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A final report: An evaluation study of PLANE

(Pathways for Learning, Anywhere, anytime – a Network for Educators)

October 2012

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Introduction

PLANE[1] is an online professional learning network that aspires to bring together different platforms to support pre-service teachers (student teachers currently studying at universities), in-service (practising) teachers and school leaders in the public, Catholic and independent school sectors across New South Wales. These teachers have equal opportunities to access the PLANE website and to enrol in information and communication technologies (ICT)–focused courses; share resources and ideas; seek advice from each other; become involved in virtual and blended modes of peer coaching; and accumulate evidence of their professional learning.

The PLANE website was made live in May 2012 after a series of trials and an action learning–oriented process beginning in November 2011. (It will be officially launched at the Festival of Learning in October 2012.) To date, PLANE has been promoted mainly among teachers in NSW, but the technologies employed have the capacity to be scaled up in terms of number and geographical spread of users. There are plans in place to roll out this network for educators nationally.

This report describes the outcomes of the two-phase evaluation of the PLANE project. The first phase took place between November 2011 and April 2012. The purpose of this phase was to explore the potential of PLANE. An interim report was produced after this phase, which helped to inform its continuing development. The second phase took place between May 2012 and September 2012. The purpose of this phase was to gather evidence of the potential of this network for educators.

Most of the data that support the findings of this final report have been gathered from pre-service teachers, in-service teachers, school leaders and educational consultants who have had direct experience with PLANE. Data were gathered through interviews, case studies and online surveys. Potential participants in the data-gathering process were approached either directly or through their employing school. They include teachers, professional leaders such as ICT coordinators, positional or role leaders such as principals and coordinators, and members of PLANE teams including the Project Control Group, the Project Evaluation and Reference Group, the Project Advisory Group and the PLANE management team.[2]

Major findings

Comparison data between the two phases of evaluation of PLANE indicate major development of the network website. In particular, it has become more focused on its professional learning functions through its course offerings, participation of teachers in discussions about the integration of ICT into the curriculum, exchange of resources and experiences, and peer coaching. The PLANE mission and vision are now communicated more coherently, its facilities and pathways are better rationalised, and navigation across its facilities seems more logical.

[1]PLANE is an acronym for ‘Pathways for Learning, Anywhere, anytime – a Network for Educators’. The PLANE website is at http://plane.edu.au.

[2]The PLANE Management Team refers to the group of interviewees involved in the design and implementation of the project.

PLANE is focused on building educational communities whose participants exchange ideas and resources and seek help and advice freely across regional and sectoral boundaries. The core product of PLANE is teacher professional learning. The network has gained recognition from the NSW Institute of Teachers (NSWIT) as a broad provider of professional learning programs. PLANE's e-portfolio facility provides teachers with opportunities to formally accumulate evidence of their learning against NSWIT professional teaching standards.

Teachers across small and large schools and in remote and metropolitan regions also have opportunities to coach new teachers online, and to formally present evidence of their coaching to meet professional development requirements.

Users also have opportunities to discover relevant innovations and to connect with other teachers with similar professional interests. A diverse range of ICT-focused learning opportunities is offered through PLANE. Teachers may enrol in Skills Snacks, Gateways, Quests, courses and programs through the various PLANE pathways (see below for more detail).

Data indicate that the Skills Snacks short courses and the Share Club are among the most popular PLANE pathways. In-service teachers in particular are often working in challenging new environments where they are expected to use computers and mobile devices and to integrate these technologies into their student learning programs. They are short on time and require professional learning programs that meet their needs. PLANE offers them tools to learn on their own, at the time of their choice and through their preferred modes of learning.

It became obvious at the end of the first phase of evaluation that one of the significant challenges associated with the PLANE project was the delay in its scheduled implementation. Gathered evidence indicates that there are attempts to meet deadlines. The rationalisation of the PLANE pathways has helped in working towards meeting its schedule.

The sustainability of PLANE is another challenge. This includes the ongoing provision of resources and responsibility for the site as a whole once the current funding arrangement concludes in 2013. In addition, the success of PLANE is in part reliant on a high-quality broadband network, which currently is not available in many parts of Australia. Finally, it was identified in the interim report that, due to the fluidity of personnel working on the project, there is a need for clear planning for future project management.

The management team recognises that the sustainability of PLANE needs to be considered, with some of its resources requiring further quality assessment toassure that they offer a high standard of professional learning for teachers. Part of the attraction of PLANE will be its ability to provide accredited professional learning for teachers and educational leaders.

Some of the other criteria identified as being crucial to PLANE's success include ensuring that it offers a product that teachers need. Most of the initial efforts put into the development of PLANE were directed at the ICT needs of in-service teachers. Later in the development of the network efforts were directed towards pre-service teachers. The current product for pre-service teachers needs to be reviewed in view of formal analysis of current teacher education programs and the need to ensure the smooth transition of student teachers into the profession.

Efforts towards meeting the leadership stage of the professional teacher career continuum have focused on supporting professional leadership, particularly within the ICT domain, rather than addressing the needs of role or positional leadership, such as school principals. The PLANE management and control teams recognise that more efforts are needed towards developing this network for educators to meet these needs. However, these efforts are still in their infancy, and it is likely to be beneficial to all teachers if they are supported regardless

ofcareer stage (whether pre-service, in-service or school leader) or role (whether teacher or school executive).This inclusive view of the teaching profession is a distinctive feature of PLANE that should be maintained.

The e-portfolio facility in PLANE is also distinctive. It has undergone major development between the two phases of evaluation. While teachers who have used the facility seem to be satisfied with its features, they report that they feel a need for more support through direct examples and better scaffolding. Thee-portfolio is one of the cornerstones that support the potential of PLANE as a provider of teacher professional learning. Hence more attention should be given to ensure the inclusivity of this facility for all teachers, regardless of their level of digital literacy.

The 'virtual worlds' features incorporated in the PLANE website has as yet unproven appeal for teachers, and may be better implemented at a later date. The PLANEmanagement team recognises the intensive demands of this facility on the resources allocated to PLANE and on the hardware of current school networks. Evidence indicates that teachers are not attracted to this facility. On the other hand, game-based learning does seem to attract teachers.

Recommendations

1. The innovative aspect of PLANE should be maintained and should continue to be promoted within the relevant school sectors and the wider educational community.
2. The e-portfolio facility, as one of the most innovative features of PLANE, should be maintained. Systematic data gathering is needed to ensure the inclusivity of this facility so that it can be used easily and efficiently by teachers regardless of their level of digital literacy.
3. Consultation should continue to expand, and collected information on PLANE should be shared among all stakeholders to ensure that they are actively involved.
4. Efforts should be made to ensure wider participation of teachers in PLANE. These efforts should be directed towards teachers in the three school sectors: public, Catholic and independent. Effective marketing must be used to promote the advantages of PLANE to each of these sectors. Online platforms such as Facebook, Edmodo and Twitter as well as more traditional means of dissemination such as flyers and face-to-face visits should be used.
5. Teachers and educational leaders from the three sectors should feel that they are true partners in the development of PLANE as a professional learning network. For example, the incorporation of the online version of Teach Meetwithin the PLANE platform has been effective. Other avenues of cooperation and empowerment at individual teacher and school levels should also be pursued.
6. Consideration should be given to the creation of professional learning school-based networks within PLANE. Certain schools may be approached for the purpose of creation of such networks. These school-based networks would serve and support the specific professional learning needs of these schools.
7. The active involvement of school positional (role) leaders, particularly principals, is essential to the adoption of any change or innovation. More systematic efforts are needed to ensure that these leaders are aware of PLANE and its potential. Such efforts should include opportunities for hands-on experiences for these leaders that are packaged and promoted in manners that facilitate their participation given the ever-growing demands on their time.

8. A concerted effort should be made to publicise PLANE to the education faculties of universities that offer teacher education programs. These efforts should be preceded and informed by systematic investigation of current teacher education programs and of the needs of student teachers with respect to smooth transition into the profession of teaching.

9. The current opportunities that are available for teachers to share ideas and contribute openly through the applicable facilities within PLANE should be maintained. Teachers should be encouraged to participate freely and to share their ideas and resources. At the same time teachers should be guided to respond professionally to these shared materials and to assist in their development to ensure their quality and usefulness.

10. To maximise the benefits of shared resources and ideas, efforts should be made to tag and classify them. As the volume of shared material is expected to grow rapidly if efforts to promote PLANE are successful, there is a need to devise a workable system to review these tags and classifications. The role of Highly Accomplished ICT (HAICT) Educators as reviewers of shared materials should be emphasised and incorporated into future workable review systems.

11. A strong system of quality control with clearly and publicly communicated criteria should be introduced to ensure that all current and future PLANE facilities are consistent with quality expectations.

12. PLANE provides links to many existing websites. These links should be maintained and in fact strengthened and supported by well-developed smart search strategies to facilitate teachers' access to the resources they need. It would also be advantageous for PLANE to work with and integrate resources already offered on the websites of its partners, such as the Department of Education and Communities, the Association of Independent Schools and the NSW Catholic Education Commission and the Catholic Education Offices.

13. The channels of professional growth and learning that are currently offered by PLANE should be enhanced. These channels would benefit from an effective self-assessment facility and workable peer-coaching programs. PLANE's existing efforts to incorporate the current NSW peer-coaching program are acknowledged and appreciated; however, there is a need to further develop workable systems of needs identification and peer matching. It is recommended that a study be conducted to assist in the development of such systems. This study should be undertaken by a team that is independent of PLANE but incorporates educators with expertise in peer coaching and needs assessment.

