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Blended learning

A synthesis of research findings in Victorian education 2006-2011

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Foreword

Victoria as a Learning Community, - Extended Special Lecture (Department of Education and Early Childhood Development, 2011) articulates the Government's goal of improving student outcomes and empowering our children and young people to thrive throughout their lives. This aligns with the *Melbourne Declaration on Educational Goals for Young Australians* (Ministerial Council on Education, Employment, Training and Youth Affairs, 2008) which aims to have all young Australians develop into confident, creative and successful learners.

Globalisation and technology are continually altering our views of education and offering new opportunities for learning and engagement in life.

Technology such as web conferencing, the Ultranet, blogs/wikis, virtual worlds and online gaming and mobile devices such as iPads, mobile phones, digital cameras and voice recorders are changing the way teachers teach and the way students learn.

Technology enables learning to extend beyond the classroom walls and facilitates better access to learning resources. It also supports the creation of partnerships with the wider school community and equips learners with contemporary skills necessary for successful participation in life.

Blended learning approaches have amplified the need for school leaders, teachers, students and the wider community to take advantage of learning opportunities afforded through *improved personalisation, collaboration, and communication* enabled by learning technologies.

Blended learning has many different forms and will continue to evolve as new technology and practices are introduced. It should not be viewed as a single model but as an approach that shares the ultimate goal of the provision of better educational experiences and outcomes.

This publication provides teachers and principals with definitions, benefits and exemplars of the use of blended learning in the Victorian education context.

I trust you will find this both informative and useful.

Dr Jim Watterston

Deputy Secretary

School Education Group

1. Introduction

This paper is a synthesis of project work undertaken between 2006 and 2011 by the Victorian Department of Education and Early Childhood Development (DEECD). It provides an overview of blended learning definitions and models, and includes some examples of blended learning activities and projects conducted in Victorian Government schools. It concludes with some considerations for the future implementation and/or maximisation of learning opportunities from such approaches in Victorian schools.

We live in a connected world with unparalleled access to a vast array of online information and experiences. Our children are growing up in a world where excitement and opportunities are just a screen touch away.

For many educators and trainers, a blended learning approach provides innovative educational solutions through an effective mix of traditional classroom teaching with mobile learning and online activities.

But what is "Blended Learning" and what does it mean for students, teachers, parents, school principals and the Victorian education system? How do we harness these resources to enrich the educational experiences for our students? How do we tap into this knowledge bank to provide relevant education and vocational training experiences for our youth? Can we use this connectivity to build online communities for isolated students and adults in rural and remote areas? Does this technology have the potential to overcome disabilities and provide equality of educational opportunity for all? Can we use blended learning approaches to deliver professional development to all our teachers and school administrators? Can traditional assessment tools be used with blended learning? Will a blended learning approach require extra resources to be provided by schools and/or the education system? Will parents be convinced their children are receiving a *'proper'* education?

Since 2010, the release of the Ultranet, a secure site for managing learning and collaboration between students, teachers and parents available to all Victorian Government schools, has placed a greater imperative for teachers to optimise blended learning opportunities in teaching and learning and maximise the potential for the online learning it provides.

In the following pages you will find definitions of blended learning and descriptions of blended learning environments; anecdotes and case studies from blended learning activities; research findings about the advantages and benefits of a blended learning approach in Victoria; and some of the challenges to be faced when implementing blended learning.

2. What is Blended Learning?

2.1 Blended Learning Defined

What is Blended Learning and why is it so hard to achieve consensus on its definition?

Historically, classroom teachers in Victoria, and indeed throughout Australia, have used a range of learning activities and resources to assist learners to achieve learning objectives. Face-to-face presentations, visual material, paper-based assessments, online research and group activities have been the mainstay of classroom teaching for many decades. More recently mobile technologies and collaborative Web 2.0 tools have expanded opportunities for learning.

Blended learning is really no more than a combination of all of these approaches.

For some teachers, blended learning is describing what they've been doing successfully for years: that is, using a range of resources and activities to provide individualised, student-centred learning experiences for their students. The real difference today is the unparalleled access to the internet with its rich sources of information and services and more importantly, the connectivity it offers students and teachers, particularly the ability to create online communities and support networks. In addition, there is a growing use of mobile technologies such as flip cameras, voice recorders, mobile phones and GPS devices extending learning beyond the classroom walls.

For other teachers, blended learning represents a challenge. They are not comfortable with nor do they fully understand the technologies and media that their students use every day, or the potential that these can offer their learners.

To assist teachers in implementing blended learning activities, this paper reinforces the concept that blended learning comes in many guises and isn't a "one-size-fits-all" educational solution.

Definitions of blended learning range from the very broad where practically any learning experience that integrates some use of ICTs qualifies, to others that focus on specific percentages of online curriculum and face-to-face instruction.

Most people agree that blended learning combines teaching and learning methods from both face-to-face, mobile and online learning and that it includes elements of both synchronous and asynchronous online learning options.

The integration of new mobile technologies and online media is proving highly effective in helping schools meet the expectations of 21st century learners while addressing the challenges of limited resources and the special needs of many students.

However, not everyone is happy with the term blended learning. Oliver and Tingwell (2003) in their article '*Can blended learning be redeemed?'* argue that blended learning is ill-defined and muddled as a description of particular forms of teaching with technology. They argue that the term blended learning may be redundant and gratuitous, as the practice of mixing traditional classroom methods with technology is widespread.

This summary acknowledges that a broad continuum of definitions exists and that its definition will continue to evolve in the literature as new technology and associated skill sets emerge. This paper takes a practical approach to defining

blended learning based on the Victorian experience and will demonstrate the benefits from such flexible approaches.

> *"Ultimately, the exact definition of blended learning, beyond some combination of online and face-to-face, may not matter."*
>
> International Association for K-12 Online Learning (2008)

2.2 Blended Learning Defined in the Victorian Context

Based on projects and teaching practice in Victorian schools, *blended learning refers to the planned implementation of a learning model that integrates student-centred, traditional in-class learning with other flexible learning methodologies using mobile and web-based online (especially collaborative) approaches in order to realise strategic advantages for the education system*.

These advantages might include cost benefits, increased access to educational opportunities, flexibility of workforce deployment, and so on.

2.3 Blended Learning Defined in a National and International Context

> *"The concept of blended learning is rooted in the idea that learning is not just a one-time event—learning is a continuous process. Blending provides various benefits over using any single learning delivery medium alone.".*
>
> Singh (2003)

Around Australia, educators have similar definitions for blended learning.

