repetition of safety instructions and instructions on how to carry out the dissection during the demonstration e.g. 'always cut in a downward direction when using the scalpel.'

Feedback was also provided to the students throughout the experiment to assist them with their methodology.

Ongoing discussion occurred between the teacher and students, as well as between the students, to clarify students' understanding and meet them at their point of need.

LEARNING ACTIVITY INSTRUCTIONS

EYE DISSECTION

Thursday, 13 October 2011

9:23 AM

Aim: To observe and identify some main structures of the eye.

Equipment:

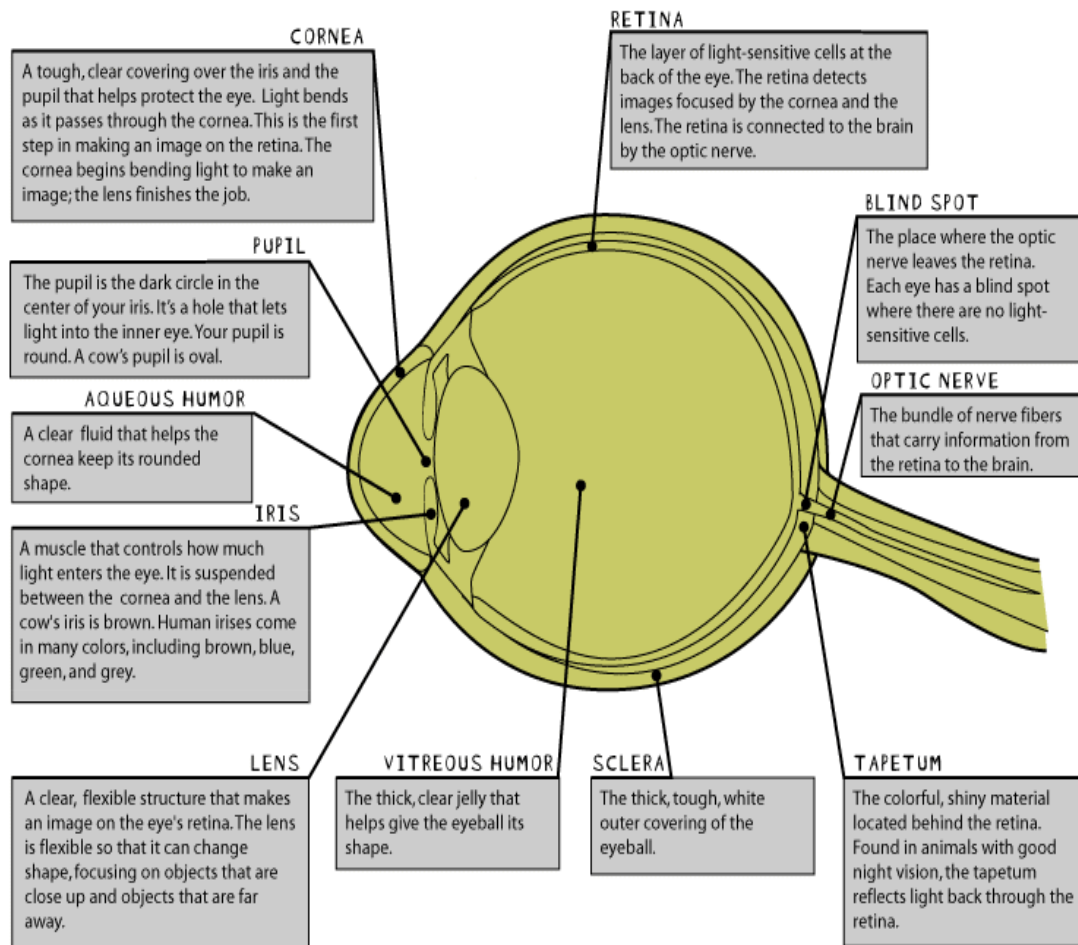
- 1 eye
- 1 set of dissecting instruments
- 1 pair of gloves

Method:

- Observe the eye as a whole
- Carefully remove any fat and tissue surrounding the eye.
- Look for the optic nerve; it should look like a thick, yellow strand.
- Using scissors or the scalpel cut through the tough outer layer of the eye (see diagram) **NOTE: take care not to squeeze the eye.**
- Now the eye should be in two halves (front and back). Observe the two sides.
- In the front section of the eye remove the lens and see what happens when you hold it over the newspaper.

You can also follow the steps on the following web site;

http://www.exploratorium.edu/learning_studio/cow_eye/index.html



Pasted from <http://www.exploratorium.edu/learning_studio/cow_eye/eye_diagram_print.html>

Activity:

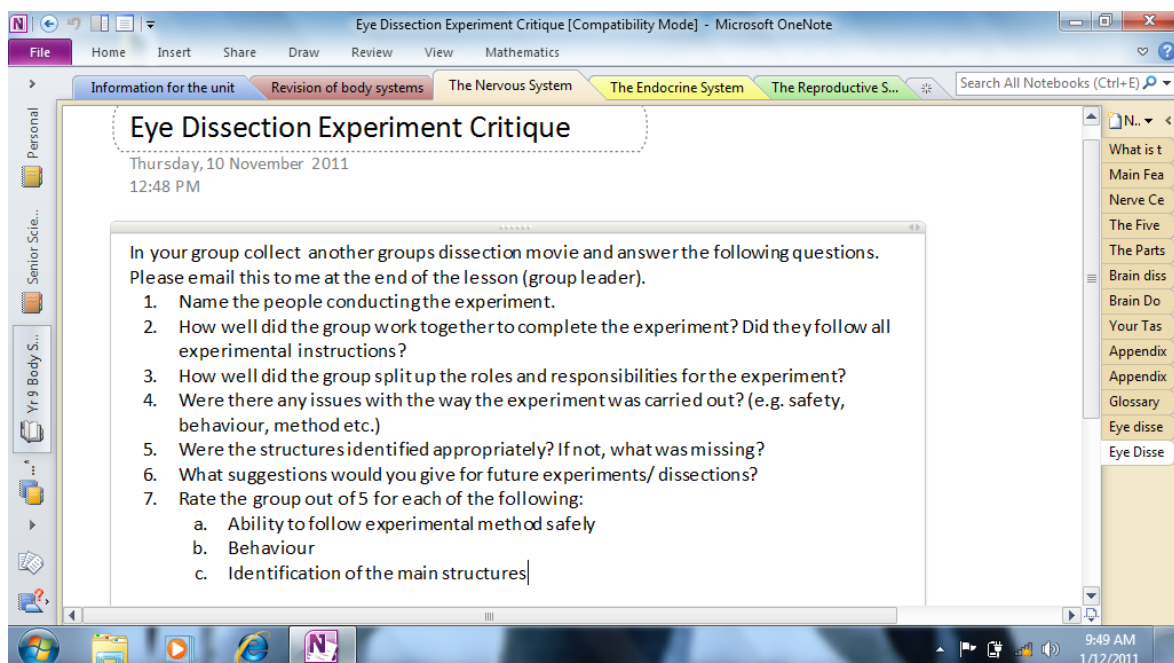
Hold this book at arms length. Close your left eye and stare at the cross below with your right eye. Note that, without looking directly at it, the black circle can still be seen. Bring the book slowly towards your face (don't look away from the cross). At a certain point the circle disappears. This happens when its image falls on the blind spot.