14. Efforts should be made to develop concrete examples of ICT integration into the various subject and key learning areas that are currently taught in primary and secondary schools or would be taught as the National Curriculum is implemented. While the technological skills and creativity of the PLANE teams and their associated efforts are recognised, the curricular dimension that provides the context for these skills and efforts needs to be developed. It is recommended that teams of consultants and expert teachers from existing bodies in the public, Catholic and independent sectors be incorporated to help in the development of these concrete examples.

15. The evidence collected during the evaluation process indicated the potential of virtual peer coaching. However, this evidence was based on small numbers of participants, so the effectiveness of this facility would need to be evaluated further with a larger number and wider range of participants before wider adoption of this facility could be recommended. This further evaluation should include a critical examination of the current capabilities of schools in terms of hardware and software, and a cost–benefit analysis of the facility.

16. A relevant strategic and sustainable system should be developed to ensure the continuous development of PLANE facilities in response to identified needs. Survey results indicate that some teachers prefer greater opportunities for social interaction. It is recommended to consider including social networking facilities within PLANE.

17. Strategic plans should be developed to ensure the maintenance of current facilities. Mechanisms should be established to monitor technological developments in learning theory and pedagogy, to ensure the capacity of PLANE to adapt its operations accordingly.

18. While it would seem more workable to place the management of PLANE within one school authority, it is recommended that the cross-sectoral nature of PLANE be maintained. It is further recommended that the current group structure of PLANE should be maintained at NSW state level. Further examination of this structure will be necessary if PLANE is rolled out nationally.

Introduction

The PLANE (Pathways for Learning, Anywhere, anytime – a Network for Educators) website can be viewed at **http://plane.edu.au**.

Context

Educators today are faced with the challenge of facilitating students' learning and fostering their ability to equip themselves for an unknown future, but one that will definitely involve the effective use of information and communication technologies (ICT). Our ability to manage knowledge and communicate information is an important aspect of living and working in the 21st century. It affects not only the manner in which we work, study and play but also the very nature of learning for both students and teachers. Developments in digital technologies have transformed the world in which we live, leading to the expectation that we can now operate personally and professionally anytime and anywhere.

"All young people need to develop knowledge, understanding and skills in the discriminating, ethical, innovative, creative and enterprising use of a range of technologies and the processes through which they can design, develop and produce innovative technological solutions" (ACARA,2012). Professional learning for teachers is crucial to the provision of authentic learning for students. Teachers need to be involved in the same type of technology-rich learning environments that they aim to provide for their students.

Traditional school cultures are not fully equipped to support the professional learning communities needed to respond to the outcomes promoted by current and future curricula, and to provide learning that promotes 21st-century skills. Today's teachers require professional communities that share knowledge through face-to-face, virtual and blended communication. Greg Whitby, executive director of schools in the Catholic diocese of Parramatta, NSW, supports collaboration in learning, which is consistent with the PLANE approach. "We have to move from the teacher in isolation to the teacher working in teams, and that mirrors what is happening across all industries. A focus on building teacher capacity, involving them in continuing professional learning and getting them to share their practice with each other is long overdue" (*Sydney Morning Herald*, 2012).

The PLANE project has emergedat a time of political debate, at both federal and state levels, about the training and maintenance of effective teachers. Most research accepts that beyond the role of a student's home and family, the quality of teaching has the greatest impact on student achievement. "Lifting the quality of teaching can be done only by improving the knowledge and effectiveness of the existing workforce" (SMH, 2012). Professional learning for teachers is seen as a core means by which effective change may occur within an education system. PLANEhas responded to the challenge of creating an environment for professional learning and development that is appropriate for the dynamic and digitally based community of today. It aims to empower teachers to provide the best possible opportunities for students to create and thrive in the ever-changing digital world.

The Australian Government provides funding for the PLANE project through its Digital Education Revolution, which aims to promote sustainable and meaningful change to teaching and learning through the development of online and interactive education and training projects. PLANE, with its aim of increasing teacher proficiency in the use of ICT in teaching and learning, has been funded under the ICT Innovation Fund.

PLANE is a resource that provides free customised learning experiences to educators across all sectors, school levels, career stages and subject areas. The project involves a consortium from the Department of Education and Communities, the Catholic Education Commission NSW, the Association of Independent Schools and the Council of Deans of Education, with industry partners Adobe and Microsoft. It aims to cater for every career stage of the professional teaching continuum, from pre-service teachers to in-service teachers, school leaders and teacher educators. This cross–sectoral and career level involvement is an innovative approach in the Australian education environment. With access anytime, anywhere, the project also responds to the needs of educators in metropolitan, regional and rural areas as well as those at school, at home and in the wider community.

PLANE provides a learning environment where these educators can connect to each other to share ideas and experiences and offer support, as well as to more accomplished teachers who will offer advice and coaching. It aims to be a dynamic and vital hub for ICT professional learning.

PLANE pathways

The PLANE project aims to “use cutting-edge technology and best practice methodology to ubiquitously empower all educators to learn, create, collaborate, innovate and transform their teaching practices to, in turn, inspire and enable their own 21st-century students” (PLANE mission statement).

Its targeted outcomes are to:

- support an interactive educator community for all teachers
- make professional learning fun
- expose teachers to a networking space for the sharing of ideas and resources
- provide professional development courses for teachers
- create a virtual world environment for peer coaching and other interaction
- support an avenue for accredited professional learning for teachers
- create and link to innovative educational digital resources and tools
- incorporate a game-based learning environment
- develop ICT skills in teachers
- provide an avenue for e-portfolio development
- inspire teachers to collaborate, innovate, create and explore using ICT
- encourage users to contribute to and sustain the PLANE network
- operate a successful pilot program in NSW, demonstrating potential for national and global possibilities.

Teachers log into PLANE through their existing accounts with Google, Facebook, Twitter, LinkedIn, Yahoo, Messenger and so on. They create a profile that liststheir teaching areas and interests, and this profile will then auto-populate with connections to other teachers with similar interests.

The learning pathways offered through PLANE are tailored to different levels of proficiency, and lead to accreditation in the ‘graduate’, ‘proficient’, ‘accomplished’ and ‘leading teacher’ classifications in the national professional teaching standards.

Through the PLANE environment, teachers may participate in a forum where they can seek advice and guidance. They may join the peer coaching program to receive ongoing support in the process of incorporating ICT skills into their classroom. They may also connect with other educators through a group, or form their own, to collaborate with others with similar interests. PLANE has been innovative in developing virtual world technologies to provide simulated 3D environments where teachers can collaborate with each other across urban, regional and remote areas. This feature is at experimental stage at the time of writing.

Users of PLANE have the opportunity to develop their own customised learning e-portfolio through which they can set goals and collate evidence of learning. They are invited to collaborate with other educators, update their knowledge and participate in self-guided learning, share experiences, knowledge and resources and take part in peer-coaching training. These learning experiences are categorised by PLANE into four groups: connecting, learning, sharing and leading. The features of each category are as follows.

Connect

Ask an expert

This is a forum where users can seek advice or guidance from educators who are highly accomplished in ICT in teaching.

Virtual worlds

These comprise several 3D simulated environments where users can learn, experiment and collaborate with other educators across urban, regional and remote areas. This feature remains in the experimental stage at the time of writing.

Peer coaching

Based on Microsoft's internationally recognised Peer Coaching Program, this feature provides user with ongoing support from peer coaches as they learn and apply technology skills to their classroom practice.

Groups

Users can join or create a group to connect with other educators who are enrolled in the same courses or who have the same interest of curriculum areas. They can share ideas, interact and collaborate to create richer learning experiences for their students.

Learn

Skills Snacks

These are short, engaging courses presented in video format, that address current and emerging technologies that will have significant effects on learning.

Courses

These are more in-depth, guided learning experiences focusing on new technologies, skills and concepts. Each course includes a forum for peer support and interaction.

Gateways

These are portals to specific content that allow users to explore a comprehensive range of multimedia-related information, resources and learning experiences collated from both internal and external sources.Theycover both curriculum-related and broader educational concepts.

Quests

These are self-directed, inquiry-based learning experiences that address the bigger questions about ICT in education while giving educators a better understanding of the benefits of inquiry-based learning. Quests can be undertaken individually or in collaboration with others.

Leornian

Users can become immersed in this 3D learning game designed to teach educators about game-based learning theory. They can learn how to plan, design and implement game-based learning for their students.

Share

Share Club

Share Club is an annotated bookmarking feature where users can share knowledge, experience and resources by posting links, creating discussions and interacting with other educators. It also allows users to learn from the experiences of other educators and to find the resources, ideas and inspiration they need to use new technology to create engaging learning experiences for their students.

Lead

Leadership pathways

These are learning experiences specifically for the benefit of leaders and aspiring leaders, giving them the skills and processes they need to effectively incorporate technology into the learning experiences at their schools.

Peer coaching training and program

This feature teaches users how to guide others along the path of learning to integrate technology into their classrooms.

Technology

PLANE is a complex environment offering a range of online experiences that require myriad software solutions for management, networking, gamification and organisation. The challenge of providing the tools to enable the complexity envisaged for PLANE has been enormous. Expertise in technical development and support has been provided in-house and has also in some cases been out-sourced. The concept of customised pathways for teacher learning has remained the foundation of PLANE, and solutions to support this have been sought locally and globally. Further challenges have arisen throughout the development of the project, as the PLANE platform also needs to provide seamless access from the different systems and platforms used by each school sector and across the nation. Access to high-quality broadband has been an assumption, and is necessary to support the high multimedia component of PLANE resources and services.

Different software platforms have been employed in the development of the PLANE project, including the following.

Drupal, an open-source content management system, is used to organise, manage and publish the PLANE content in different ways.

Moodle (modular object-oriented dynamic learning environment), a free open-source learning platform, is used to manage the courses and generate progressive data, with some profiling.