The Tasmanian Department of Education e-School (2011) defines blended learning as 'a *range of learning opportunities, e.g. online, face-to-face, community and home to achieve curriculum diversity and promote student enthusiasm'*

In 2003, the Australian National Training Authority (ANTA) described blended learning in Australia as '*the integrated combination of traditional learning with web-based online approaches'.* These simple, practical definitions are supported by eminent researchers who have defined blended learning as *'essentially traditional in-class learning supplemented by online activities and resources' (* Downes, 2008) and '*blended learning is currently conceived as the combination of technology and traditional face to face instruction.'* (Stacey and Mackey, 2009)

In the US, the International Association for K-12 Online Learning (2008) follows a similar line with its definition: *'In general terms, blended learning combines online delivery of educational content with the best features of classroom interaction and live instruction to personalise learning, allow thoughtful reflection, and differentiate instruction from student to student across a diverse group of learners.'*

> "*Blended learning should be viewed as a pedagogical approach that combines the effectiveness and socialisation opportunities of the classroom with the technologically enhanced active learning possibilities of the online environment, rather than a ratio of delivery modalities*."
>
> Dziuban, Hartman and Moskal (2004)

3. What does blended learning look like?

3.1 Blended Learning Formats

Some blended learning practitioners worry about the appropriate allocation of time between traditional face-to-face teaching and learning, and extending learning beyond the classroom walls with mobile and online technologies. The actual percentage of time allocated or the blending of the different activities and approaches is not important. What is important is finding the right mix or blend that serves each student's needs.

In Victorian schools, blended learning comes in many guises although each application has the essential ingredients of classroom delivery plus mobile learning and web content with the added inclusion of interaction with community members and other subject matter experts plus opportunities for sharing and learning with peers.

In essence, there is a blending of flexible teaching and learning approaches that include student-teacher, student-student, student-community interactions and feedback.

The projects described below were derived from the Innovating with Technologies (IWT) research projects (2008-2011) exploring the impact of ICT on student learning outcomes.

Stories From Around A Campfire (2010)

This project sought to improve the speaking and listening skills of Prep to Year 2 students in three rural schools, in the Loddon Campaspe Region of Victoria. The schools involved used Skype, blogs, interactive whiteboards, flip cameras, webcams, digital cameras and email to improve communication skills of learners. The project provided situations that encouraged oral language development and provided authentic student-student feedback.

"*The strength of using the flip cameras and Skype was that it provided opportunities for the students to observe themselves and to self-evaluate as well as receive feedback from peers*".

Teacher, *Stories From Around a Campfire (2010)*

Ping (2009)

Walking into any of the five rural school classroom spaces when the *Ping (2009)* music education project was running, a visitor would have witnessed the use of virtual delivery approaches to enhance young people's involvement in music. In this IWT project students developed their own music composition using synchronous professional guidance from Melbourne Symphony Orchestra musicians. Communication took place using web conferencing technology.

Sharing Our Environment (2010)

This was an IWT project where Prep and Year 1 students at three primary schools in the Barwon South West Region of Victoria used technology to allow students to communicate regularly, and co-create and share learnings with students in neighbouring rural communities whom they had never met. The students used digital cameras, webcams with Skype, iPods, computers and some environmental gadgets (rain gauges and bug catchers) to collect, share and relay their learnings and experiences.

Improving Literacy In ESL/ VCAL Students Undertaking Workplace Learning (2009)

This was a North Geelong Secondary College IWT project using mobile technologies (iPods) to extend learning by a group of 10 students from refugee backgrounds undertaking their *Victorian Certificate of Applied Learning* (VCAL) to assist them to gain self-confidence to improve their language acquisition. Students used the devices in their work placement to complete word tasks, document occupational health and safety issues; record oral logs and reflections on their performance; and gather employer feedback on their daily progress. The students' reflections and employer feedback were then emailed to their classroom teacher for assessment.

3.2 Designing Blended Learning Activities

Well-designed blended learning models offer immediate advantages for the Victorian school system. However, current trials support the view that there is no one blended learning model that adequately meets the needs of each and every learning community.

The National Centre for Vocational Education Research Report *One size doesn't fit all: Pedagogy in the online environment* (Brennan, 2003) and the more recent report by the Department of Education, Employment and Workplace Relations *Exemplar Schools: Using Innovative Learning Technologies* (Holkner, Romeo, Henderson, Auld, Russell, Seah and Fernando, 2008) both argue that the most successful blended learning models are ones which best meet all the demands of a local situation.

> "*It is important to recognise that each Australian school is a unique learning community made up of school leaders, teachers, students and parents. Each of these communities is influenced by a large number of factors including, the socio-economic background of the students and parents, the geographic location of the school, levels of government funding and of course the quality of teachers and staff*".
>
> Holkner et al (2008)

The authors of *Issues in Digital Technology in Education: Blended Learning* (Wikibooks, 2009) have identified four broad principles of education design for blended learning. These are:

- *A thoughtful integration of face-to-face and fully online instructional components*
- *Innovative use of technology*
- *Re-thinking the way we teach*
- *Sustained assessment and evaluation of blended learning*.

According to Bonk and Graham (2006) in their *Handbook of Blended Learning*, blended learning should be approached as a fundamental redesign of the instructional model with the following characteristics:

- A shift from teacher-centred to student-centred instruction in which students become active and interactive learners (this shift should apply to the entire course, including face-to-face contact sessions)
- Increases in interaction between student-teacher, student-student, student-content, and student-outside resources

- Integrated formative and summative assessment mechanisms for students and teachers.

Elements of these design principles are discernible in most Victorian blended learning projects discussed in the next section.

3.3 Interaction

Research both in Victoria and elsewhere indicates that student satisfaction with the blended format is directly dependent upon the level of interaction with teachers and other students. Teachers can increase interaction opportunities through face-to-face discussion sessions and by using online tools such as discussion forums, virtual conferencing, virtual world and online games, and using mobile technologies such as flip cameras and voice recorders to engage with parents and the wider school community.

Teacher-Student interaction

Podcasting in the Classroom (2006)

For this Wanganui Park Secondary College project a teacher created a series of VCE biology podcasts which were then posted to a website available for download.

The website not only allowed people from all around the world to benefit from the information presented but also allowed the listeners to share their testimonials of how they have benefited. Teachers no longer needed to have their students in class with them in order for the students to be learning. Students can be presented with material (from the teacher and other students) via podcasts and can be involved in discussions about learning using discussion boards, blogs and chat rooms outside of the classroom.
See: http://biologyoracle.podomatic.com/

This freed class time for richer, reflective and more creative activities which engage students and help them to learn more deeply than has happened previously. Because the bulk of content delivery was taking place out of class, the traditional idea of a class having one teacher was being challenged.

Student-Student interaction

Sharing My Voice (2010)

For this IWT project, Eltham High School students used iPods to listen to a wide range of authentic French listening materials 1:1 at their own pace. Music, podcasts, and apps were sourced and students listened to these

intensively. Having completed the listening component of the project, students then created an audio book in which they were required to read the story they had written and record their version to the iPods. Drafting occurred using the devices, and teacher and peer feedback was facilitated through the use of the iPods. Final story narration demonstrated clear improvement in the lower to middle band of student performance.

The students then visited the local primary school and taught a French lesson to Preps 1:1 using the devices confirming their understanding of the content and giving the Eltham High School students confidence in speaking another language.

Student-Content interaction

Hiragana, iPods And Japanese Character Recognition (2009)

This was a Derrinallum P-12 School IWT project. The Japanese language teacher developed a series of podcasts for the students' iPods to differentiate learning (e.g. teach the Japanese characters to lower level students and to introduce more complex Japanese Hiragana to the more advanced students). The vodcasts were supported by a range of iPod applications to encourage students to use their knowledge of hiragana. These included: online games, online dictionaries and quizzes.