Questions:

1. Why don't your blind spots stop you seeing properly?
2. Why is it important that we have our senses?
3. What kind of neuron is involved with the senses?
4. What are the other two kinds of neurons and what are they used for?

REFLECTION ON TASK THROUGH MICROSOFT ONENOTE



MARKING CRITERIA

Eye Dissection Experiment Marking Criteria

Outstanding	Group works at an outstanding level with all roles and responsibilities identified and carried out efficiently. Group communicates efficiently and remain on task for the duration of the experiment. All key structures of the eye are identified during the dissection. Each group member carries out the experiment following the experimental method in a safe and effective way.
High	Group works at a high level and most roles and responsibilities are carried out efficiently. Group communicates most important information and remain on task for the majority of the dissection. Most key structures of the eye are identified during the dissection. Each group member carries out the experiment following most steps of the experimental method in a safe and effective way.
Sound	Group works at a reasonable level with some roles and responsibilities identified and carried out to a sound standard. Group communicates some important information to each other and remain on task for some of the experiment. Some key structures of the eye are identified during the dissection. Some group members carry out the experiment, however some steps are missed or not performed correctly. Some safety issues are noticeable.
Basic	Group works at a low level and roles and responsibilities are not clearly identified or carried out. Group does not communicate most information to each other, and remain off task for the majority of the experiment. Limited identification of structures of the eye during the dissection. Many steps of the experiment are missed, and there are several safety issues present in the experiment.
Limited	Group does not work well together. Roles and responsibilities are not identified at all. Group does not communicate with each other throughout the experiment. No key structures are identified during the dissection. The experiment is not carried out appropriately and many safety issues are present.

Knowledge Building Learning Activity

ITL Research Project Learning Activity Cover Sheet

Please fill in one of these sheets and attach it to EVERY learning activity you submit. Choose the learning activities that you feel **provided the best learning opportunities for students**.

1. Title of Learning Activity

Plant Cell analogy using web 2.0

2. What skills, concepts and content knowledge did you hope students would learn or demonstrate when they completed this learning activity?

NSW Science Stage 4 Syllabus

4.8 - A student describes the features of living things

4.8.4 - Multicellular Organisms - Plants

This task was undertaken in the NSW Stage 4 Science curriculum, delivered to a Year 7 class. It was completed after the students had completed some internet research investigating the structure of plant and animal cells.

This task was to aid their understanding of the roles of many of the important organelles in plant cells by establishing an analogy between the functions of the organelles and a common and well known institutions and/or organisations.

Instead of using conventional presentation software such as MS PowerPoint, the students were directed to try using a web 2.0 tool such as www.prezi.com. Since this was the web site that was mentioned and presented in a demonstration, all students chose this site.

Students commenced this task with no previous knowledge of the program/site and were required to undertake the presentation tutorials on the web site to gain the bulk of their understanding and knowledge.

Prior to the commencement of the task, a discussion was had within the class as to which scenarios or institutions may have appropriate components to structures to support the analogy of a plant cell. The groups that they worked in then decided what they were going to base their analogy upon. They then had to choose 5 to 7 of the major components of a plant cell to specifically explain within their task.

3. Did students study multiple subjects while working on this learning activity (for example, literature and history or science and math)?

- ☒ No, students studied one subject
☐ Yes, students studied two or more subjects

4. Did students work in groups on any part of this learning activity?

- ☐ No
☐ Working in groups was *optional*. Please describe below the work that students did together.
☒ Working in groups was *required*. Please describe below the work that students did together.

Students were required to work as a group and make the key decision of the institution or structure to base the analogy upon. The students then worked collaboratively on their presentations using "www.prezi.com"

5. In completing this learning activity, did students use technology (for example, computers or digital cameras)?

- ☐ No technology was used for this learning activity.
☐ Students *could* use technology for this activity
☒ Students were *required* to use technology for this activity

If students used technology, please describe what they used it for.

Creation of their presentation and acquisition of the pictures to aid in the effect.

6. What criteria did you use to make a judgment about the quality of students' work on this learning activity? *Please attach all available grading criteria and rubrics.*

This was part of formative assessment and then the students were asked to comment in an informal manner on their peers work for clarity, level of understanding, creativity and presentation methods. This feed back was provided in a verbal manner.

7. Were assessment criteria given to students before they submitted their work?

☐

Yes

☒

No

8. Did this learning activity involve multiple stages or interim products, such as a rough draft and a final version or laboratory notes and a research report?

☒

No

☐

Yes. Please describe below.

9. Length of learning activity

☐

a. Completed in a single class period

☒

b. Completed in 2-4 days

☐

c. Required one week or more to complete

Use Of ICT Learning Activity

ITL Research Project Learning Activity Cover Sheet

*Please fill in one of these sheets and attach it to EVERY learning activity you submit. Choose the learning activities that you feel **provided the best learning opportunities for students.***

10. Title of Learning Activity

Contraceptive Podcast

11. What skills, concepts and content knowledge did you hope students would learn or demonstrate when they completed this learning activity?

Outcomes from the NSW stage 5 Science Syllabus

5.8.4

relates the organs involved in the human reproductive systems to their function

5.22

A student plans, implements and evaluates the effectiveness of a variety of tasks independently and as a team member

5.25

A student recognises the relevance of lifelong learning and acknowledges the continued impact of Science in many aspects of everyday life

Background Information and Description of the Learning Activity

This activity was undertaken during the topic on the Human Body - in the section on the Reproductive System. It was completed by a year nine mixed ability class who all had DER laptops.

The activity was designed to provide relevant and accurate information about different types of contraception suitable for a year 9 audience.

Students completed individual research on different forms of contraception, then they were placed into small groups of 2-3 and had to write a script for their podcast. Podcasts were then recorded and edited.

Finished podcasts were collated and the full set of podcasts were given to each student.

The next step for this activity will be peer assessment, using the two stars, one wish method, and a worksheet summarising the different forms of contraception. (This is still to take place)

This task allowed students to become experts on a subject and present their information in a new format. This task also allowed students to become familiar with the program Audacity.

12. Did students study multiple subjects while working on this learning activity (for example, literature and history or science and math)?

- ☒ No, students studied one subject
☐ Yes, students studied two or more subjects

13. Did students work in groups on any part of this learning activity?

- ☐ No
☐ Working in groups was *optional*. Please describe below the work that students did together.
☒ Working in groups was *required*. Please describe below the work that students did together.