Mahara, an open-source e-portfolio and social networking web application, controls the digital portfolio, setting and monitoring professional learning goals, storing artefacts as evidence of learning and organising groups for networking.

Google Analytics is used to gather data in order to track performance and social networking activity.

The **Badgeville** behaviour platform is used as a software-as-a-service (SaaS) resource for gamification and behaviour analytics. Game-like mechanics are used to keep educators engaged and to make PLANE experiences more enjoyable.

OpenSimulator (**OpenSim**) is the open-source virtual-world server used to develop the PLANE virtual worlds. It runs on a server to which the player connects using a virtual world viewer.

Imprudence is the virtual world viewer. It organises the immersive learning environment and the game-based learning features, as well as supporting networking and coaching.

Sloodle is the OpenSim plug-in that allows integration between the virtual world and Moodle.

Unity3D is an integrated authoring tool used to create 3D videogames to introduce users to the world of gaming.

PLANE developments

As the concept of ‘TeachMeet’, where groups of teachers meet to share ideas and resources, blossoms in the NSW education environment, PLANE has responded to the needs of teachers in remote areas and those who are unable to attend their local TeachMeet by providing this concept online. Topics such as ‘Transforming your classroom with technology’, ‘Edmodo innovations’, ‘The value of personal learning networks’, ‘Using video in your teaching’ and ‘Leading learning with ICTs’ have attracted a pleasing number of participants and enhanced communication between teachers. A future Teach Meet will focus on the virtual world environment of PLANE.

Similarly, the concept of ‘LeadMeet’ for school leaders has been incorporated into the PLANE environment. Recognised educators are invited to address groups of school leaders on topics of relevance.

PLANE aims to transform practice, ensuring that new ideas, strategies and concepts are implemented in the classroom to enhance learning. It plans to do this by empowering teachers to develop strategies appropriate to the demands of the 21st century.

PLANE has been evolving since its inception. Its underlying philosophy of professional learning has not changed, but testing and evaluation have led to improvements and further development. The functionality, user experience and effectiveness of professional learning on PLANE have been evaluated through a number of different trials and promotional activities, as outlined below.

Trials

October 2011: North Coast trial

This trial was held at the North Coast Leadership Centre and provided an opportunity for teachers to be trained and accredited as Microsoft Peer Coaches, as a vehicle to assist in the implementation of ICT within the North Coast Region. An online learning module within the PLANE environment was also trialled.The e-portfolio function of PLANE was introduced, tested and evaluated. This group of teachers and teacher leaders formed a key group of early users providing advice on the development of PLANE.

November 2011: Virtual World Bootcamp

This trial involved pre-service teachers, in-service teachers and school leaders from regional and metropolitan locations across all sectors. Participants provided feedback on the potential contribution of PLANE to professional development and on their personal feelings about the experience, includingthe sign-in process, professional learning options, Virtual World Bootcamp and the help and support provided. Fourteen participants completed this general survey, while 39 participants provided specific feedback on the Virtual World Bootcamp.

February–September 2012:Virtual peer coaching sessions

A comprehensive information pack was provided to participants and this event moved from a proof-of-concept exercise to a level where participants test peer coaching on the 'Coach Away Island' region within the PLANE virtual worlds. Participants were invited to participate in the Virtual World Bootcamp and in peer coaching trials. These sessions tested the technology and provided valuable experience for potential peer coaches.

April–May 2012: User experience testing

These sessions aimed to evaluate the material presented in the PLANE environment. Small groups of around 10 participants and then online sessions provided an opportunity for a facilitator to discuss the experience and gather relevant data. A formal evaluation form was also completed. At the conclusion of each session, recommendations were made that should lead to better functionality and improved user experience.

May 2012: Soft launch

At the 2012 Technology in Education K–12 Congress in Sydney, the PLANE project was presented as an avenue for professional learning (it will be officially launched at the Festival of Learning in October 2012), and conference participants were invited to register and participate in PLANE's pioneer program.Of those who registered, 150 were selected to participate in the Highly Accomplished ICT (HAICT) Educator program, to be trained to assume leadership and mentoring roles within the PLANE community.

June to September 2012: TeachMeet

The TeachMeet concept of short presentations for teachers by teachers has been moved online by the PLANE team. Such events have occurred on a monthly basis and strong attendances of teachers from all sectors and teaching areas has provided valuable data on teachers' learning needs. PLANE has responded to feedback from participants and offered a range of topics in response, from using Edmodo in the classroom to developing professional learning networks.

June to July 2012: Masterclasses

Les Foltos, founder of Microsoft's Peer Coaching Program, provided a masterclass in June on Coach Away Island, the purpose-built virtual world in PLANE. A second masterclass on collaboration was facilitated by Les in July, again using the virtual world within the PLANE environment. These events modelled the concept of using a virtual world for professional learning.

August 2012: LeadMeet

Donald Brinkman from Microsoft conducted a live-streamed session about gamification in education, sharing his experience of games for learning at Microsoft Research. Further sessions on topics nominated by the participants are planned.

Ongoing: Virtual World Bootcamps

These events have been offered on a regular basis at three different levels to cater for user needs. They provide valuable feedback to the PLANE team, test the technology and involve users in a virtual world experience.

Ongoing: Highly Accomplished ICT (HAICT) Educator training

These sessions have been conducted in Parramatta, Orange, Port Macquarie, Wollongong, Newcastle and South Penrith. They allow participants to explore the potential of PLANE. HAICT Educators are encouraged to moderate topics, groups and forums within the PLANE community and to take leadership roles running events through PLANE.

Promotional activities

The PLANE team has taken every opportunity at conferences, seminars and other events to promote PLANE to the three targeted levels of educators across all sectors. A high level of interest has been noted after each event. At such presentations, true stories of nominated PLANE participants illustrate the potential of the project.

Literature review

Professional networks for teachers

All educators need timely, job-embedded assistance to adapt new curricula and new instructional practices to their unique classroom contexts (Guskey & Yoon, 2009). One means teachers use to gain this assistance is the teacher network. Teachers' professional networks have been in existence for many years. These networks are defined by "voluntary, reciprocal interactions among teachers that enable teachers to share or acquire the professional expertise that strengthens service to students" (Adams, 2000, p. 19).

Identified shortcomings in conventional professional learning models have sparked a shift towards community-based models for the purpose of providing the ongoing support teachers need as they educate students. With advances in ICT and ICT infrastructure in schools, online environments can be created and used in a meaningful way to support teachers' professional practice. These online environments are a recent trend in education and can be designed to nurture the development of online learning communities to facilitate teacher professional learning (Lock, 2006).

According to Morris, Chrispeels and Burke (2003), successful teacher networks are the foundation of strong professional communities, and provide opportunities for teachers to develop:

- deeper knowledge of their subject area
- greater pedagogical expertise
- a culture of collaboration
- skills in examining their own practice within a supportive context
- links with others in their subject area and within the education profession in general
- strategies for organisational change, including preparation for leadership roles.

Other benefits of online networks, as identified by Thomas (2004, p. 3), include that they:

- *"reach teachers regardless of where they live and work.* Physical barriers to access are removed, allowing 'anytime, anywhere' and 'just-in-time' learning to occur. This gives teachers access to information and resources when needed. Some teachers have referred to this as help only a 'click' away.
- *eliminate or reduce travel time and expense.* Given declining budgets, limiting the cost and use of cars, hotels and meals holds considerable appeal. Because online learning provides teachers with the flexibility they need to engage in training when it fits their schedule, fewer days away from the classroom or office are necessary and therefore reduce the need for substitutes".

Such networks were previously facilitated solely through face-to-face meetings or paper-based communication. Since the advent of the internet,professional and indeed other networks have dramatically increased in number (Brown & Green, 2003). There is an expectation today that teachers will use technology for professional and lifelong learning (European Commission, 2007). Professional organisations such as the Australian Association of Mathematics (http://aamt-makeitcountnetwork.ning.com) and the Science Teachers' Association of NSW (www.stansw.asn.au) have online networks, as do many others throughout Australia and beyond.

The most important benefits of teacher networks identified by Moore and Rutherford (2012) were the “reciprocal arrangements in terms of sharing a rich and varied pool of resources, and the professional support available from within and beyond the network from others with the same issues and a key common purpose” (p. 74). One of the challenges was that “[c]ontinually shifting membership means a continual need to reassess and renegotiate others’ agendas. Hard-won compromises can suddenly be reopened” (Huxman & Vangen, 2000, p. 799, cited in Moore & Rutherford, 2012, p. 75).

The selection and use of technology affects how communities can be fostered within and beyond the scope and structure of the intended learning environment and target audience. Reliability and scalability of technologies must be considered to accommodate a larger user group within dynamic, collaborative learning environments. Therefore, creating and sustaining online communities that facilitate high-quality ongoing professional learning must be carefully planned and well supported, if the intention is for teachers to become active and long-term members of these communities (Lock, 2006).

Networks wider than in-service teachers

The issue of both pre-service and in-service teachers belonging to the same online network has been raised by Tammets, Pata and Laanpere (2012). According to their findings,“[t]eacher students feel excluded from the teachers’ community, which is why they are afraid of sharing their learning materials in public” (p. 68). Vavasseur and MacGregor (2008) have claimed that the social networks and communities of educators of our day have begun to appear in technologically supported form. However, in the Tammets et al. study, teachers stated that “using technology takes extra time and decreases face-to-face communication”, emphasising the negative role of technology (Tammets et al., p. 68).

There are also concerns about networks incorporating both teachers and teacher trainers (Helleve, 2009; Lambert, 2003), in that there is a barrier between the two groups relating to the traditional lack of collaboration between teachers with different levels of professional expertise (Cassidy et al., 2008).