Student-Community interaction

***Creating Links within the Bayside Community* (2010)**

This was a Sandringham College IWT project where students used Global Positioning System (GPS) devices and geocaching websites to find and hide caches. The local historical society became involved and provided the students with local historical information. Students used a group wiki and individual blogs for reflection. Students learnt to identify and hide caches (which required them to load the GPS information onto a geocaching website), and they learnt to research and investigate the historical significance of some

caches. The students checked the geocaching website for feedback on the cache, and to make improvements and maintain the cache. Students shared their experiences and reflections on a weekly blog and their group Wikis.

Students also developed stronger community links through the historical society, interviewing members of the community and finding out the historical importance of the different areas of Sandringham. It gave them a sense of pride and belonging to the local area.

3.4 Is Blended Learning for Everybody?

Blended learning comes in many shapes and sizes – there is no right way or wrong way, no correct formula or single "right" ratio of face-to-face, online time and self-paced activities in and beyond the classroom. Each approach is based on the needs of the students, the curriculum and the resources available.

Victorian DEECD projects described here have been conducted with students from Prep to Year 12.

Is Blended Learning Different from Distance Education?

Distance education offers one form of blended learning.

Traditionally distance education provision has been predominantly for students who through their geographical isolation have not been able to attend classes.

Distance education providers were early adopters of ICT in education, notably the various Schools of the Air with their use of radio, then video and now the full range of communications and online technologies (including online conferencing, social media websites, wikis/blogs, email and virtual worlds).

The increased integration of ICT, particularly Web 2.0 technology into distance education provision has broadened the scope of delivery to include learners who choose not to attend classroom education as well as those who don't have the choice through their personal circumstances e.g. ill health.

Blended Learning In the Early Years Classroom

"While at times, it has been seen as controversial to use technology so regularly with Early Years students, the parents, students and wider community support the trend."

"The Prep students are now using appropriate language when working in groups and during problem-solving and decision-making activities, which would be expected from more mature students. They are showing responsibility and respect towards the school's and other's belongings and understand the consequences of each other's actions."

Teacher, *Sharing Our Environment (2010)*

Blended Learning and Rurality

Robotics for Rural (2008)

This was an IWT project where teachers and students from eight small rural schools in Gippsland worked with Year 5 and 6 students on using Lego robotics equipment to produce a Lego robotics program, with mentoring from a local secondary school via webcams.

"The implementation of the Lego Robotics program for any of our small schools alone would have been a very large commitment in terms of the allocation of human resources and funding".

"The geographical spread of our eight cluster schools has meant this program has built relationships for students and has been an important transition experience for secondary education".

Teacher, *Robotics for Rural (2008)*

4. Blended Learning in Action – Victorian Case Studies

Between 2006 and 2011, the DEECD through its Innovation and Next Practice Division conducted a number of action research projects using ICTs designed to cater for specific cohorts of students and teachers where there was an identified need or opportunity.

The ***Emerging Technology (2006-2007)***, ***Innovating With Technologies (2008-2011)***, and ***KnowledgeBank: Next Generation (2008-9)*** trials were all designed to encourage the innovative use of ICTs in schools to improve student outcomes, build workforce capability and promote system improvement (DEECD 2010).

The projects supported teachers in schools by building capacity to provide full curriculum coverage for all students and to work together to optimise learning opportunities for all students whilst minimising disadvantage (rural/remote students, indigenous students, students with disabilities, and disengaged learners etc.).

CASE STUDY 1: Chinese Language Learning With Web 2.0 Project (KB:NG 2009)

The Chinese language learning with Web 2.0 project investigated how Web 2.0 technologies may facilitate and support the acquisition of Asian languages (in this case, Mandarin) in schools. Four teachers and 80 students in two primary and two secondary schools participated in the trial. Three of the schools were suburban schools with one rural secondary school. The students comprised four classes – Year 5, Year 6, Year 7 and a mixed Year 9 and 10 class.

The participating teachers were asked to explore how the use of Web 2.0 tools and technologies, when embedded within the curriculum, might affect:

- student learning outcomes, in listening and speaking, reading and writing
- student attitudes and levels of engagement
- student and teacher confidence and capability in using ICTs
- communication and collaboration between students and teachers
- changes in teacher practice that reflect learning needs of students of Mandarin Chinese
- the level of contact hours students have with the language and the increased opportunities to be “immersed” in the language using Web 2.0 technologies between classes.

The students used lessons and activities downloaded from a wiki, and games and videos sourced from the web. Students demonstrated their learning by producing original audio, video and written texts, and these were uploaded to a social networking site (Ning) for sharing.

The teachers had three online meetings via virtual classroom technologies and kept in regular contact through phone and email. The meetings were held as a forum for exchange of experiences and suggestions regarding technical issues and good practice in managing student use of the online spaces.

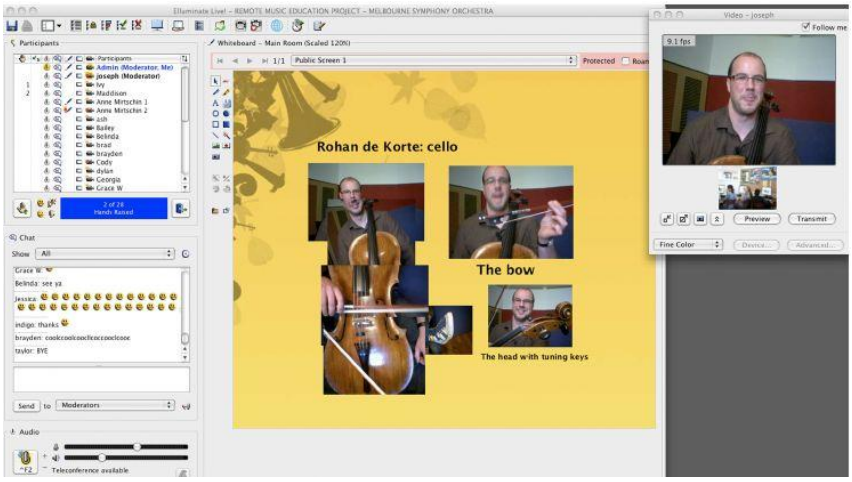
The findings included:

- student engagement, confidence and motivation to learn Chinese increased
- classroom behaviour improved with more students staying on task
- the school community, family and friends were able to get involved in the learning
- increased interest in using Chinese to communicate with other learners and native speakers
- a wiki served well as a resource centre especially for the younger students to get access to the audio and video resources beyond the language classroom
- students showed greater initiative and independent learning
- teachers increased their knowledge and confidence in Web 2.0 and ICT
- using new skills and creative activity gave teachers increased enjoyment in teaching.

CASE STUDY 2: Ping Online Music Education Project (IWT 2009)

The ***Ping (2009)*** online music education project trialled new ways of delivering music education using a blended learning approach. It incorporated in-classroom teaching artists, Web 2.0 and video conferencing technologies.

Focusing on music composition, this project was delivered over two terms in 2009 to four schools in the Wimmera region, targeting 70 students in Years 6 and 7. The project used professional guidance (synchronous) and recordings from Melbourne Symphony Orchestra musicians.