Students were required to work in small groups of 2-3 to create a script for their podcast. They then worked in the same groups to record and edit their podcasts.

14. In completing this learning activity, did students use technology (for example, computers or digital cameras)?

- ☐ No technology was used for this learning activity.
☐ Students *could* use technology for this activity
☒ Students were *required* to use technology for this activity

If students used technology, please describe what they used it for.

Researching the information required the use of the internet. Their Scripts were created in the OneNote books and then Audacity was used to record and edit their podcasts.

15. What criteria did you use to make a judgment about the quality of students' work on this learning activity? *Please attach all available grading criteria and rubrics.*

Students were assessed on their research prior to the podcast. The podcasts will be peer assessed using the two stars, one wish method. (see below)

Two Stars, One Wish

Two stars = students outline two things that were done well by each group providing reasons to support their opinion.

One wish = students outline one thing that could be improved or changed, again providing reasons to support their opinion.

16. Were assessment criteria given to students before they submitted their work?

☒ Yes

☐ No

17. Did this learning activity involve multiple stages or interim products, such as a rough draft and a final version or laboratory notes and a research report?

☐ No

☒ Yes. Please describe below.

The activity involved students researching the information, then writing their scripts. Followed by recording and editing their podcasts.

This will be followed by peer assessment and an in class activity based on the information that has been collected.

18. Length of learning activity

☐ a. Completed in a single class period

☒ b. Completed in 2-4 days

☐ c. Required one week or more to complete

19. Please list any verbal instructions you gave to students.

Verbal instructions were provided to students on how to use Audacity

11. Is there any additional information about this learning activity you would like us to know?

Outline of the research and task is also included with the work samples.

TASK

Thursday, 24 November 2011

1:33 PM

Using your information on Contraception you are going to create a podcast.

Here are your guidelines for the podcast;

- The podcast will be a conversation between two students and will discuss one type of contraception
- It must not be longer than 2mins in length
- It must be informative and give relevant information for your age group
- We will be using a program called audacity to record your podcast

I will be collecting all your recordings and they will be given to all other students in the class. The rest of the class will assess your work using the two stars and one wish method.

CONTRACEPTION

Wednesday, 28 September 2011

3:28 PM

Go to www.kidshealth.org

Enter the Teen's website and select Sexual Health

1. What is birth control? Why is it relevant to people your age?
2. Individually choose 5 of the methods of birth control and answer the following:
 - How does this method work? If it involves external devices how does this work?
 - Who is responsible for this method?
 - How effective (percentage) is this method?
 - Is there anything that limits the effectiveness of this method?
 - Are there any side effects?
 - What other factors should be considered when deciding on a contraceptive method?

Self-Regulation Learning Activity

ITL Research Project Learning Activity Cover Sheet

Please fill in one of these sheets and attach it to EVERY learning activity you submit. Choose the learning activities that you feel **provided the best learning opportunities for students**.

Title of Learning Activity

Film - Annotated Storyboard (formal assessment)

What skills, concepts and content knowledge did you hope students would learn or demonstrate when they completed this learning activity?

Uses and describes the form and features of a film storyboard and the structure of a short film narrative

Makes informed choices in visual and written language techniques to shape meaning clearly, accurately and coherently

Thinks critically and interpretively about the ideas in a narrative to compose a storyboard text with a similar narrative structure, ideas and characters

Did students study multiple subjects while working on this learning activity (for example, literature and history or science and math)?

- ☒ No, students studied one subject
- ☐ Yes, students studied two or more subjects

Did students work in groups on any part of this learning activity?

- ☒ No
- ☐ Working in groups was *optional*. Please describe below the work that students did together.
- ☐ Working in groups was *required*. Please describe below the work that students did together.

In completing this learning activity, did students use technology (for example, computers or digital cameras)?

- ☒ No technology was used for this learning activity.
- ☐ Students *could* use technology for this activity
- ☐ Students were *required* to use technology for this activity

If students used technology, please describe what they used it for.

What criteria did you use to make a judgment about the quality of students' work on this learning activity? *Please attach all available grading criteria and rubrics.*

See grading criteria attached.

Were assessment criteria given to students before they submitted their work?

- ☒ Yes ☐ No

Did this learning activity involve multiple stages or interim products, such as a rough draft and a final version or laboratory notes and a research report?

- ☐ No
- ☒ Yes. Please describe below.

Students had many lessons leading up to this assessment in which they completed learning activities and note taking about film techniques, characterisation, camera angles and the features of a storyboard.

Length of learning activity

- ☐ a. Completed in a single class period
- ☐ b. Completed in 2-4 days
- ☒ c. Required one week or more to complete

Please list any verbal instructions you gave to students.

Same as written instructions on assessment task

Year 7					
Title:	Film - Annotated Storyboard		Task Number:	4	
Date Set:		Date Due:	Wk 6	Class:	
Student's Name:		Teacher's Name:			
Description of Outcomes Assessed:					
4	uses and describes the form and features of a film storyboard and the structure of a short film narrative				
5	makes informed choices in visual and written language techniques to shape meaning clearly, accurately and coherently				
7	thinks critically and interpretively about the ideas in a narrative to compose a storyboard text with a similar narrative structure, ideas and characters				
Learning areas Assessed:					
Viewing and Representing					
Assessment Task:					
<p>Using the internet, research a fairytale of your choice.</p> <p>Using the fairytale of your choice as your basis, compose a 6 - 9 frame annotated storyboard depicting the structure and events of the fairytale.</p> <ul style="list-style-type: none"> • Use the storyboard scaffold provided. • Include at least two characters in an appropriate setting. • Demonstrate your knowledge of film techniques - camera angles and camera shots through visual representation. • Briefly state the action of the plot in each frame. • Justify your choice of camera techniques. <p>Please note: Your drawing skill will not be assessed. However, your illustrations of must accurately reflect the intended film technique.</p>					

Feedback:	Mark / Grade
Marking Criteria:	
Outcome	Criteria

Outstanding Achievement A 13 - 15	<ul style="list-style-type: none"> Composes a clear and coherent storyboard using a wide range of inventive and accurate camera angles and shots Demonstrates highly proficient use of the form and features of a film storyboard to show narrative structure Accurately describes and explains the effect of the film features and techniques with a sophisticated style and confidence Uses flair and a high level of creativity in interpreting ideas from the narrative to compose a storyboard text with narrative structure and characters
High Achievement B 10 - 12	<ul style="list-style-type: none"> Composes a clear and coherent storyboard using a wide range of accurate camera angles and shots Demonstrates proficient use of the form and features of a film storyboard to show narrative structure Accurately describes and explains the effect of the film features and techniques with a consistent style and confidence Uses a high level of creativity in interpreting ideas from the given narrative to compose a storyboard text with narrative structure and characters
Sound Achievement C 7 - 9	<ul style="list-style-type: none"> Composes a clear and coherent storyboard using a range of accurate camera angles and shots Demonstrates sound use of the form and features of a film storyboard to show narrative structure Adequately describes and explains the effect of the film features and techniques with a sound style and growing confidence. Uses some creativity in interpreting ideas from the given narrative to compose a storyboard text with narrative structure and characters
Basic Achievement D 4 - 6	<ul style="list-style-type: none"> Composes a basic storyboard using a different camera angles and shots Demonstrates some use of the form and features of a film storyboard to show narrative structure Attempts to describe and explain the effect of the film features and techniques Uses little creativity in interpreting ideas from the given narrative to compose a storyboard text with some narrative structure and characters
Limited Achievement E 0 - 3	<ul style="list-style-type: none"> Composes a partial or incoherent storyboard using limited camera angles and shots Demonstrates limited or no use of the form and features of a film storyboard to show narrative structure Does not attempt to describe and explain the effect of the film features and techniques or describes and explains them incorrectly Uses no creativity or accuracy in interpreting ideas from the given narrative to compose a storyboard text with narrative structure and characters