In order to encourage teachers and educational leaders to engage in professional online networking, it is important to provide them with the tools with which to undertake this. Solomon and Solomon (1995) suggest providing software for teachers to develop their skills, which is what currently occurs in NSW Department of Education and Communities (DEC) schools. Likewise, teachers need to be provided with up-to-date computers or mobile devices so that they can engage in online training anywhere and anytime. The provision of these devices should also come with professional onsite technical support and the authority to download software to support online networking. Currently this does not occur in NSW DEC schools. Until it does, teachers cannot readily be expected to engage in professional networking in their own time.

Another factor to consider with respect to establishing online networks for teachers is that they may already belong to such networks, which also serve as informal social spaces. Participation in informal social networks can be a powerful catalyst to teachers improving their practice (Schlager & Fusco, 2003). One of the main reasons for participation in informal social networks is that it fulfils the user’s immediate needs or desires. “This ‘’just-in-time’’, as opposed to ‘’just-in-case’, need-to-know basis can transform teachers into active knowledge builders possessing substantial autonomy regarding the specific knowledge they require” (Granger, Morbey, Lotherington, Owston & Wideman, 2002, p. 574).

Facebook is an example of an informal social network that links many teachers to each other socially and allows connections to be easily generated.[3] Not only does Facebook serve as a social networking site, it also serves as a professional networking site for teachers. Table 1 is a screenshot showing some existing discussion groups for teachers on Facebook (Rutherford, 2011).

Table 1: Examples of discussion groups for teachers on Facebook

Facebook Teacher Discussion Groups Descriptions	Number of Participants
You know you're a teacher when... A group for all those who are in the "rewarding" (i.e. doesn't pay well!) profession of teaching or training to be a teacher	38,504
Primary Teachers - Resources, ideas, stress relief!: Basically, I was planning today and thought why not set up a group for all those primary teachers out there where we can share resources, good websites, ideas and general stories to relieve the almighty stress that is being a primary school teacher!!	28,374
Ontario teachers - resource and idea sharing: As Ontario teachers, we have a wealth of experience and useful ideas to share. We know what works, and what does not work. Let's share what we have discovered!	8,153
Teacher Ideas for all ages!!!! Sharing fun activities, useful information, ideas with other teachers. Preschool-5th grade	901
Beginning Teacher: A group for those in their first few years of the teaching profession, to share ideas, offer support, etc. Also a group for those who will soon be entering the teaching profession and are interested in what those beginning years are actually like	657

Table1 also shows the number of participants in each group, with the first one having 38 504 members. These networks also have the advantage of sustainability, as they are set up and managed by teachers. They also allow easy cross-sector participation. As reported by Rutherford in her analysis: “With 91 percent of the post falling under Shulman’s (1987) categorisation of teacher knowledge, it is evident that these discussions are relevant and have the potential to impact teaching practice” (2011, p. 24).

It is clear from the literature that teachers are participating in many and varied online professional networks. These networks are being organised both formally through associations and informally through sites such as Facebook. Each of these sites offers something to teachers that supports their professional needs. It should be remembered, however, that while participation in networks has many benefits, there are also many challenges involved in setting them up and sustaining them.

Online professional learning

Online teacher professional learning models can provide high-quality learning opportunities. They can give teachers access to experts in a given field and allow them to collaborate with other teachers with similar interests. Additionally, online learning allows time for reflection and dialogue. It can provide flexibility in scheduling, timing and the development of personal learning spaces. It can also be empowering, as teachers can take ownership of their own learning. However, there are challenges involved with this type of learning. Experts in a given field are not always the best teachers. Although they may understand the content, imparting it to others in a way that is comprehensible can be a challenge. Therefore, mentors

[3] LinkedIn was recently reported to be the most frequently accessed social networking sitein New South Wales.See www.smh.com.au/technology/technology-news/state-of-denial-facebook-not-such-a-turnon-says-report-20120528-1zfc5.html.

and experts may need extensive training in online interaction, pedagogical knowledge and best teaching practices for the given content area (Sprague, 2006).

Online learning environments that can be accessed anywhere and anytime afford new possibilities for teachers. These technologies are transforming the insular working environments that teachers have in the past commonly experienced. The capacity of these technologies, along with the use of networked communities of inquiry, provides a forum where teachers can work online in collaborative, collegial spaces, investigating ideas, engaging in pedagogical conversations, sharing resources and expertise, reflecting on practice and providing support. Such technologies provide a means of collaborating with other teachers both within and outside their own school and region as well as with others outside the teaching community (Lock, 2006).

For online communities to evolve to support teacher professional learning, it is critical for key educational stakeholders to consider how communities can be interwoven throughout teachers' professional practice, the curriculum, the institution and globally within professional organisations and professional thinking (ibid.).

General issues identified with professional learning for teachers

Despite the benefits of online networks for supporting teachers' professional growth, they have also been criticised by both researchers and teacher educators on the grounds that teachers need to watch and discuss reform-based practices for the nature of the reforms to be grasped (Barab, Barnett & Squire, 2002). In examining discussions of teacher professional learning programs in the literature (see, for example, Barab, Makinster, Moore & Cunningham, 2001; Reitzug, 2002; Sparks & Hirsh, 2000; Stein, Silver & Smith, 1999; North West Regional Educational Laboratory, 1998), a number of shortcomings were identified. The following issues have influenced the level of impact professional learning has had on teachers changing and improving their practice (Lock, 2006).

Workshop-based delivery

Of all professional learning activities, none has been more disparaged in recent years than the workshop, particularly those of short duration. Criticised as being the epitome of ineffective practice, many education leaders regard workshops as a waste of both time and money. Many workshops are indeed wasteful, especially the one-off variety that offers no genuine follow-up or sustained support. However, allof the studies reviewed that demonstrated a positive relationship between professional learning and improvements in student learning involved workshops or summer schools. These positive workshop experiences focused on the implementation of research-based instructional practices, involved active-learning experiences for participants, and provided teachers with opportunities to adapt the practices to their unique classroom situations. While many workshops are poorly organised and focus on unproven ideas and strategies, as a form of professional learning they are not as ineffective as they are often made out to be. Effective professional learning requires considerable time, and that time must be well organised, carefully structured, purposefully directed and focused on content, pedagogy or both (Guskey & Yoon, 2009).

Use of the transmission model and external experts

Shifting from the transmission model to a community model of professional learning requires a focus on how teachers learn rather than on how much the provider can teach (Burns, 2002, p. 302). According to Barab et al. (2001), this approach to professional learning should be "fostering a culture of sharing, and providing sustained support for teachers (i.e., knowledge networks) as they evaluate both their beliefs and practices" (p. 74). Research carried out by the North West Regional Educational Laboratory (1998) found that professional learning needs to be "intensive and sustained; it occurs through collaborative planning and implementation; and it engages teachers in opportunities that promote continuous inquiry and improvement that is relevant and appropriate to local sites. …[It should involve] communities where inquiry is a stance, not a project or strategy, [and] groups of teachers and students teachers engage in joint construction of knowledge through conversation and other forms of collaborative analysis and interpretation" (Cochran-Smith & Lytle, 2001, p. 53).

Many authors suggest that teacher professional learning should be strictly onsite and should build on the combined expertise of in-house staff members. They believe that the most effective way to bring improvement is to have educators in each school meet regularly to explore common problems and seek solutions based on shared experiences and collective wisdom (Guskey & Yoon, 2009). While this may be an appropriate starting point, it is rarely, if ever, sufficient (Holloway 2000). A review by Corcoran, Fuhrman and Belcher (2001) found that when decisions about professional learning were primarily school based, staff members paid lip service to the use of research and "were more interested in designs that drew on research about practices that they already felt were 'good' than in designs that were producing results" (p. 81). According to these researchers, "the decentralization of decision-making appear[s] to be undermining the use of knowledge rather than promoting it" (ibid.).

However, educators at all levels must demand better evidence from consultants and purveyors of new strategies and practices. Stories about what happened at one time in a single school may be interesting, but they do not justify broader implementation. What we need is trustworthy, verifiable, replicable and comparative data. In addition, those promoting particular ideas or techniques often preface their comments with 'Research shows …' in order to enhance credibility. School-based educators must be prepared to question such claims, asking such questions as: 'What research?''When was it conducted?''Was it undertaken in a context similar to ours?' Consultants have the responsibility of knowing that research in sufficient depth to answer these questions. If they do not, then they should at least have the courage and integrity to say, 'I don't know' (Guskey & Yoon, 2009).

Insufficient time

System-wide presentations that do not provide sufficient time for planning or learning new strategies to meet the reality of the participants' own classrooms are not highly regarded. This is professional learning that has been organised in terms of events or periodic activities, with a focus on training that tends not to be context specific and fails to provide opportunities for teachers to reflect on their beliefs and practices (Lock, 2006). Professional learning advocates have lamented the lack of time for staff members to engage in high-quality professional learning. Obviously, teachers need time to deepen their understanding, analyse students' work and develop new approaches to instruction. However, providing more time for professional learning yields no benefit if that time is not used wisely. An analysis by Kennedy (1998) showed, in fact, that differences in the time spent on professional learning activities were unrelated to improvements in student outcomes.

Conversely, Guskey and Yoon (2009) found time to be a crucial factor in success. While the number of contact hours ranged widely across studies – from five to more than 100 hours – those initiatives that showed positive effects involved 30 or more contact hours. It seems clear that effective professional learning requires considerable time, and that this time must be well organised, carefully structured, purposefully directed and focused on content, pedagogy or both (Birman, Desimone, Porter, & Garet, 2000; Garet, Porter, Desimone, Birman & Yoon, 2001).