The ***Ping (2009)*** project was initially conceived as a remote delivery program.

It was anticipated that the blended learning model would result in:

- a better integration of the complex mix of technologies and skills involved, including music composition, and digital audio editing
- more assistance to schools in training and supporting teachers in all the key elements of the project within a short time frame.

Ping (2009) provided a basic introduction to composition by using music technology to lower the barriers for access. No music notation was used during the pilot with the aim of including students with no previous music experience.

The pilot project found:

- live video conference presentations by arts experts are extremely engaging and lead to strong educational outcomes for students
- listening and arranging skills are actively developed through composition activities using music technology
- literacy skills are actively developed through reading and writing blog posts and comments
- the blended learning model using classroom-based teaching artists coupled with Web 2.0 and interactive video conferences, did increase students' access to music curriculum resources and experts
- the project can be successfully run by generalist teachers if music teachers are unavailable
- that although this project substantively targeted music curriculum, similar projects might extend and improve students' learning in other curriculum areas.

Ping (2009) demonstrated the potential for a blended learning model to be used widely in music education. It would comprise:

- Web 2.0 technologies to provide students with creative read/write spaces online
- teaching artists in Melbourne bringing expert real-time music and music technology skills into rural classrooms to support teachers and students
- students undertaking creative composition tasks to apply the knowledge learnt from the video conferences
- sharing of students' work through uploading their compositions as mp3s to the Ping website
- ongoing feedback and commentary on students' work (teachers and peer to peer) through posting comments on the Ping blog
- professional development for teachers.

Future online music projects might use an increased repertoire of music styles that include jazz, rock, hip hop, electronic and folk music. This would be enabled by developing additional cultural partnerships.

CASE STUDY 3: National Gallery of Victoria Floating World Project (IWT 2009-10)

The ***Pictures of the Floating World (2009)*** project was developed in partnership between DEECD and the National Gallery of Victoria (NGV) with funding from Multimedia Victoria's Broadband Innovation Fund.

The ***Pictures of the Floating World (2009)*** resource featured an interactive scriptwriting activity, based on characters sourced from the *Floating World*

artworks. Using a mixture of traditional scriptwriting methods and animation techniques, students were able to explore and create their own *Floating World*-inspired digital stories using a variety of ICT media. Although *Floating World* was based on Japanese artworks, it was designed to have a broad appeal across all areas of the curriculum.

The project had two distinct phases. Phase 1, ***Pictures of the Floating World: from Japanese Woodblock Prints to Digital Story Telling (2009)***, involved the digitalisation of an exhibition of 19th century Japanese ukiyo-e woodblock prints from the NGV Asian art collection which was then packaged as an online resource for schools. A central feature of this resource was an interactive script-writing game *Stories From Old Japan*, where students could use various elements of the *Floating World* resources (objects, music, backgrounds, and characters from the original woodblock prints) to create their own stories of 'old Japan'. The artwork was supplemented with videos relating to Japanese culture, including a workshop on traditional woodblock printing techniques and musicians playing traditional instruments. See: http://www.ngv.vic.gov.au/ngvschools/FloatingWorld/stories/

Phase 2, ***Scaling Up Pictures Of The Floating World (2010)***, built on Phase 1 and demonstrated the capacity to scale up innovation and share practice across 20 rural, regional and metropolitan schools.

The project started with three broad aims:

- explore the efficacy of a model of knowledge transfer based on Web 2.0 principles (read/write/co-produce) in making resources developed by the NGV more accessible/ usable for Victorian schools
- document how teachers and students in different school settings use the Floating World resources and evaluate the impact of these resources on teaching practices and learning outcomes
- evaluate the process of scaling up an educational innovation across 20 diverse school settings.

Phase 2 of the project demonstrated the capacity for teachers to share best practice through an active online community. It also demonstrated the potential of the *Floating World* resource to generate a deeper interest and

understanding of Japanese culture and art among participating students and teachers.

CASE STUDY 4: Collaborative Rural Research Trials (Rural IWT projects 2010)

The ***Collaborative Rural Research Trials*** were six projects (over 24 schools) trialling the use of Web 2.0 tools to link students in rural schools. The primary objectives were to overcome issues of rural isolation; maximise learning opportunities for rural students; and at the same time, enable students to co-create and share work between schools to enhance their learning outcomes.

The projects included:

- *Sharing Our Environment* (2010)
- *Comparing Ecosystems* (2010)
- *Overcoming ICT Barriers In The Seven Hills Cluster* (2010)
- *Rural Kids Connected* (2010)
- *Using Web 2.0 For Languages Other than English in the Campaspe Network* (2010)
- *Stories From Around A Campfire* (2010)

> "*Our community is keen to continue this type of collaborative learning, and to work towards utilising the Ultranet as the collaborative learning platform*".
>
> Teacher, *Comparing Ecosystems (2010)*

The trials were highly successful with a number of significant findings emerging.

Some of the reported outcomes included:

- teachers stated that they used greater integration of Web 2.0 especially collaborative real-time communication technologies in their teaching and in curriculum planning
- students used online tools such as blogs and shared documents to reflect and discuss their learnings with their peers
- teachers relinquished their leadership role and allowed the students to explore their own ways of personalising their learning with the new technology
- the collaborative nature in which the students created project tasks led to better quality learning outcomes and multi skilling (i.e. questioning, prompting discussion, reflection, speaking etiquette)

- students' oral skills improved as they communicated across schools and when working in groups
- the opportunities for the students to view their own performance and that of their peers in the cluster schools heightened their awareness of the necessity to arrange their thoughts, use a clear voice, and use appropriate eye contact when collaborating using web conferencing.

CASE STUDY 5: VCE e-Biology Project (Hume region, 2011)

The ***e-Biology*** project combined the lessons learnt from a ***Podcasting in the classroom (2006)*** project with a *Country Education Project* framework developed as part of the e-Kids science digital learning program. This program aimed to enhance online learning provision and opportunities within rural communities by encouraging staff in these schools to develop and provide online learning in an area where they have expertise; providing professional development for teachers and community members; and engaging teacher trainee organisations in the provision of digital learning.

The project focused on the provision of VCE Biology Units 3 and 4 in a blended learning environment, using the *Virtual Conference Centre* for synchronous web conference sessions with students. More than 38 students participated in the project from eight rural schools across all five rural regions.

Ongoing evaluation of the project in 2012 will ensure that both teacher and student reflections are captured to support the overarching research question: *"How can blended learning, teaching and assessment broaden, enhance and improve learning outcomes for rural students completing VCE Biology?"*

The project reported the following outcomes and benefits from the project thus far, such as:

- better access to provision of VCE Biology Unit 3 and 4 courses to students in rural schools via web site posted content and weekly web conferencing sessions
- enhanced teacher capacity in facilitating learning in a blended learning environment with a largely online component

- the sharing of strategies and practices with the education community to support effective pedagogy and assessment in blended learning environments
- the impact of an inter-school team-teaching approach to curriculum planning and delivery
- anecdotal evidence of improvements in student performance.

CASE STUDY 6: The Victorian Virtual Learning Network (2008-2010)

The ***Victorian Virtual Learning Network*** (VVLN) project was a two-year proof of concept project investigating the ways of providing delivery of online VCE courses in Mathematical Methods, Physics and Psychology using a learning management system across a network of seven schools in the Loddon-Mallee Region.