Problem Solving and Innovation Learning Activity

ITL Research Project Learning Activity Cover Sheet

*Please fill in one of these sheets and attach it to EVERY learning activity you submit. Choose the learning activities that you feel **provided the best learning opportunities for students**.*

20. Title of Learning Activity

Letter to the Prime Minister : Current and Alternate Energy Sources

21. What skills, concepts and content knowledge did you hope students would learn or demonstrate when they completed this learning activity?

Skills - Analysis skills required by the NSW Science syllabus (5.11.2, 5.20 and 5.27)

5.11.2- waste from resource use:

- identify excessive use of fossil fuels as a contributing factor to a greenhouse effect
- discuss strategies used to balance human activities and needs in ecosystems with conserving, protecting and maintaining the quality and sustainability of the environment

5.20 - problem-solving:

- identify the nature of a problem
- describe different strategies that could be used to solve an identified problem

5.27 acknowledges their responsibility to conserve, protect and maintain the environment for the future

Background Information and Description of the Learning Activity

This activity was performed at the summation of the unit 'Human Impact.' It was completed by a year nine mixed ability class who all had DET or personal laptops.

The unit involved studying the various types of energy resources used in Australia and around the world e.g. how they are used, positive and negative impacts of them etc. Prior to completion of this task students had completed an assignment which focussed on alternative sources of energy and the advantages and disadvantages of these.

The task was given to engage students in acknowledging their impact on the environment, and their individual responsibility in protecting the environment whilst also encouraging them to engage with, and come up with ideas to promote their views to, the wider community.

The task involved students drafting a letter to a significant person outlining their views on fossil fuel usage and the greenhouse effect, and required them to form an opinion regarding

the type of energy source they feel should be used in the future. They were also asked to develop strategies to promote their idea to the wider community.

Prior to the lessons, students were emailed the task outline.

Lesson Sequence Outline

Lesson 1 & 2

Students opened the task outline and it was discussed in detail, as was the marking criteria that the letter would be judged on. The class decided that the person who should receive the letter should be the Prime Minister as the leader of Australia and thus an influential person both nationally and internationally.

Also included in the class outline was a hyperlink to an outline for writing a formal letter which we discussed and was modelled on the board by the teacher with suggested ideas which could be covered.

Following this, students were asked to begin their outline of their letter, including a rough outline of what they wanted to talk about and the sequence in which they would do this. This was then discussed in pairs prior to the writing of the actual letter. Some areas which required extra research were also identified, and areas which linked up with research they had conducted in their assignment were also noted. Students then completed their draft letter during class ready for submission in the next lesson.

Lesson 3 / Homework

In the next lesson the peer assessment section, which included the idea of '2 stars and a wish,' was demonstrated using a letter from a previous class. Students were asked to individually write down what they felt was really good about the letter (2 stars) and then identify one area which could be improved (a wish). These areas were then discussed as a class. The importance of ensuring that the feedback was constructive and that it was being used to improve work was stressed to the students. Students were asked to refer to the marking criteria when providing feedback to each other.

The students were then placed in groups of 3 to read each others' letters and offer feedback. As part of their task they were required to have 2 students read and assess their letters in relation to a set of key points which were included in the task outline. This also allowed them to see areas which they could improve in their letter, such that they could further modify it for the purpose.

Following this process, students individually applied suggested changes to their letter for the remainder of the lesson and were asked to submit it via email by the beginning of the next lesson.

22. Did students study multiple subjects while working on this learning activity (for example, literature and history or science and math)?

- ☒ No, students studied one subject
☐ Yes, students studied two or more subjects

23. Did students work in groups on any part of this learning activity?

- ☐ No
☐ Working in groups was *optional*. Please describe below the work that students did together.
☒ Working in groups was *required*. Please describe below the work that students did together.

Students worked in groups to evaluate and offer feedback for each others letters

24. In completing this learning activity, did students use technology (for example, computers or digital cameras)?

- ☐ No technology was used for this learning activity.
☐ Students *could* use technology for this activity
☒ Students were *required* to use technology for this activity

If students used technology, please describe what they used it for.

Students used technology to receive the work, access further information and resources to help them complete the activity, and through developing their word processing skills in constructing the letter.

25. What criteria did you use to make a judgment about the quality of students' work on this learning activity? *Please attach all available grading criteria and rubrics.*

Letter writing rubric which looks at factors such as the content, organisation and style of the letter as well as basic skills present in the letter such as spelling and punctuation. (See attached)

26. Were assessment criteria given to students before they submitted their work?

☒ Yes

☐ No

27. Did this learning activity involve multiple stages or interim products, such as a rough draft and a final version or laboratory notes and a research report?

☐ No

☒ Yes. Please describe below.

Draft letter was produced, followed by a peer assessment identifying strengths and weaknesses prior to construction of a final product.

28. Length of learning activity

☐ a. Completed in a single class period

☒ b. Completed in 2-4 days

☐ c. Required one week or more to complete

29. Please list any verbal instructions you gave to students.

All instructions were emailed to students however further instruction was provided in class as a result of students completing the task and asking questions. Verbal instructions were also supported with visual demonstrations using the projector for both the letter writing stage and the peer assessment stage. Ongoing discussion occurred between the teacher and students, as well as between students and students, to clarify students' understanding and meet them at their point of need.

11. Is there any additional information about this learning activity you would like us to know?

Students letters were also sent once completed.

Learning Task

Letter to the PM

Your task:

In this task you are to argue for the use of one form of renewable energy. In doing this, please include the following information:

- who you are & why are you writing*
- what the greenhouse effect is, and how it impacts on the earth*
- the form of energy source we currently rely on & the advantages/ disadvantages of this*
- the energy source you feel we should rely on & the advantages of this (some of this information can be taken from your assignment).*

Specific instructions:

- Use the information provided to guide you in 'Conventions for writing a Formal letter'
- Bonus points for the use of a slogan which is catchy and promotes your alternate energy source
- This is to be submitted via email by the end of the double. You will receive feedback on it prior to your final submission of the complete letter.