Insufficient follow-up

For decades professional learning experts have stressed the importance of follow-up activities. Virtually all of the studies that showed positive improvements in student learning included significant amounts of structured and sustained follow-up after the main professional learning activities (Guskey & Yoon, 2009). In a nationwide study examining the question 'What makes professional development effective?', Garet et al. (2001) found that:

> sustained and intensive professional development is more likely to have an impact, as reported by teachers, than is shorter professional development. Our results also indicate that professional development that focuses on academic subject matter (content), gives teachers opportunities for 'hands-on' work (active learning), and is integrated into the daily life of the school (coherence), is more likely to produce enhanced knowledge and skills (p. 935).

To achieve such ends requires thinking differently about professional learning. Professional learning cannot be perceived as an event or a periodic activity required to address only system-wide training needs. Sufficient time is required to plan, learn and reflect on new strategies and practices grounded in the context and content of the reality of the teachers' classrooms.

Failure to address school-specific differences

Discussions about best practice have dominated professional learning circles in recent years. Debates frequently arise from these discussions about which particular professional learning activities or designs are most effective and work best (Easton, 2004). Our analysis of well-designed studies identified no common set of activities or designs linked to effect on student learning outcomes. In each case, the structural features of the professional learning activity were determined by the specific content involved, the nature of the work and the context in which that work took place. This corroborates the position taken by the National Staff Development Council (2001), which argued that the most effective professional learning comes not from the implementation of a particular set of best practices but from the careful adaptation of varied practices to specific content, process and context elements (Guskey & Yoon, 2009).

Irrelevant content

Equally debated in recent years has been what professional learning content is most likely to lead to improvements in student learning (Guskey & Yoon, 2009). Professional learning efforts in investigations researched centred on enhancing teachers' content knowledge and their pedagogic content knowledge (Shulman, 1987). The activities were designed to help teachers better understand both what they teach and how students acquire specific content knowledge and skill.

Characteristics of online professional learning for teachers

There is a need to be cautious about assumptions made and factors taken into account when attempting to create and sustain online learning communities that positively affect teacher professional learning. In the literature (see, for example, Eib, 2002; Hunter, 2002; Killion, 2000; Schlager, Fusco & Schank, 2002), the following four factors have been identified as hindering the success of online communities for professional learning: technological challenges, lack of learner readiness, school culture, and poor quality of the professional development community(Lock, 2006).

Available technology and network infrastructure influence teachers' willingness to use online communities. Infrastructure instability at the time of online activity becomes an obstacle to teacher participation (Hunter, 2002). Schlager et al. (2002) noted that conventional internet applications such as asynchronous discussion forums and websites are inadequate in supporting the desired goals of ongoing discussion within a community. Ebbs and flows in conversations and collaboration using conventional applications also influence the potential of an online community. Technological infrastructure should be in place that provides the necessary access to technology, is flexible and accommodates the needs and desires of the community (Lock, 2006).

It should not be assumed that working online is commonplace for all teachers. Not all teachers are ready, nor do they want, to become online community participants. According to Salmon (2000), to work effectively in an online environment, teachers need to be self-motivated and independent learners and have the necessary level of technological skill and self-confidence. Salmon further argues that"[w]hen participants feel 'at home' with the online culture, and reasonably comfortable with the technology, they move on to contributing" (p. 29). Assessing the needs of teachers will determine what strategies and supports need to be put in place to assist them as they develop technological proficiencies and a sense of personal confidence in participating in the online community. Developing confidence and appreciation of ICT in their personal and professional practice will affect how teachers use and interact within the online community for their professional learning.

The school culture can also be a barrier to the transition to an online community of learners. Current educational structures, teachers' busy schedules and competing educational priorities influence when and how often teachers access and participate in the online community. Further, when participating in an online community, teachers are expected to share their ideas in a public space and to work in a collaborative forum, leading to the development of collective knowledge. "Learning from colleagues requires both a shift in perspective and the ability to listen hard to other adults, especially as these adults struggle to formulate thoughts in response to challenging intellectual content" (Grossman, Wineburg & Woolworth, 2001, p. 973). Therefore, the transition from working in an insular to a collaborative environment using technology must also be considered when designing online communities (Lock, 2006).

Within schools, consideration must also be given to the provision of adequate time and resources to support the use of online communities in facilitating professional learning. Hunter (2002) argued that for change to occur, teachers need support and incentives to participate in ongoing professional learning. Current school schedules do not facilitate collaborative work by teachers. Online communities must remain closely attuned to teachers' needs and goals if they are to be sustained. Educational stakeholders who support online communities to facilitate professional learning must monitor and be responsive to the needs of the community and provide the necessary support and incentives to nurture that community. Schlager et al. (2002) argued that building a community is a matter of building capacity through a systemic online educational approach that addresses the teacher, the provider and the larger educational community.

Failure of online professional learning communities can also be a result of the contrast between the number and the quality of online professional opportunities. The power and direction of the community must come from community members. It cannot be imposed on them, if the community is to be sustained.

> As a community grows among its members, it becomes intentional and sustainable. The richness and diversity of interactions among the community members are based on the nature and ideology of the community, which attracts members and inspires them to contribute and be active participants. Community building takes time, commitment, and a willingness to work with others in a community way. Community-building in online environments is a voluntary and participatory process, but it is also a relatively new and unexplored area of online life (Di Petta, 1998, p. 62).

There is also a need to understand what motivates teachers to seek online professional learning opportunities. For some, such programs are mandated by their school or university. For others, a need to obtain continuing education credit is the motivator. Some teachers voluntarily seek out such opportunities. Understanding teachers' motivation and needs can help with the design and creation of online learning environments. Sprague (2006) reported that teachers who voluntarily participate in online learning environments are influenced by their school climate: those who come from a controlling school with little support seek online learning environments to have their ideas validated, while those who come from a supportive school seek online learning environments to find ideas for improving their teaching and their students' learning.

Unfortunately, many teacher professional learning programs are not of high quality, offering fragmented or intellectually superficial content (Borko, 2004). In addition, these programs are unable to provide ongoing support for teachers as they attempt to implement new curricula or pedagogies (Barnett, 2006). This problem is exacerbated when teachers attempt to implement these new strategies in environments made hostile by reluctant peers or administrators. As a result, teachers often become frustrated with professional learning because it is ineffectual or requires large investments of time they do not have (Sprague, 2006). Furthermore, in the US it has been determined that a lack of day-to-day professional support and mentoring for entry-level teachers – assistance that current approaches to professional learning generally fail to provide – is a major factor underlying the nearly 50 per cent attrition rate among new teachers within their first five years in the classroom (National Commission on Teaching and America's Future, 2003).

The need for professional learning that can fit within teachers' busy schedules, that draws on powerful resources often not available locally, and that can create an evolutionary path towards providing real-time, ongoing, work-embedded support has stimulated the creation of online teacher professional learning programs. Many of these programs are working to realise other potential benefits of online communities of practice among teachers, such as the opportunities for reflection offered by asynchronous interaction, the contributions of teachers who tend to be silent in face-to-face settings but 'find their voice' in internet-mediated interactions, and the unique affordances for learning of immersive virtual simulations (Dede, 2004).

A commonly stated reason for lack of involvement was lack of external motivation. Lebec and Luft (2007) reported that respondents indicated that their professional learning course would have been given higher priority had they been receiving a grade or university credits or been working towards a degree. This highlights the need for external motivators in web-based learning to encourage the consistent use of media associated with online courses.

Generally, these programs are available to teachers at their convenience and can provide just-in-time assistance. In addition, they often give schools access to experts and archival

resources that financial and logistical constraints would otherwise limit. Online professional learning programs are potentially more scalable than those that depend purely on local resources and face-to-face interaction. Some pedagogical strategies (such as lectures) are likely to be more effective facetoface than online, but others (such as extended discussions) may be more effective online than facetoface. A broader range of participants may be able to 'find their voice', many people can contribute at the same time, and the period available for discussion may be extended. The availability of attractive online options not possible in face-face professional learning is one reason many programs are moving to blended or hybrid models that attempt to combine the strengths of both (Sprague, 2006).

Contexts in which online professional learning is feasible

Over the past decade, many teacher educators have grown increasingly dissatisfied with traditional and individualistic approaches to teacher education and professional learning (Barnett, 2006). This dissatisfaction has led educators to recognise that teachers need experience in collaborative learning communities where they are afforded opportunities to articulate, reflect on and share their teaching experiences with their peers (Barab et al., 2002; Grossman, et al., 2001). The emphasis on building collaborative learning experiences has sparked numerous efforts to transform existing teacher education programs into learning communities that link pre-service teachers with experienced teachers and teacher educators (Cochran-Smith & Lytle, 2001; Grossman et al., 2001; Putnam & Borko, 2000).

Sherer, Shea and Kristensen (2003) acknowledged that teachers, through their lifelong professional learning, seek out peers to help facilitate their own growth and development. This has traditionally been achieved mainly within face-to-face environments, such as conferences, workshops and informal conversations. Moreover, through their years of experience and professional learning activities, teachers have worked to refine their craft of teaching (Lock, 2006).

It is the partnerships and interactions among people who gather together that define community, and not the digital media used to connect them (Riel, 1996). Computer systems simply provide the online gathering space for connections and interactions that foster the "process of building and rebuilding interpersonal relationships" (Di Petta, 1998, p. 62). Groups of people not only interact but also "learn from each others' work, and provide knowledge and information resources to the group related to certain agreed-upon topics of shared interest" (Hunter, 2002, p. 96). There is responsiveness to the contributions of the community members (Hunter, 2002; Garber, 2004), and interactions are based on influence among community members, not on power relationships (Di Petta, 1998). Participants need to be contributors, not just observers or consumers of the group's knowledge.