The initiative was a response to the emergent and changing demands of contemporary students. The project also responded to the difficulties rural schools face in recruiting and retaining highly skilled staff to teach VCE Maths, Physics and Psychology specialist subjects.

The VVLN was investigating the delivery of these three subjects to remote students using a blended learning approach with the following features:

- high quality interactive digital resources that are available to students at any time
- regular support from the facilitator using online collaboration via a range of Web 2.0 technologies
- collaboration with the classroom teacher to support the online instruction
- interaction with students in other schools to enhance the learning.

The blended learning model was designed to test the versatility of learning forums and interactions; the capacity to customise student learning experiences to realise greater efficiencies from the existing ICT infrastructure; and to build superior curriculum content.

The project had a key focus of providing professional learning for teachers in the use of the new online and emerging technologies to ensure they have the skills in developing and delivering curriculum to students in an online environment, and to build the face-to face component of the model.

Some of the findings from this project included:

- online curriculum development was a far lengthier process than anticipated, especially when resources could not be sourced from elsewhere
- delivering subjects across schools required substantial cultural changes in adopting new approaches to teaching and in risk management
- there is considerable work involved in aligning timetables and in establishing a cohesive community to deliver across schools.

CASE STUDY 7: The Wimmera Rural and Remote Project (2008-2010)

The ***Wimmera Rural and Remote (2008-2010)*** project ran concurrently with the *VVLN* project described above and involved 11 secondary colleges across the Western district of Victoria. The project's primary aim was to determine what are the leading practices, innovative solutions and best mix of resources

required to address issues of educational disadvantage experienced by students, teachers and schools in rural and remote locations.

Key to this was the identification of ‘the best mix of viable and adaptable provision solutions in rural Victoria’. The project drew on the earlier local experience of online learning in the Grampians and the blended education delivery model that operates in Canada.

The project was able to deliver curriculum across rural schools using video conferencing technologies. The project had to establish a community of learning across the schools, standardise infrastructure, develop professional development for users (practitioners and students), align school timetables, and establish protocols for assessment and student support.

5. The Benefits of a Blended Learning Approach

The research projects completed by the schools described herein and in other INPD supported projects have shown that blended learning approaches enhance learning outcomes through:

- inclusion of more differentiated/personalised instruction
- increased access to resources, experts and learning opportunities
- more authentic and student driven tasks being incorporated into the curriculum
- higher student engagement
- greater opportunities for collaboration (especially beyond the classroom and involving the wider school community)
- exposure to a wide range of Web 2.0 technologies and acquisition of contemporary literacy skills
- better access to infrastructure and, anytime, anywhere learning.

5.1 Learning Outcomes

The series of trials in Victorian schools from 2006-2011 have demonstrated improvements in student learning, attitudes and engagement as a result of integrating blended approaches into teaching and learning.

The projects in these blended learning trials offered greater options for personalisation of study and put students in control of their own learning. Students were able to vary their pace of learning, drawing on as few or as many resources as necessary, choosing tasks/resources that best suited their learning styles and level of prior knowledge. Students could use teacher created vodcasts to review class work, practise their knowledge of a text by playing their aligned online games, and demonstrate knowledge of principles by recounting their own understanding of the topics through claymation storytelling.

Blended learning approaches allowed students to shine in competencies other than the traditional literacies, as leaders, ICT technical experts, cultural experts, resource managers, and negotiators. They also acquired new literacies of online protocols (cybersafety), intercultural understanding through exposure to global connections, and constructing/synthesising knowledge from non-linear content.

As a result, students became more informed, more resourceful and constructed their own learning paths, ultimately producing better work outputs.

Increased system knowledge of how to use and integrate ICTs into better teaching and learning practices raised expectations and outcomes for students.

Access to infrastructure assisted both teachers and students to achieve better outcomes through flexible access to content instruction and experts.

It enabled their work to expand beyond the classroom boundaries and provided students with the means to document and reflect on their learning, and share and validate their learnings through their personal networks. By using such tools as digital portfolios, films, and games they were able to create evidence that demonstrated deeper conceptual understanding, enquiry and knowledge.

Connected Learning

The Victorian blended approaches facilitated connected learning.

Students became better connected to their learning environments both in-school and beyond the school. This included teachers, coaches, peers and community experts, locally and globally.

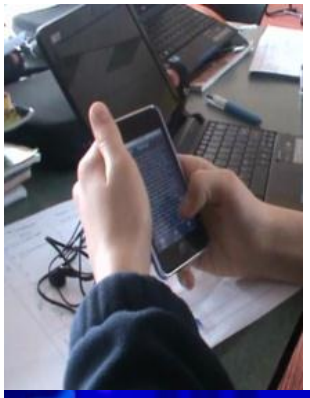
The portability of ICT devices and the ease of sharing the learning outputs via a range of online options extended learning opportunities well beyond the classroom walls through online conferencing, blogging, forums and discussion

boards. Students tended to produce more considered projects when their work was likely to be shared or viewed by parents, experts and their peers.

> *"Social networking, mobile technology and digital literacy are part of their regular, everyday lives and we are doing them an injustice if we don't include it in our daily teaching."*
>
> Teacher, *Sharing Our Environment (2010)*

5.2 Changes in Student Practices, Behaviours and Attitudes

Greater student engagement and motivation for completing tasks were observed. This has been attributed to familiarity with technologies already used by students outside the classroom and the novelty of some of the ICTs used in blended learning. As an example, online games were used successfully in exploring character roles and narratives with boys studying Year 9 English who previously showed little interest in reading books.



Collaborative tools (virtual conferencing), social networking (e.g. SuperClubsPLUS) and gaming were especially popular.

The breadth of learning tasks that ICTs can accommodate also contributed to higher levels of student engagement. In one example, students could test their knowledge through quizzes, acquire new knowledge through games and reflect on their learning by producing their own podcasts all on the one device, the iPod. Students began to control the construction of knowledge as there

was less dependence on traditional instruction and more self-driven tasks were allocated.

Students changed their behaviors to become more reflective, collegial and collaborative (engaging in peer coaching and team activities) and far more accepting of peer review and external feedback. Engaging in more reflective and self-monitoring tasks also enhanced their understanding.

Changes to the teacher-student relationship were also noticed when students were empowered to act as leaders, coaches, mentors and technical experts. Teachers were freed from having to understand the technologies, so spent less time on technical instruction and more time supporting learning.

A teacher participating in the ***Ping (2009)*** project noted that the students coped well with the new learning environment and as the project progressed felt more comfortable with it: *"The kids just seem to do it naturally!"* (Teacher)

One teacher from the ***Chinese Language Learning with Web 2.0 (2009)*** project observed that motivating students in language learning was often a challenge but that the use of blended approaches made the task so much easier.

A teacher from the ***Sharing Our Environment (2010)*** project commented that some students who were reluctant to communicate openly with others, were able to speak freely and contribute to class conversations after Skyping neighboring rural schools. In the same project, students enjoyed seeing the different work produced by other students and often included some of the ideas in their own work.