Good Luck!!

PEER ASSESSMENT

Your letter will need to have your letter peer assessed based on the following points:

- Does it follow the conventions for writing a letter?
- Do they use appropriate language i.e. is the letter formal?
- Has an opinion been formed i.e. do they suggest areas which are good and areas which can be improved?
- Do they validate each point raised with supporting evidence?
 - If any of the above areas need improving you need to be explicit as to how this can be done.

Use the scaffold at <http://www.letterwritingguide.com/businessletterformat.html> to guide your letter writing – if you are peer assessing you can also use this to guide your assessment.

Use the scaffold below to have your letter peer assessed:

Peer Assessment 1:

Star:

Star:

Wish:

Peer Assessment 2:

Star:

Star:

Wish:

Assessment Rubric

Category	Outstanding (4)	High (3)	Developing (2)	Deficient (1)
Content	Provides all essential background information	Provides most essential background information	Provides minimal background information	Lacks minimal background information
	Opinion is clear and insightful	Opinion is clear and logical	Opinion is somewhat unclear or lacking in logic	Opinion is unclear and lacking in logic
	Support, explanation, and evidence are comprehensive	Support, explanation, and evidence are fairly thorough	Support, explanation, and evidence are minimal	Insufficient support and evidence
	Exceptional analysis, development, and insight	Strong analysis, development, and insight	Minimal analysis, development and insight	Weak analysis, development and insight
Organization	Introduction creates interest, provides direction, and shows engagement with topic	Introduction creates some interest, provides fair direction, and shows some engagement with topic	Introduction creates little interest, provides limited direction, shows little engagement with topic	Introduction lacks interest, direction, and engagement with topic
	Paragraphs reflect highly unified thinking, strongly promote the letter's flow and effectively present details	Paragraphs reflect unified thinking, promote the letter's flow and present details somewhat effectively	Paragraphs reflect limited thinking, somewhat promote the letter's flow, and present some, but not enough details	Paragraphs lack unified thinking, limit the letter's flow, and lack effective details
	Conclusion thoughtfully and effectively ends the paper	Conclusion effectively ends the essay	Conclusion ends the essay with summary	Conclusion is either missing or lacks even a basic summary
	Transitions between paragraphs and sentences are logical and enhance meaning	Transitions between paragraphs and sentences are logical but do not enhance meaning	Transitions between paragraphs and sentences are inconsistent or insufficient	Lack of consistent transition between sentences and paragraphs significantly limits meaning
Style	Variety and quality of sentences consistently enhance the essay	Variety and quality of sentences are evident in the essay	Some sentence variety but relies too heavily on a few simple patterns	Little sentence variety-relies on a few simple patterns
	Rich, effective vocabulary and language use	Effective vocabulary and language use	Simple vocabulary and language use	Vocabulary errors and misuse of language limit
	Voice and tone are engaging and appropriate for the purpose of the essay	Voice and tone are appropriate for the purpose of the essay	Voice and tone must better match the purpose of the essay	Voice and tone are inappropriate for the purpose of the essay
Basic Skills	Very few or no errors	Few errors	Errors but meaning is clear	Errors interfere with meaning
	Spelling, punctuation, and capitalization enhance clarity	Spelling, punctuation, and capitalization are mostly correct	Some errors in spelling, and punctuation, capitalization diminish clarity	Errors in spelling, Punctuation, and capitalization seriously

APPENDIX C- CASE STUDY SCHOOL REPORTS

- School 1 Report
- School 2 Report

Microsoft Innovative Teaching and Learning (ITL) Project

Individual School Report

Case Study School 1		The ITL research project is designed to investigate factors that contribute to the transformation of teaching practices and their ensuing impact on the development of 21st century skills in students.
Effect size measures*		
Younger average teacher age	0.19	Younger teachers and those with fewer years of experience did better in terms of ICT based pedagogies. Teachers were also asked about their use of ICT and professional learning generally and specifically with ICT pedagogies.
Fewer average years of service	0.17	
Teacher use of ICT	0.09	
General professional learning	-0.24	
ICT professional learning	0.28	
Student average age	-0.10	Student characteristics Teachers rated their students in terms of average academic ability of the class, ICT capability, frequency of ICT use, ICT skill level and level of engagement with using ICT in learning.
Class academic ability	-0.12	
Student use of ICT	0.28	
Average ICT skill level	-0.01	
Student engagement with ICT	-0.10	
Use of extended tasks	0.16	Data was collected through a series of questions on specific aspects of pedagogy and delivery . These were transformed into four constructs representing aspects of teaching and learning.
Student self regulated learning	-0.09	
Extended communication	0.15	
Global citizenship	0.04	
Student-centred pedagogy	0.23	The ITL data was consolidated into three major constructs characterising the transformation of teaching practices and ensuring impact from ICT.
Connected learning	0.11	
ICT integration	0.16	
ICT teaching practices	0.21	Overall ICT teaching practices construct.

**Note: The results presented here relate to the 63 teachers that participated from your school

Key to the interpretation of effect sizes:		
Averages for respondents in your school compared with the full NSW sample		
Well above average	1.0	Note: The effect size measures indicate where the average for teachers in your school sits compared with the average for the full sample of 679 NSW teachers. Positive effects indicate above average performance and negative effects indicate below average performance in your school compared with the full NSW sample.
Above average	0.5	
Slightly above average	0.2	
At or close to average	0.0	
Slightly below average	-0.2	
Below average	-0.5	
Well below average	-1.0	

Development of the Innovative Teaching Practices (ITP) Index

The global ITL study focuses on three research questions:

1. To what extent are innovative teaching practices associated with 21st century learning outcomes?
2. What school-level factors are associated with innovative teaching practices?
3. What national or regional program supports and professional development are associated with innovative teaching practices?