Four key factors need to be considered in conceptualising online communities to facilitate teacher professional learning. Firstly, there is a need to develop new images of online learning communities that are not inhibited by current perceptions of professional learning or the use of course-based training environments (for example, face-to-face workshops put online). Being creative and imaginative in designing and facilitating an online communal space is necessary if it is to be a living, dynamic community where teachers are personally compelled to be active participants (Lock, 2006).

Secondly, the goal is to create a dynamic learning environment that involves knowledge construction. The community needs to be well structured yet flexible, in order to be responsive to the needs of teachers and to the evolution of the community, based on its members' visions and goals (Lock, 2006).

Thirdly, enthusiasm, commitment and dedication are required for the development of the community. The creation of a safe and trusting space, the relevancy and currency of content in meeting the needs of learners, the nature and richness of online discussions and the nature of participation and interaction all affect motivation, commitment and the engagement of community members. However, members of the community also have a role and responsibility in fostering enthusiasm and commitment to the community (Lock, 2006).

Finally, purposeful selection of appropriate digital technology is a critical component.

> Without proper planning, technology can become a disconnected add-on, creating a sense of frustration and loss of time rather than learning opportunities for participants. In addition, resources and supports need to be in place to nurture an understanding of how to use online technologies to attain goals and to cultivate community in meeting the professional learning needs of the community members (Lock, 2006, p.674).

A culture shift is required when conceptualising professional learning using online communities. The transition to online communities alters current beliefs and practices and transforms current notions of professional learning. Online communities can function outside conventional practices and time frames. This gives teachers new opportunities with respect to how and whenthey can engage in these communities and provides new possibilities for the communities to evolve over time to support members' needs and foster ongoing opportunities for teacher renewal (Lock, 2006).

The breadth and depth of the nature of the work conducted within communities are influenced by technology, the level of trust and comfort working in the online learning environment, the building of relationships and the nature of the collaborative inquiry. Further, developing an online learning culture requires a shared understanding by all educational stakeholders involved in conceptualising, developing, implementing and sustaining a community model of professional learning. The learning environment should be structured to support and nurture teachers in taking greater ownership of their learning, honouring learners and learning in the community, and nurturing the lifelong learning of teachers. Shifting a culture and developing a learning community take vision, dedication, perseverance and time (Lock, 2006).

Games and learning

Games have been a part of every teacher's repertoire since teaching began, so there is nothing new about educational games per se. This section addresses the specific context of electronic games as learning activities.

Electronic games have been used to support learning for some years now. A number of terms relate to concepts that come under the broad heading of games, including' gamification', 'game-based learning', 'virtual worlds' and 'simulations'. Gaming can occur using a number of different media. There are video-based games such as those found on Wii and Xbox as well as games found in online environments such as Second Life or Quest Atlantis.

A 'serious game' is a blend of game elements, simulation and pedagogy that leads to the learner being immersed in and thus motivated by the aims of the learning interaction (Wexler, Corti, Derryberry, Quinn & Van Barnveld, 2008). Serious games use state-of-the-art gaming technologies for the development of adaptive instructional solutions. According to the Serious Games Blog (n.d.), "a serious game may be a simulation which has the look and feel of a game, but corresponds to non-game events or processes, including business operations and military operations. The games are intended to provide an engaging, self-reinforcing context in which to motivate and educate the players."

As Aldrich (2009a, p. 4) explains:

> Educational simulations are part of a formal learning program and are built primarily to nurture specific learning goals in participants, while adhering to program goals to achieve desired results. Yet as with all simulations, educational simulations require participants to develop real skills, and do so through emergent learning. They can be single player, multiplayer, or massively multiplayer, and include many genres.

An and Bonk (2009, p. 44) have developed a framework of games to guide educators, which consists of the following 12 elements:

1. scaffolding
2. problem
3. exploration
4. content
5. interaction
6. agency
7. learning through doing
8. pausing to reflect
9. learning through failure
10. adaptation
11. character
12. engagement.

Benefits of gaming

Educational gaming was examined in *The Horizon Report*, as follows.

> Games can be applied across the curriculum, and research is continually uncovering new uses. Using games in practice helps present concepts in new and interesting ways, makes topics more approachable to the novice learner, and provides new opportunities for collaboration and competition among learners. One aspect of gaming that makes it so flexible a tool for teaching and learning is the way it can be approached from the angle of game creation as well as play(New Media Consultants, 2006, p. 17).

Aldrich (2009b, p. 5) reports two cases where students learnt through simulation games while a control group learnt by traditional methods. Testing revealed significantly greater improvement in those who learnt by simulation games. In one of the cases cited, the students who learnt using the simulation also had significantly greater recall and application after six months.

> Maybe the most compelling reason to adopt gaming technology is that is improves critical thinking and literacy. Players must take on new identities, solve problems through trial and error, and gain expertise or specific types of literacies to be successful in a game. A player learns to think critically while at the same time gaining embodied knowledge through interactions with the environment (Annetta, Folta & Klesath, 2010, p. 31).

Game-based learning can also be effectively used to support the development of leadership skills (Andrews, Sanchez and Lee, 2010). Table 2 sets out some examples of leadership skills that may be developed through game-based learning, instructional techniques that may be used to attain them and simulation or gaming elements that may be employed.

Table 2: Leadership skills, instructional techniques and simulation/game elements

Leadership Skills	Instructional Techniques	Simulation/Game Elements
• Decision making • Problem Solving • Critical Thinking • Interpretation • Analysis • Inference • Strategy Formation • Reflection • Judgment • Self-Regulation	• Digital Storytelling • Learning by Doing • Case Study • Guided Discovery • Coaching • Learning from Mistakes • Situated Learning • After-Action Review	• Challenge • Rules/Controls • Fantasy/Mystery • Sensory Stimuli • Single Player/Multiple Players • Cues/Feedbac

Source: Andrews et al. (2010, p. 410) Challenges in gaming.

Learning from a sociocultural perspective occurs in social interactions where two or more individuals collaborate (Vygotsky, 1978). Effective learning happens where collaboration can occur within authentic settings (Lombardi, 2007; McKenzie, Morgan, Cochrane, Watson & Roberts, 2002). However, collaborative online learning and the formation of communities of learners is often stifled by the opaqueness of the technology (Campbell & Uys, 2007).

> For example, engaging in online discussions is often through a text-based interface in the form of textual conversations posted to a space that resembles a notice board. There is little identification of the person who posted the message and the responder has no visual image of the person to who they write, beyond their own imagination(Campbell, 2009, p. 104).

While virtual worlds such as Second Life do provide more visual cues, they still lack many of the cues available in face-to-face interactions.

Another of the challenges of gaming and game-based learning is the fact that it tends to be biased towards males. This is a particularly significant factor in the education community, where a large percentage of teachers in primary and secondary schools are female.

> Textual analyses suggest that game content contains gendered, patriarchal and stereotypical representations of females and a general lack of female game characters (Bryce & Rutter, 2003, p. 6).

Many female game characters fulfil stereotypical roles, such as the helpless ‘damsel in distress’ awaiting rescue, or the ‘prize’ for completing game tasks (Gailey, 1993). Considering this alongside the dominance of stereotypically ‘masculine’ themes (such as war, sports, competition and acquisition) and high levels of violence, computer game content has been claimed to be uninteresting or offensive to females (Dietz, 1998; Greenfield, 1996; Kafai, 1996; Kinder, 1996). This lack of connectedness with gaming for females means that it is less likely to appeal to female teachers as a source of professional learning.

Use of rewards in gaming

Typically, much of the satisfaction and motivation offered by gaming comes from the intrinsic rewards involved. There are also extrinsic motivations, such as badges and points.

> Awarding badges has also become a key ingredient in 'gamifying' online social media experiences. The large-scale implementation of badges has been around since 2002 with Microsoft's Xbox Live service. Social systems such as Foursquare, StackOverflow, and Wikipedia also use badges as a way of engaging and motivating users (Antin & Churchill, 2011, p.1).

Some of the functions of badges are that they promote goal setting among users, provide status and instruction and provide group identification. Interestingly, Kapp (2012) states that gamification is not badges, points and rewards.

Peer coaching

The peer coaching program has been developed as a model for the professional development of teachers, and trains teacher leaders to serve as peer coaches for colleagues. As coaches, these teachers assist their peers in identifying ways that technology can strengthen classroom curriculum and enhance their students' academic achievement. Peer coaches teach skills by breaking them down into behaviours, modelling them, observing them and then providing feedback. They help teachers to engage in regular, reflective discussions about instruction (Guiney, 2001) as well as providing resources, consultation and 'just-in-time' support. They also help their colleagues to develop the necessary technological skills and instructional strategies to integrate technology into teaching and learning (Foltos, 2011).

Peer coaching was designed to address the fact that most teachers work in isolation and do not have meaningful experiences with collaboration, yet Darling-Hammond's (2009) work found that collaborative approaches to professional learning can promote school changes that extend beyond individual classrooms.

Peer coaching focuses on three things:

- developing the communication and collaboration skills needed to build trust and effective collaboration
- strengthening lesson design skills to improve learning activities so they reflect 21st-century learning
- understanding best practice in technology integration so that teachers can use technology to enhance student learning (Foltos, 2011).

Teachers often look first to colleagues when they need assistance to integrate technology into their classroom. By providing job-embedded, ongoing professional support, peer coaches can help them to build new strategies and skills by:

- encouraging reflection and analysis of teaching practice
- fostering collaboration among teachers throughout the school
- using the school's teacher leaders
- providing ongoing, cost-effective staff development

- providing opportunities for professional growth for their colleagues, whatever their experience with integrating technology.