A similar outcome was also observed in the ***Stories from Around a Campfire (2010)*** project, where teachers noted that providing opportunities for the students to view their own performance and that of their peers in other schools heightened their awareness of the need to arrange their thoughts, use a clear voice, and use appropriate eye contact.

Student Comment from Victorian Projects

"Today I created a new piece of music. I think this is my best one so far! This music features the, dun nu dun nu, from Jaws! Also slow soft sounds and other cello noises! I made this music after we watched and listened to musicians from the Melbourne Symphony Orchestra in Melbourne.

Year 7 student, Hawkesdale P12 College, *Ping (2009)*

Teacher Comments From Victorian Projects

"He's a student who has some problems with some other classes, but he was thriving... I think it had a great effect on him ...".

Instrumental Music Teacher, *Ping (2009)*

"Using Skype with the students made conversations more student-centred as other students were asking questions and prompting discussions."

Teacher, *Sharing Our Environment (2010)*

5.3 Teacher Factors

Improved Pedagogy, Teacher Skills and Confidence

Research outcomes from Victorian blended learning projects reinforce current thinking that the positive impact of ICT on student learning outcomes is strongly linked to improved pedagogy and course design, especially the development of more authentic, student–centered learning tasks.

When ICTs were fully integrated into classroom practices, (embedding them as opposed to just adding technologies), it was noticed that teachers took a more deliberate approach to lesson planning.

They focused more intently on developing tasks relevant to a student-centred approach to learning activity design; designing tasks to accommodate different learning styles and purposes; making use of more diverse teaching resources; and improving their understanding of the technologies and subject content.

The research revealed that teacher confidence and knowledge of teaching with ICTs contributed to a more engaging and considered curriculum, and subsequently, better student outcomes.

Changes in Relationships with Students

Because students were allowed to assume the roles of leaders, mentors and co-creators, a new trust developed between teachers and students.

Teacher Development

The ***Ping (2009)*** project demonstrated the potential to build teacher capacity by engaging classroom teachers with Web 2.0 pedagogies in their classroom practices.

In the ***Rural Kids Connected (2010)*** project, teachers used Microsoft Communicator, Microsoft Live Meeting, Elluminate, Google Docs, blogs, and email for the majority of the collaborative planning. This enabled regular planning and professional development sessions to be carried out in a virtual environment, increasing participation and reducing travel. Teachers were also exposed to a variety of content creation tools, like GoAnimate and Voicethread. Google Docs was particularly useful in co-developing curriculum and assessment.

"In the past our teaching practice was to explain and model appropriate oral language skills to the students. We would instruct the students, provide situations that encouraged oral language and provide feedback. The strength of using the flip cameras and Skype was that it provided opportunities for the students to observe themselves and to self evaluate. More importantly these tools successfully engaged the students."

Teacher, *Stories from Around a Campfire (2010)*

"How can I prepare them for a digital world if I myself am not yet ready?"

Teacher, *Stories from Around a Campfire (2010)*

5.4 Community and Expert Involvement - Intercultural and Cultural Opportunities

Teachers learnt from their involvement in these blended learning trials that they didn't have to be experts on everything and that the students didn't expect them to be the founts of all knowledge. Projects like ***Ping (2009)*** and the ***Chinese Language Learning With Web 2.0 (2009)*** enabled the students to interact with community leaders and other subject experts in areas where this wasn't possible in a face-to-face setting on a regular basis.

Students participating in the ***Using Web 2.0 for Indonesian in the Campaspe Network (2010)*** project hosted three Indonesian exchange teachers and used a range of Web 2.0 technologies (e.g. voice threads, Screencaster, Glogster and Wikispace) to enhance their language skills.

In the ***NGV Floating Worlds Project (2009)*** students engaged with curators of the National Gallery whilst in the ***Creating Links with The Bayside Community Project (2010)*** students drew on expertise of local historians and local residents.

5.5 Addressing Disadvantage

Rurality – Connecting Small Rural Schools

Projects like ***Rural Kids Connected (2010)*** used blended learning as a way of connecting small schools in a cluster, allowing students to communicate regularly with other students from similar rural communities.

The technology not only allowed the students to further develop their ICT skills, the more exciting methods of communicating also helped enhance their communication skills. Students who were previously reluctant to engage in conversation began talking more freely when speaking with other students from different schools.

Students used a variety of technology such as easy speak microphones, flip cameras and digital still cameras to create videos and slideshows to share with the students at the other schools. Prep and Year One students used Skype on a touch screen computer to present their project work and writing to students from the other schools. They also communicated through written letters and emails.

The success of the ***Rural Kids Connected (2010)*** project encouraged one community to comment that they were keen to continue the collaborative learning approach and hoped to use the *Ultranet* as the collaborative learning platform.

These rural projects also assisted with isolation and transition to secondary school by making connections with students in their primary years.

The ***Ping (2009)*** project demonstrated that a blended learning model for music education has potential to address and alleviate access to high quality musical resources for rural schools in South-West Victoria.

The use of a blended learning model and the provision of digital resources provided a foundation for schools with limited music instruction to incorporate high quality music education into their curriculum offerings. The project was able to excite and engage the students' sense of musicality.

Disengagement

"By embedding blended approaches using ICT in science with a focus on living things students have experienced higher levels of engagement with a significant improvement in their observational skills, ability to collect and represent data, ability to correctly identify mini beasts, understand what a habitat is and the impact of different environmental conditions and an increase in their understanding and use of scientific language."

Teacher, *Comparing Ecosystems (2010)*

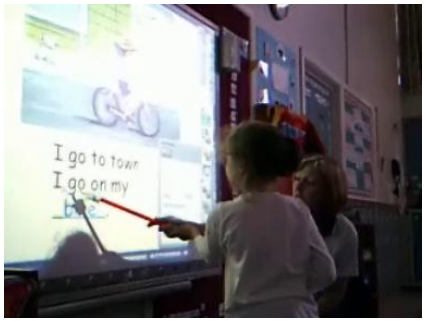
Similar observations were made in other VELS domains, especially in English and mathematics, where games, online quizzes and learners creating their own podcasts and animations kept students more engaged and even seeking their own learning opportunities.

Special Needs

The blended learning approach in these trials assisted students with special needs and preference for particular learning styles. Students who struggled with writing skills were able to express their understanding of concepts and

reflections through student produced vodcasts. Students with Asbergers developed confidence with socialisation and oral competency by making films using green screen technologies.

Students with disabilities used the electronic whiteboard and web cameras to view their own actions and achievements.



"This visual recording has been crucial for young learners who find it difficult to write or recount without a visual aid."

Teacher, *Sharing Our Environment (2010)*

5.6 The Advantages of Blended Learning

From a pedagogical perspective, blended learning aims to incorporate the best aspects of face-to-face classroom learning experiences with the best of mobile and online learning experiences.

This allows:

- an increase in learning outcome measures and lowering of attrition rates compared to fully online courses (Dziuban, Hartman & Moskal, 2004)
- an opportunity for students to practise technology skills in navigating online course materials and creating their own digital content for assessment
- an increase in student-teacher and student-student interaction through the use of communication tools like discussion forums, blogs and shared web content on the electronic whiteboard
- the ability to reserve face-to-face time for interactive activities, such as higher-level discussions, small group work, debates, demonstrations, or lab activities.