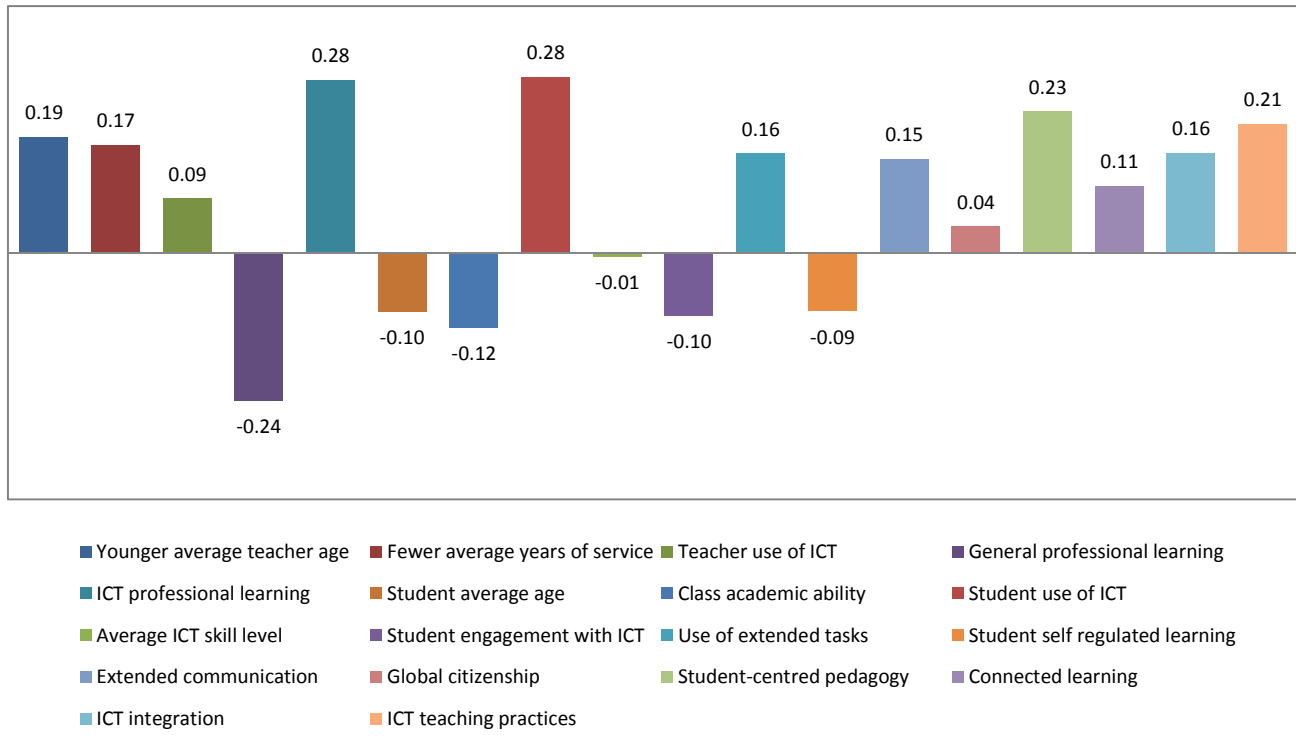
A number of teacher practices and beliefs and school practices were identified in the surveys through use of sets of items related to a construct. The overall ITP Index was created from eight sub-constructs or scales, giving equal weight to three sub-constructs -- student-centred pedagogies, connected learning (extension of learning beyond the classroom) and ICT integration into teaching and learning.

School-level reports have been generated for all participating schools in NSW. The copy sent to your school shows the school name but this is masked in the centrally provided copies. When read in association with the overall report, your school-level report can be used to help contextualise where your school sits and may help in identifying future development activities.



Microsoft Innovative Teaching and Learning (ITL) Project Individual School report

Case Study School 1



****Note:** The results presented here relate to the 63 teachers that participated from your school

Background

The Innovative Teaching and Learning (ITL) Research is a multi-year program started in 2011 to investigate factors that promote technology-supported educational reform within and across diverse country contexts. The research uses mixed methods to collect data across all levels in the system, but focuses in particular on teaching and learning in the classroom. The international partners are Finland, Indonesia, Russia, Senegal, UK, Mexico and Brunei. The NSW Department of Education and Communities is the partner and co-sponsor with Microsoft of the research in Australia.

The data reported here is drawn from the Australian teacher sample which includes 679 teachers from 22 NSW secondary schools. Significant findings in NSW were that: there were no significant differences in the results based on gender; and, being younger and having fewer years of experience were positively associated with the ITL outcome measures.

Other aspects of the study will be reported separately as they are developed including: the school leaders' survey, interviews with teachers and school leaders, analysis of learning activities and student work, classroom observations, student focus groups, interviews with national educational leaders and student achievement data.

No international comparisons are provided in this report.



Education &
Communities



Microsoft Innovative Teaching and Learning (ITL) Project

Individual School Report

#	o	o		The ITL research project is designed to investigate factors that contribute to the transformation of teaching practices and their ensuing impact on the development of 21st century skills in students.
Effect size measures*				
Younger average teacher age	0.24			Younger teachers and those with fewer years of experience did better in terms of ICT based pedagogies. Teachers were also asked about their use of ICT and professional learning generally and specifically with ICT pedagogies.
Fewer average years of service	0.25			
Teacher use of ICT	-0.06			
General professional learning	0.27			
ICT professional learning	0.27			
Student average age	-0.14			Student characteristics Teachers rated their students in terms of average academic ability of the class, ICT capability, frequency of ICT use, ICT skill level and level of engagement with using ICT in learning.
Class academic ability	-0.03			
Student use of ICT	0.11			
Average ICT skill level	0.17			
Student engagement with ICT	0.31			
Use of extended tasks	-0.01			Data was collected through a series of questions on specific aspects of pedagogy and delivery . These were transformed into four constructs representing aspects of teaching and learning.
Student self regulated learning	0.03			
Extended communication	0.06			
Global citizenship	-0.06			
Student-centred pedagogy	0.15			The ITL data was consolidated into three major constructs characterising the transformation of teaching practices and ensuring impact from ICT.
Connected learning	0.00			
ICT integration	0.19			
ICT teaching practices	0.14			Overall ICT teaching practices construct.

**Note: The results presented here relate to the 60 teachers that participated from your school

Key to the interpretation of effect sizes:		
Averages for respondents in your school compared with the full NSW sample		
Well above average	1.0	Note: The effect size measures indicate where the average for teachers in your school sits compared with the average for the full sample of 679 NSW teachers. Positive effects indicate above average performance and negative effects indicate below average performance in your school compared with the full NSW sample.
Above average	0.5	
Slightly above average	0.2	
At or close to average	0.0	
Slightly below average	-0.2	
Below average	-0.5	
Well below average	-1.0	

Development of the Innovative Teaching Practices (ITP) Index

The global ITL study focuses on three research questions:

1. To what extent are innovative teaching practices associated with 21st century learning outcomes?
2. What school-level factors are associated with innovative teaching practices?
3. What national or regional program supports and professional development are associated with innovative teaching practices?