Peer coaching offers schools the capacity to offer sustained, high-quality assistance to its teachers. It provides coaches with the knowledge, tools and support needed to enhance student learning. Russo (2004) found that effective staff development was ongoing, deeply embedded in classroom work, specific to the relevant level and academic content, and based on research. It also promotes collaboration and a sense of community among teachers. Russo also noted that school-based coaching met these criteria extremely well.

When comparing teachers who had worked with coaches with those who had not, Joyce and Showers (2002) found that,comparatively, teachers who had worked with coaches:

- practised new strategies more often and with greater skill
- retained and increased their new skills over time
- demonstrated a clearer understanding of the purposes and uses of the new strategies.

When teachers combined participation in traditional workshops with peer coaching or methodologies that promoted collaboration and reflection, more than 80 per cent of teachers used newly learned strategies in their classrooms (Joyce and Showers, 1996; Joyce, Murphy & Showers, 1996; Richardson, 1999).

Teachers involved with peer coaching reported that they received meaningful feedback, motivation to direct their learning, increased levels of trust and morale among themselves and justification to do more work (Arnau, Kahrs & Kruskamp, 2004). Richard (2003) found that schools with anonsite staff developer to organise and support professional development opportunities experienced improvements in student test scores, increased staff stability and increased numbers of teachers embracing content standards. Peer coaching can be customised to meet teachers' individual needs and skill levels.The content is drawn from the curriculum, it is integrated into classroom life and it is less disruptive than other types of professional development (McKenzie, 1999).

Studies have also found that teachers who are in coaching relationships are more likely to try new skills or techniques, and that areas not routinely discussed with a coach showed little or no refinement (Kohler, Crilley, Shearer & Good, 1997). In a study by Ross (1992), student achievement was higher in classes where teachers had more contact with their coaches. Similarly, Sparks and Bruder (1987) found that 70 per cent of teachers with coaches felt that their new techniques led to marked improvements in students' academic skills.

Virtual worlds

Three-dimensional (3D) technologies have become a fundamental element of almost all modern computer games. They are also central to the new generation of immersive virtual worlds, such as active worlds, Second Life and Open Sim (Delgarno & Lee, 2010). Virtual worlds provide a vehicle for offering learners 'lived experiences' or 'immersive learning' (Salmon & Hawkridge, 2009).The ability of virtual worlds to support groups or communities of learners and to aid in engagement and collaboration has been identified as having key benefits for education and training purposes (de Freits & Veletsianos, 2010). Virtual worlds can support radically different models of education for two reasons. Firstly, they allow the learner to do things that would be difficult or impossible to do in the physical world. Secondly, evidence shows that they encourage playfulness and testing of boundaries (Twining, 2009).

Virtual worlds provide an environment in which space takes on new meanings and people bring different understanding about how to behave.Twining (2009) reports that teachers using virtual worlds find it difficult to know what sorts of activities to implement or how best to organise them. This lack of understanding of how to use virtual worlds to support learning contrasts with the physical world where there are clearly established and dominant models of education. This creates uncertainty about how best to use the virtual space to support learning.

Virtual worlds exhibit a unique set of characteristics from a pedagogical point of view. Hedburg and Alexander (1994) suggest that their most important defining feature is the "transparent interface with which the user directly controls the objects in the context of the virtual world" (p. 215). They see virtual worlds as having the potential to offer a superior learning experience due to increased immersion, increased fidelity and a high level of active learner participation. Many authors have stressed the importance of immersion and presence, suggesting that these are critical features distinguishing virtual worlds from other types of computer applications (see, for example, McLellan, 2004; Mikropoulos, 2006; Mikropoulos & Strouboulis, 2004).

While a sense of presence in a virtual world has traditionally been used to refer to a user's perception of 'being there', a more recent area of research involves the examination of 'co-presence', defined as the sense of 'being there together' with other geographically dispersed users (Delgarno & Lee, 2010). Edirisingha, Nie, Pluciennik and Young (2009) found that virtual worlds can facilitate social presence and foster socialisation among distance learners: they found that socialisation among such learners was a crucial step towards success in mastering content and laying the groundwork for collaborative learning.

Frequent reference is made in the literature to the amount of time required of teachers who want to develop and maintain their teaching and learning skills in virtual worlds (Salmon & Hawkridge, 2009).Kirriemuir (2008) found that teachers committed substantial amounts of their own time to this pursuit, to say nothing of the commitment of technical and support staff.A significant amount of time is needed to become oriented in a virtual world, and it may beargued that this is too much to ask of teachers and their students. Salmon & Hawkridge (2009) highlight the importance of scaffolding as teachers and students become residents of their new learning environment.

There also remains the problem of access. Most research has found that users need access to an up-to-date computer linked to the internet by broadband with no firewalls – which presents a problem in most school environments.

Currently, design and development efforts in virtual worlds are largely undertaken on the basis of trial and error, driven by intuition and common-sense extrapolations rather than being solidly underpinned by research-informed models (Delgarno & Lee, 2010).Researchers have concluded that the educational potential of virtual worlds has barely been tapped:they seem as well suited as face-to-face models to discussing concepts, and students'online role-playing conversations have provento be just as rich conceptually as those carried out facetoface (Salmon & Hawkridge, 2009).

Internationally, educators and educational institutions envisage great potential in the use of 3D worlds for teaching and learning, as they provide the possibility of rich learner engagement together with the ability to explore, construct and manipulate objects, structures and metaphorical representations of ideas (Delgarno & Lee, 2010). However, more work is needed to bring the virtual worlds and games development and educational communities closer together. Teachers have not yet established norms of how to support learning within virtual worlds (Twining, 2009). Teachers and learners require time for upskilling and development, as well as guidance on how to plan and implement appropriate activities to use in conjunction with virtual worlds (Delgarno & Lee, 2010).

In summary, virtual worlds provide new frontiers for teaching and learning (Castronova, 2007) but present real challenges for teachers attempting to find appropriate and beneficial ways to use them.

e-Portfolios

e-Portfolios offer a new way of collating and displaying information (Hills, Randle & Beazley, 2010). An e-portfolio is an electronic system that facilitates the development, collection and management of digital resources drawn from a range of experiences over a period of time,which may include formal and non-formal learning opportunities (Beetham, 2004; Funk, 2004; Siemens, 2004). It is a place to electronically record achievements and to reflect, learn, store information, network and plan further studies and career paths. In practical terms, this can allow the owner to support the claims made in job applications by linking to uploaded documents or webpages that substantiate claims and showcase work (Peacock, Gordon, Murray, Morss& Dunlop 2010). The act of creating an e-portfolio demonstrates a commitment to lifelong learning and improves the calibre of employment applications.

e-Portfolios can support lifelong learning by supporting the electronic storage and transfer of learning records. This means that prior learning and achievements can be taken into account, and that the owner can take their digital records with them into employment. More fundamentally, it is also intended that the *process* of completing the portfolio will itself encourage the development of skills necessary for lifelong learning. As an owner-centred process, the development of an e-portfolio is intended to encourage independent learning. Personal development planning and the ability to evidence learning outcomes are also important lifelong learning skills (Cotterill, 2005).

e-Portfolios effectively bring together all the elements of professional development and career planning, along with the ability to compose a CV, job applications, reports and other communications from a single platform and increase the interactions between all these elements. The potential for e-portfolios to support a full range of applications makes it a desirable tool for showcasing talents in visual and audio form, as well as practical evidence of skills that are difficult to express and evaluate in written form. Employers and managers will value e-portfolios for their‘clean’ applications that clearly show the links between criteria and evidence and make the process of reviewing applications much easier. Through their use as a reporting format, managers will be able to receive and share reports and collaborate with colleagues and staff efficiently and securely (Hills et al., 2010).

An e-portfolio has a similar look and feel to a personal website.The main difference is that it includes a link to a personal repository containing items of work, employer or tutor comments, feedback and reflections. As e-portfolios may be used for different purposes, a ‘one size fits all’ approach is not appropriate: the owner needs to be able to create front-end displays tailored to the task required. For example, given certain access privileges, the owner can set up a front-end web page displaying their CV along with a few examples of their work and some employer or tutor comments. The URL of this web page could be sent to a potential employer so that they can read the CV and view examples of work selected to reinforce the skills base presented in the CV (Tosh & Werdmuller, 2004).

Combining documentary evidence with reflection and discussion can provide a rich tapestry of the owner’s experiences and skills. Documents and other content can be linked, augmented and evidenced by other data sources, including personal data held on institutional systems, such as university student records and school staff lists. An e-portfolio can also support continued personal enrichment through commentary and feedback from authorised individuals or groups, as the owner can release materials selectively as

appropriate, for example, for different audiences such as peers or potential employers (Ward & Grant, 2007).

Recognition of prior learning, transferable skills and academic qualifications may also be evidenced.In addition, many professional fields now require evidence of professional competency for accreditation, which may easily be presented in the form of ane-portfolio (Hallam, 2008).

Recording all this information can be complicated, and saving it in a manner that allows it to be easily retrieved, updated and reused can be time consuming. An e-portfolio that can be used for a variety of purposes is a good solution (Hills et al., 2010).

Conclusion

Teachers do not need to be convinced that professional learning networks are useful to them. Teachers have been creating, accessing and contributing to professional networks for many years. Online networks for teachers already exist, and teachers already use social media for the purposes of professional networking.

Online networks for teachers, whether for professional learning or otherwise, must pass the following tests.