For students, the appeal of blended learning includes:

- flexibility and the freedom to learn anytime, anywhere
- some level of control over the pacing of their learning. Difficult concepts can be reviewed as often as necessary
- more engaging content that they can create and use their own initiative, and networks to shape
- the opportunity to engage and draw on expertise that would otherwise not be available to them without costly travel, such as virtual conferencing with zoo/museum/galley staff or virtual excursions to overseas historical or culturally significant landmarks.

6. Challenges in Implementing Blended Learning Strategies

The trial projects have identified a number of challenges for teachers and students to implementing blended learning strategies:

- developing blended pedagogy
- teacher support and professional development
- technological challenges
- student preparation/support and transition
- assessment considerations
- culture and innovation.

6.1 Developing Blended Learning Pedagogy

> *"For our teachers, especially those new to our school, the initial challenge is more a matter of mindset than an academic change".*
>
> *International Association for K-12 Online Learning (2008)*

Teaching using a blended approach can be challenging for some as it may require the acquisition of different teaching skills, re-designing the curriculum and the inclusion of new teaching and learning opportunities, managing the learning content both online, in-class and beyond the classroom walls, and preparing students to work in blended modes.

Most negative feelings towards blended forms of learning tend to be generated by poorly designed approaches. It takes a great deal of thought and careful planning to deliver a quality learning experience regardless of the mode of delivery (*Idaho Digital Learning Professional Development*, *2009*).

Adopting a blended learning approach must start with a re-examination of the intended learning outcomes. The teacher needs to design learning activities that support these intended learning outcomes, personalise or differentiate learning and then integrate these activities effectively with the required assessment tools.

Teachers should prepare their students for the blended learning style and discuss the new roles and responsibilities. Some students won't be used to working independently or may be unfamiliar with some of the technologies, so support mechanisms will need to be put in place for these students.

> *"At the heart of blended learning redesign is the goal to engage students in critical discourse and reflection. Course redesign is not just about putting courses online. It is about rethinking the way we deliver instruction in light of the possibilities that new technology offers."*
>
> *Garrison & Vaughan (2007)*

6.2 Teacher Support and Professional Development

Feedback from the trials indicated the capacity for teachers to incorporate new technologies into teaching and learning programs may be limited without an expanded time commitment, and better support from IT staff and additional professional development.

Professional development options to be considered include adding new competencies to the curricula, assessment schemes more suited to blended delivery, and graduate training to encourage blended teaching and learning approaches across all curriculum areas.

Other options might include motivating and/or rewarding teachers for the innovative use of blended learning approaches to improve student outcomes plus support from peers and technical experts.

Teacher training needs to include and refine competencies of teachers in taking on a more facilitative role: skills such as questioning, creativity, observation, differentiation/scaffolding, and facilitating collaboration and networking opportunities and especially in understanding of and imparting of knowledge of online protocols (such as cyber ethics and intellectual property).

Support for teachers can often come from peers. The ***Overcoming ICT Barrier In The Seven Hills Cluster (2010)*** project allowed the teachers from each school to communicate more effectively, and to plan curriculum tasks together, where previously they would only meet on cluster days or on an ad-hoc basis.

Some teachers in these trials were able to pair up with literacy and Ultranet coaches, as well as cultural partners (zoo, museum, gallery, state library experts) to achieve better outcomes from blended learning projects.

6.3 Technological Challenges

Access to devices was generally not a major issue in these projects, as schools were provided with a grant to enable them to purchase devices. However in all cases, the grant was not sufficient to support one-to-one access. Teachers employed techniques to enable devices to be shared - by having class sets and using rotations and/or by sharing device functionality through headphone splitters or interactive whiteboards, or assigning collaborative tasks that require sharing e.g. GPS and geocaching activities. It was very common for a number of technologies to be used within the one task. On the whole students viewed access as a privilege and worked hard to keep it.

Teachers participating in this research reported that technical support was generally available and is becoming less of an issue because devices are becoming more intuitive, teachers are offered professional development and most schools have some allocation of funds for technical support. Both students and teachers acquired more knowledge of the devices through these projects and collaborative teaching reduced the reliance on one teacher problem-solving technical issues. Access to technical assistance and ICT training opportunities remains an issue for some educators.

Ping (2009), ***Floating Worlds (2009-10)*** and ***Chinese Language Learning With Web 2.0 (2009)***

These projects identified a number of technological issues that needed to be resolved: a lack of bandwidth and IT support; web proxies and internet filters impacting on program delivery; and the cost of student access to the internet. Ping also identified the need for improved audio fidelity to avoid compromising

the quality of voice and musical instruments. Some of these issues have been resolved by higher bandwidths and changes to the standard operating environment by using eduSTAR and the Ultranet.

Ping (2009)

In the participating schools, the lack of broadband bandwidth and IT support were issues that hindered the rural schools' use of digital resources. Web proxies and filtering of internet content also had an impact upon the delivery of Ping into some schools. Schools also underestimated the amount of bandwidth required to run the Ping project.

School practices, such as charging students for internet access, had an impact on all students fully participating in the Ping program. The three participating secondary schools all charged their students for bandwidth. This affected student learning and the outcomes of the project.

Floating Worlds (2009-10)

Official school broadband speeds appeared adequate, however most participating schools reported that if a whole class was engaged in interactive internet use the broadband speed slowed to a crawl. This limited the capacity of schools to make optimal use of Web 2.0 technologies.

Some schools set a financial limit on students' downloads, and then charge students for any further costs. Where online resources are recommended by the Department, this should be accompanied by advice on how to minimise or remove the financial burden on students.

Chinese Language Learning With Web 2.0 (2009)

The teachers reported mostly positive experiences during the trial, however all four encountered difficulties in the integration of Web 2.0 tools in the language classroom due to a variety of technical and policy issues including:

- training in the relevant ICT skills
- familiarity with Web 2.0 tools
- a commitment to collaboration and student-centred learning that should underpin the languages program
- sufficient class access to the internet and relevant hardware
- sufficient time for professional learning, program planning and resourcing.

6.4 Student Preparation / Support / Transition

It's not only the teachers who need support for the transition to a blended learning environment. Students also need preparation and support for the transition to becoming more independent learners and self-managers.

Support for Students – the role of the wider workforce including paraprofessionals

Díaz and Entonado (2009) noted that the important role of teachers in blended learning is in 'facilitating of the teaching/learning process, combining the explanation of theoretical contents with activities, and encouraging interaction'.

Students also required additional assistance in understanding internet protocols especially those of cybersafety and intellectual property. Intercultural understanding was also an area that required guidance.

Students can also engage expert non-teachers (paraprofessionals) to assist with specific content teaching, for example scientists, especially through the use of Web 2.0 technologies.