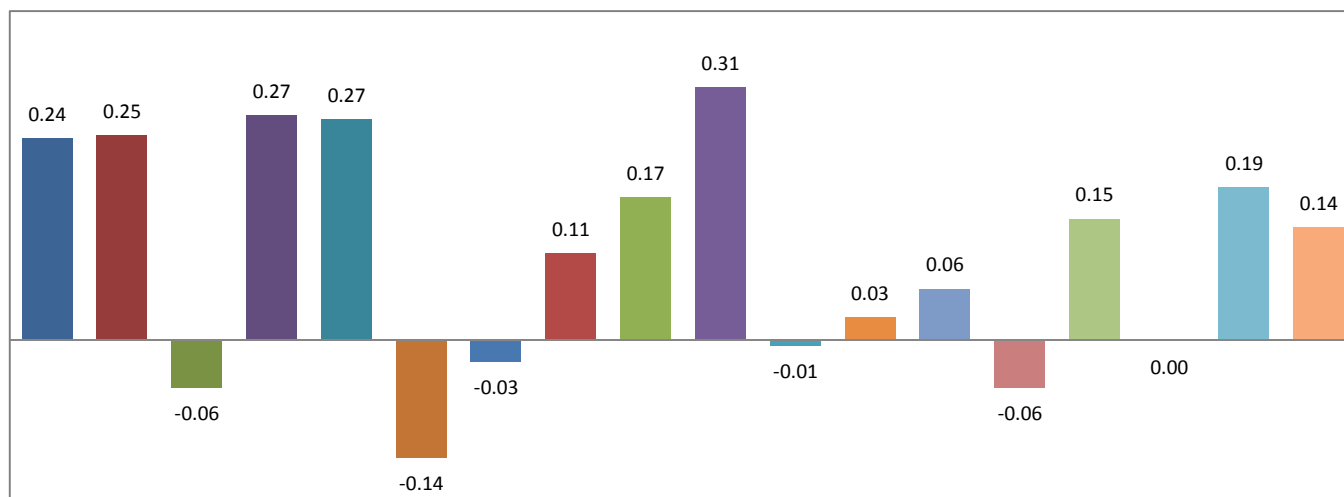
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Microsoft Innovative Teaching and Learning (ITL) Project Individual School report

Case Study School 2



****Note:** The results presented here relate to the 60 teachers that participated from your school

Background

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Innovative Teaching and Learning (ITL): Australia

Phase I Report

June 2012

Inside this report:

Innovative Teacher Index (ITP) 2

Teacher Age and Innovative Teaching 2

Teacher Qualifications and Innovative Teaching 2

Professional Culture in Schools: 3

Impact of Professional Development for Teachers 3

Barriers to ICT Integration 3

Site Visits 4

LEAP21 5

Key Findings from the Global Study

The global study was conducted in 7 countries: Australia, England, Finland, Indonesia, Mexico, Russia and Senegal.

The global study found that:

- Innovative teaching does support the development of 21st century skills in students
- Student opportunities to develop these skills are scarce and uneven in all countries
- ICT use by students in their learning is not widespread
- Innovative teaching is more likely to flourish where there is teacher collaboration, active and direct engagement of teachers in professional development and a school culture that offers a common vision of innovation and consistent support for teachers.
- Pockets of innovation were observed but a coherent and integrated set of conditions to support the adoption of innovative teaching is lacking in most schools and in all of the school systems in the study.

Innovative teaching in this study refers to three categories of practice:

1. Student-centered pedagogies
2. Extending learning beyond the classroom to include knowledge building and problem solving in today's world
3. ICT integration in ways that support learning goals, not as a goal in itself



The Australian sample

679 NSW teachers completed the ITL survey

22 schools.

79% of the teachers had a Bachelor's degree; 14.4% had a Master's degree; and 6.6% had a teaching certificate.

59.6% Female; 40.4% Male

Age Distribution of teachers:

< 25	6.5%
25-29	12.5%
30-39	26.6%
40-49	26.9%
50-59	25.4%
>60	2.1%

"While innovation is not yet commonplace in most settings, seeds are being sown"

ITLresearch
Innovative Teaching and Learning



“The latest ITL research is the clearest conceptual and empirical example...of how technology and pedagogy can be effectively integrated..”
Fullan (2011)

Innovative Teaching Practice (ITP) Index

Responses to the teacher survey were used to develop an Innovative Teaching Practice (ITP) Index for each teacher in the sample.

The ITP is an indication of the degree to which teachers incorporate each of the following three components:

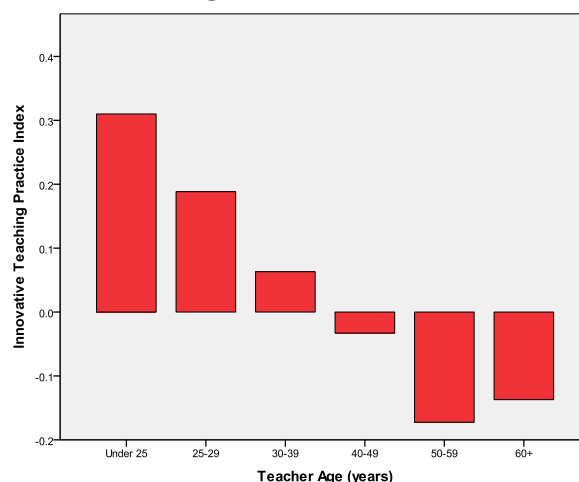
Student centered pedagogies: Knowledge building, Self-regulation and assessment; Small group work; personalized and individualized learning.

ICT integrated into teaching and learning: teacher ICT use and student ICT use.

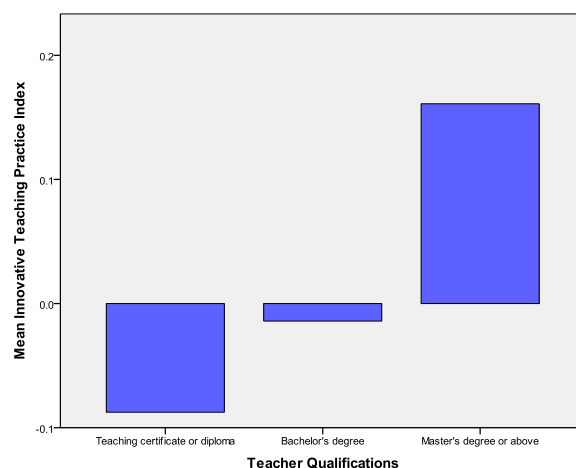
Extension of learning beyond the classroom: extended classroom community, global awareness and cultural understanding

Teacher Age and Innovative Teaching

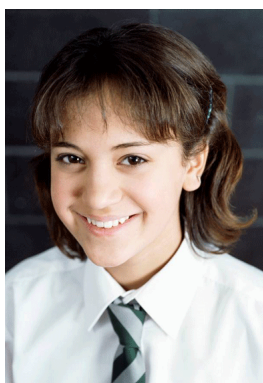
- Younger teachers scored significantly higher than older teachers on the ITP index.
- Teachers' years of teaching experience was negatively correlated with the ITP index, indicating that younger, less experienced teachers were more likely to engage in student-centered pedagogies which integrated ICT and extended learning beyond the classroom.



Teacher Qualifications and Innovative Teaching



- Teacher's educational qualifications were significantly related to their scores on the Innovative Teaching Index. Teachers with qualifications beyond that of a Bachelor's degree scored significantly higher on the ITP score.