6.5 Assessment Considerations

The way in which teachers assessed student outcomes in these blended learning projects changed, for example:

- reflection was encouraged, so students could go back to revisit their products such as podcasts and refine them
- teachers were able to assess many more skills than just traditional literacy (e.g. reading, writing) in activities such as digital story creation e.g. group work, media literacy and technical editing skills
- technologies that enabled frequent feedback (online quizzes) allowed for differentiated intervention
- engaging students in creating their own podcasts, films and games allowed teachers to assess deeper conceptual thinking and creativity
- monitoring using ICT was often instantaneous and timely, offering immediate opportunities for remedial action
- collaboration and peer review became part of the formal assessment using ICTs especially through blogging, discussion boards and film making, and this encouraged better performance
- assessment criteria in these projects were also more transparent to students (possibly due to the use of rubrics), raising expectations in performance
- the public nature of students' work and having an authentic audience (through blogging, web pages, online chat etc) made students more aware of social etiquette, the need to present better products and encouraged healthy competition between students raising academic achievement.

6.6 Culture and Innovation

The system and cultural influences on student performance, teacher practice and device access were profound.

Leadership and Peer Support

Teachers involved in these projects reported receiving encouragement from their school leadership and peers. Some principals came to visit the classrooms, provided extra time release, promoted the projects further e.g. to regional directors etc. Peers showed support by showing interest in the project, providing encouragement/ assistance, and by creating an expectation that there would be a flow-on effect across the school. This raised expectations, empowered teachers and students, contributing to better outcomes.

An Innovative Culture

A culture that encouraged innovation was typical for the success of these blended learning projects. In general the culture was accepting of change and risk and looked to overcome issues and to challenge students to do better.

7. Summary and Conclusions

Adopting a blended learning approach offers the appeal of combining different learning elements using the power of ICT while retaining a human touch.

A blended learning model should describe a planned and deliberate educational activity that integrates student-centred learning, classroom-based teaching and learning with mobile and web-based online approaches based on individual learners and their specific needs.

Learning initiatives such as the Victorian Virtual Learning Network Pilot for the Loddon and Grampians Regions and the Innovations Hub in Northern Region, as well as the Rural Education provision initiative are all based on the need for online learning infrastructure, policy and practices to facilitate 21st century learning.

The Ultranet supports these aims by providing online collaborative spaces, tools and digital resources in a state-of-the-art 21st century learning environment that enhance the physical classroom. This provides opportunities for students, parents and educators to share information, collaborate and engage in learning in a secure space. The Ultranet provides seamless asynchronous and synchronous eLearning environments to all Victorian Government schools.

There is a growing world-wide trend in initiatives that are explicit about the availability of learning anywhere, anytime. The underpinning notion is that teachers will need to be up-skilled quickly to cope with the virtual learning opportunities in the classroom.

8. Moving forward

The following is a series of questions for school leaders and teachers to consider when implementing blended learning in their schools. They address the needs of leadership, teachers, students, parents and infrastructure. Although none of the questions below are specific to a particular technology, the role of the Ultranet in supporting blended learning should be a key consideration as principals and teachers reflect on blended learning approaches to optimise student learning.

8.1 Considerations at a whole school level

Is there a whole school approach to blended learning (in terms of whole school culture, shared investment, and a common vision etc)?

How can school leaders support blended learning at a whole school level in relation to:

- Building teacher capacity
- Scaffolding students' transition
- Engaging parents and wider school community.

Has the school developed sufficient networks and collaborative arrangements to maximise blended learning opportunities?

8.2 Considerations for Teachers

What are the capabilities that teachers need to teach effectively in a blended learning environment?

Is there sufficient professional development for teachers to understand the potential that blended learning offers?

Is there sufficient expertise and collegiality amongst educators to design and deliver online curriculum?

Is co-teaching/team teaching well entrenched to allow more risk taking, and sharing of skill sets?

How do teachers change assessment to align to new learning approaches and skill acquisition?

How can blended learning practice be made more sustainable and effective?

8.3 Considerations for Students

Are the students equipped with new literacies to support safe and responsible use of technologies, collaboration beyond the classroom walls and synthesising information from wider-ranging repositories to learn effectively in an online/collaborative learning environment?

8.4 Technology Considerations

Is there adequate access to technology and technical support in (and beyond) the classroom?

What technologies would maximise particular skills sets? What potential risk and opportunities do they present?

Where to next? For example, gaming, social media, virtual classrooms, and virtual worlds?

9. List of Schools

Podcasting in the classroom (2006)

Wanganui Park Secondary College

Robotics for Rural (2008)

Airly Primary School

Bundalaguah Primary School

Cobains Primary School

Cowwarr Primary School

Loch Sport Primary School

Nambrok-Denison Primary School

Seaspray Primary School

Wurruk Primary School

Improving Literacy in ESL/VCAL Students Undertaking Workplace Learning (2009)

North Geelong Secondary College

Hiragana, iPods and Japanese Character Recognition (2009)

Derrinallum P-12 School

Ping (2009)

Balmoral Secondary College

Casterton Secondary College

Hawkesdale P-12 College

Heywood and District Secondary College

Creating Links with the Bayside Community (2010)

Sandringham College

Sharing My Voice (2010)

Eltham High School

Victorian Virtual Learning Network (2008-2010)

Bendigo Senior Secondary College

Boort Secondary College

Charlton P12 College

Donald High School

Hopetoun Secondary College

St Arnaud Secondary College

Wedderburn P12 College

Wycheproof P12 College

Wimmera Rural and Remote Project (2008-2010)

Balmoral Community College
Beaufort Secondary College
Birchip P-12 School
Dimboola Memorial Secondary College
Edenhope College
Goroke P-12 College
Hopetoun Secondary College
Horsham College
Kaniva College
Lake Bolac College
Mount Clear Secondary College
Rainbow Secondary College

Chinese Language Learning Web 2.0 (2009)

Doncaster Gardens Primary School
Doncaster Primary School
Horsham Secondary College
Keysborough Secondary College

Floating Worlds Project (Phase 2) (2009)

Amsleigh Park Primary School
Balmoral P-12 College
Birchip P-12 School
Brighton Beach Primary School
Collingwood College
Dimboola Memorial College
Elwood College
Fitzroy High School
Frankston High School
Geelong High School
Hawkesdale P-12 College
Maroondah Secondary College
Mt Beauty Secondary College
Mt Clear College
Nungurner Primary School
Princes Hill Primary School
Richmond West Primary School
Sydenham-Hillside Primary School
Toora Primary School
Wooranna Park Primary School

Rural Kids Connected (2010)

Nyah District Primary School

Ultima Primary School

Woorinen District Primary School

Sharing Our Environment (2010)

Grasmere Primary School

Nullawarre and District Primary School

Panmure Primary School

Using Web 2.0 for Indonesian in the Campaspe Network (2010)

Nanneella Estate Primary School

Rochester Primary School

Rochester Secondary College

Comparing Ecosystems (2010)

Bona Vista Primary School

Bruthen Primary School

Woodside Primary School

Overcoming ICT Barrier in the Seven Hills Cluster (2010)

Hepburn Primary School

Invermay Primary School

Mt Blowhard Primary School

Stories from around the Campfire Project (2010)

Langley Primary School

Newham Primary School

Tylden Primary School

VCE e-biology project (2011)

Camperdown College

Corryong College

East Loddon College

Hawkesdale P-12 College

Heywood and District Secondary College

Swifts Creek School

Warracknabeal Secondary College

Werrimul College

Wycheproof College

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