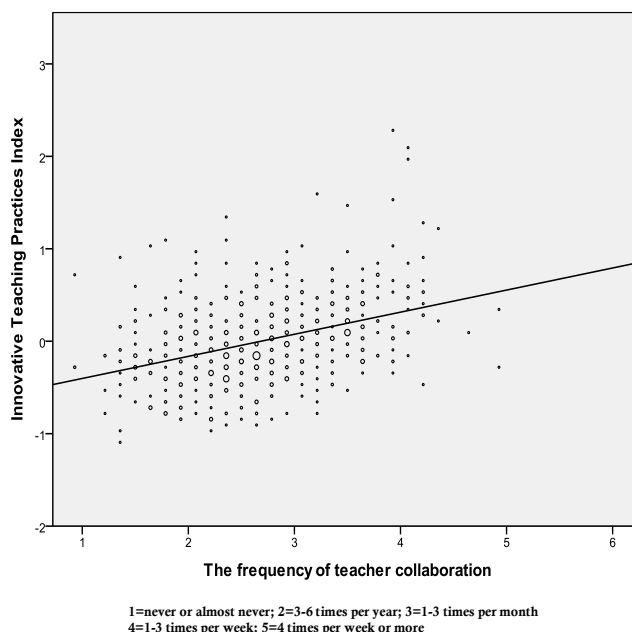


“An abundance of research establishes that changes in behaviour precede changes in the assumptions, beliefs, expectations and habits that constitute the culture of an organization” (DuFour & DuFour, 2010)

Professional Culture in Schools—Collaboration

The teachers were asked about the degree to which teachers in their school had common goals and held similar views about teaching and learning. This factor was found to be unrelated to the ITP score for each teacher.

In contrast, **the frequency with which teachers reported that they collaborate with each other, was found to be significantly positively correlated ($r = 0.375$, $p < 0.001$) with the Innovative Teaching Practice Index.**



Impact of professional development for teachers

Teachers were asked about the types of professional development that they have undertaken in the last 2 years. Their responses were examined in relation to their scores on the ITP index. In general, teachers who had participated in any type of professional development in the past two years scored more highly on the ITP than those that did not, but specifically,

- teachers who had undertaken a degree (either un-

dergraduate or postgraduate) in the past two years scored significantly higher on the ITP than those that had not, and,

- teachers who had undertaken observation visits to other schools in the past two years scored significantly higher on the ITP than those that had not.

The **most common forms** of professional development that the teachers had undertaken were lectures and dem-

onstrations, while the **least common forms** were one-on-one mentoring and observations of lessons.

Research indicates that professional development is more effective if it is taken over an extended time period. In this study we found that 60% of professional development opportunities are for short durations (< 1 week), with only 12% of teachers undertaking activities that lasted for more than 1 month.

Barriers to ICT Integration



Teachers said that the most significant barriers to ICT integration were:

1. Not enough computers for student use (24.6%)
2. Not enough time to plan for ICT integration (19.9%)
3. Not enough professional development involving ICT (9.7%)
4. Difficult to access computers in labs (7.3%)

The teachers who responded that 'not enough computers for students' was the most significant barrier had (on average) 6.3 computers in their classroom; and those that said 'not enough time to plan' had (on average) 17.7 computers. It appears that the availability of computing hardware is a significant barrier, but that when that barrier is removed, teachers do begin to focus on the importance of seeking out professional development opportunities with

regard to ICT use.

73% of the teachers had undertaken professional development in ICT use for teaching and learning in the last two years.

33% of teachers wished to participate in more professional development, however, most of these said there was no professional development to match their needs, or that it was too expensive.

Site Visits to Schools

‘Students in our school community need to learn how to live in the 21st century – we have made a decision to focus on embedding these skills rather than teaching to the test. If this affects our My School results, so be it!’

(School Leader E)

The ITL Research team conducted site studies with five of the schools which participated in Phase I of the study — three sites in Sydney and two in the Hunter regions. The schools which participated in site visits met a 60% response rate target for Teacher Surveys and 100% response rate target for School Leader Surveys.

The site visits to schools involved interviews with School Leaders and Teacher Case Studies. The Teacher Case Studies focused on teachers of Science and Humanities in Years 7-10.

Teachers involved in the study participated in an interview about their target class and a class observation. There were also focus groups of students from the target classes.



What do School Leaders say?

School Leaders of schools in the study shared an awareness of the importance of 21 Century learning.

On the whole, School Leaders had a collaborative approach to school planning.

Professional development was approached in ways where teachers shared innovative teaching and learning practices with faculty members and also at whole school meetings. At one school, staff rooms had been re-developed so that all

teachers shared the same space. The School Leader reported a shared approach to curriculum and an increase in communication between Heads of Discipline.

All School Leaders discussed the challenges of embedding 21C Learning within the school community whilst also meeting school community expectations of ensuring high results in national (NAPLAN) and state (Higher School Certificate) testing.

A number of School Leaders talked of a community decision to focus on 21C skills.

‘We have a sustained focus on teaching and learning which involves innovative tailored opportunities to engage students in learning’ (School Leader C)

Some communities benefited from extending learning outside the classroom and by exploring opportunities for learning activities to link to community, especially in the Sydney region.

What do Teachers Say?

Teachers selected to participate in the Case Study in the schools selected a target class to be in the study.

The target classes selected were from Years 7,8,9 and 10 classes. Two discipline areas were selected for the case studies—Science and Humanities.

Four staff members from each discipline participated in the study. The classes nominated covered a range of abilities—

from Gifted and Talented classes, to mixed ability to life skills.

Each teacher was interviewed and participated in a class observation by the researchers.

‘I am sorry that you didn’t see an innovative lesson today, we have exams tomorrow and I needed to do revision’ (Teacher Humanities, D).

Teachers reinforced the tensions felt by schools in how to engage students in 21C learning whilst also ensuring they were prepared for assessments and tests.

Most of the teachers nominated as innovative were younger staff members and in some cases they were not permanent staff members.



What do students say?

Student Focus Groups comprised of students from Years 7-10 talked about Innovative Teaching and Learning (ITL) in their schools. Each Student Focus Group had approximately 10 students participate.

Students were divided in the groups dependent on Year group. All Years 9 and 10 students in NSW high schools have laptops whereas generally the younger students in Years 7 and 8 only have access to shared ICT in classrooms.

Most older students appreciated the opportunity to have laptops, but there were some inconsistencies across schools in how learning was integrated with the laptop program. In schools where all teachers 'bought in' students were generally happy because they could do most of their learning on the laptop. Students in schools using programs, such as OneNote and Edmodo to organise class learning across KLA's, reported a positive experience with laptops.

Where there was no consistent approach, students were dissatisfied. They found there were too many passwords to remember for different Web2.0 tools and some preferred to use pen and paper to a laptop.

Students on the whole did not feel that they had opportunities to engage in learning beyond the classroom.

What next? LEAP21

LEAP 21 is a professional development program arising from the first phase of the ITL research.

LEAP21 asks teachers and school leaders to:

- Analyse and 'score' learning activities to see how deeply they integrate 21st century skills
- Collaborate in designing new learning activities that provide deeper 21st century skills development
- Examine the impact of these learning activities on students' work
- Use ICT as part of the process



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SORTi



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