1. The network must be reliable and must work with the equipment that teachers have at hand. It is also preferable that the learning curve required to use the site not be too great, and that this learning be repaid in benefits within the short term.
2. Access to the network must be easy across platforms.
3. The content and pedagogy offered must be of a high professional standard.
4. The network must be perceived to be useful and must offer benefits to users' classroom practice. These benefits may be to content, pedagogy or, ideally a combination of both. In other words, the site must offer materials relevant to users' teaching.
5. The network must require limited time and expense ofusers. Networks that require a lot of time are likely to be little valued by teachers, who perceive themselves to be time-poor.
6. The network needs to promote and facilitate face-to-face collaboration at local level, rather than diminish or seek to replace it. Local mentoring is critical for teachers' ongoing involvement.
7. A good network will allow the tentative or technologically challenged teacher a gradual learning curve, as well as support that the teacher can choose to access.
8. A sustainable network must reward participation in ways that users find meaningful. In addition, ait must provide for a turnover of participants as well as for new participants entering at all skill levels.
9. The network must implement knowledge construction and model the best in learning theories, content and pedagogies.
10. The selection of technologies, materials and experiences needs to develop teachers' understandings both of how to use technologies and of how to select and implement appropriate technologies.

Methodology

As indicated above, PLANE is intended to provide teachers with professional learning environments. It aims to provide pre-service teachers, in-service teachers and educational leaders with opportunities to develop their skills, connect with others and exchange ideas, resources and experiences.

The evaluation study on which this report is based was designed to review PLANE's potential impact on the innovative use of ICT in pedagogy (ICTIF, 2011, p. 1), specifically in terms of:

1. improving the capability of pre-service teachers to achieve competence in the effective, creative and innovative inclusion of ICT in teaching and learning
2. enhancing the capacity of in-service teachers to develop the pedagogical understanding, confidence and tools required to design and deliver curricula that effectively enhance student learning outcomes and harness the resources and benefits of the Australian Government's Digital Education Revolution
3. driving innovation through leadership, by enhancing the ability of educational leaders to guide and inspire staff and students to share a strong vision for the integration of ICT in the school community.

The PLANE project views the teaching profession, for the purposes of professional learning, as falling on a continuum comprising three main stages: pre-service teachers (student teachers); in-service (practising) teachers; and school leaders, who may include role or positional school leaders such as head teachers or principals as well as professional school leaders. The latter are accomplished teachers who have the potential to lead change within their schools and beyond.

Beginning in October 2011, the primary focus of activities within PLANE was on in-service teachers. Gradually, and particularly since April 2012, the scope of these activities was broadened to include pre-service teachers and professional school leaders.

The development of PLANE thus far may be divided into two phases. The first phase occurred between October 2011 and April 2012. It included focus group input, trials, design of the site and its components and development of applicable software. The second phase was the launch phase. It began in May 2012, when the site became live (it will be officially launched at the Festival of Learning in October 2012). During this phase PLANE was promoted among pre-service and in-service teachers.

The original evaluation plan was modified to align as closely as possible with the two phases of PLANE. The revised evaluation plan also comprised two phases. The first phase of the evaluation took place between November 2011 and April 2012. The second phase took place between May 2012 and September 2012 (see Table 3).

The purpose of the first phase of the evaluation was to explore PLANE's potential. This was achieved through interviews with individuals and groups who were directly involved in managing or advising the development of PLANE, analysis of documents and observation of PLANE trials.

The purpose of the second phase of the evaluation was to gather evidence to determine PLANE's potential. Data was collected from pre-service teachers, in-service teachers and school leaders through surveys, interviews and analysis of case studies.

Table 3: Evaluation phases of the PLANE project

Phase	Purpose	Methods/strategies	Data sources
One	To explore PLANE's potential	Individual interviews	PLANE Project Control Group (PCG), PLANE Evaluation Reference Group (PERG) and PLANE team
		Document analysis	PLANE documents
		Observations	Evaluation team members
		Secondary analysis of PLANE internal data	PLANE trials
Two	To gather evidence to determine PLANE's potential	Online surveys	Samples of pre-service teachers, in-service teachers and school leaders
		Individual interviews	Samples of in-service teachers and school leaders with direct experience of PLANE
		Case studies	Three schools with involvement in PLANE
		Individual interviews	PCG and a sample of the PLANE team

Evaluation questions

In general terms, the evaluation studies aimed to answer the following question (ICTIF, 2011).

- What is the potential impact of PLANE on the innovative use of ICT in pedagogy?

Specifically, the studies aimed to address the following sub-questions.

- Does PLANE have the potential to contribute towards the betterment of teaching in particular and learning in general?
- What are the factors that would ensure the potential contributions of PLANE?
- What are the challenges that are likely to influence the potential of PLANE in the near future (within the next two years) and beyond (within the following five years)?

Evaluation design

The evaluation studies incorporated relevant features of the Realist Evaluation Model (see Figure 1). The fundamental propositions of this model are that:

- evaluation findings are generated through inquiry
- it is not possible to attribute to social projects universal and generalisable cause-and-effect relationships (Owen, 2006, p. 261).

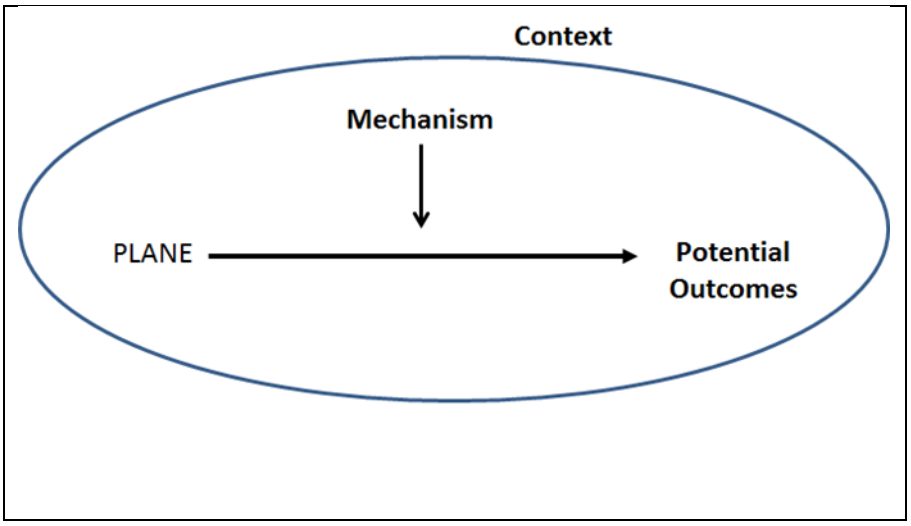

Figure 1: Evaluation Realist Model of PLANE

Source: Adapted from Pawson and Tilley, 1997, p. 412.

In Figure 1, the term *mechanism* refers to any of the processes, ideas, technologies and capacities that comprise the PLANE project. These mechanisms allow PLANE's operation, and facilitate its implementation within the intended context.

The PLANE *context* includes the various learning environments within which PLANE operations take place. These comprise the three targeted groups – pre-service teachers, in-service teachers and educational leaders – within the public, Catholic and independent school sectors.

The *potential outcomes* of PLANE are identified and investigated in view of its context. Thus, any possible causal relationships between PLANE and its potential outcomes are not viewed in absolute terms.

PLANE uses integrated technologically rich environments to facilitate professional learning among teachers. When these teachers access PLANE they bring with them their diverse pedagogical and technological backgrounds. The evaluation studies intended to identify these backgrounds and predict PLANE's potential within them.

Evaluation scope

The scope of the evaluation was specified in the call for expressions of interest (ICTIF, 2011, pp. 7–8). In order to identify PLANE's potential, the evaluation explored the following components of PLANE:

- online professional learning programs as translated through PLANE pathways
- self-assessment and peer coaching designed to support teachers' professional learning pathways
- e-portfolios as repositories of teachers' professional growth and means of exhibiting experiences and accomplishments
- the Share Club and other networks allowing teachers to exchange experiences and ideas
- the virtual worlds as professional learning environments to support teachers' growth and enrich the gamut of their pedagogical strategies. This included the use of game-based learning.

Table 4 shows how the scope of the evaluation aligned with the available data sources.

Table 4: Data sources for the evaluation of PLANE

Evaluation focus	Data source			
	Interviews and case studies	**Documents and trial data**	**Team observations**	**Online surveys**
Rationale, expectations and innovation	✓	✓		
Teachers' attitudes, ICT skills and ICT needs				✓
Self-assessment and peer-coaching	✓		✓	
Professional learning course	✓	✓	✓	✓
e-Portfolio	✓			✓
Share Club and networks	✓		✓	✓
Virtual worlds and game-based learning	✓	✓	✓	✓

Data-collection strategies

A variety of data-collection strategies was used to inform the evaluation, including:

- individual interviews
- PLANE documents and trial data
- participation in and observations of trials and other activities
- case studies
- online surveys.

Phase One

As part of Phase One of the evaluation, the evaluation team conducted 22 individual interviews, analysed available PLANE documents and trial data, and participated in and observed four of the PLANE trials and other activities.

Individual interviews

The individual interviews were developed by the evaluation team and all interviews were conducted by the same two team members. Three interview schedules were developed, each of which focused on the same major issues. The three schedules differed only in the questions included about hands-on involvement in the project, to reflect the different levels of involvement of the respective participants.

The interview schedules sought participants' responses to the following questions.

- What is innovative about PLANE?
- What benefits might flow from PLANE?
- What changes might PLANE offer to education and educators?
- What are the risks and challenges facing PLANE?
- What would success of the PLANE project look like?

A list of potential interviewees was acquired from the chairperson of the PLANE Evaluation Reference Group. Four groups of stakeholders in the PLANE Project were identified: the Project Control Group (PCG); the Professional Learning Advisory Group; the PLANE Management team; and the PLANE Evaluation Reference Group.

Prospective participants were contacted initially by email, then follow-up phone calls were made to arrange mutually convenient times. The initial email provided participants with a précis of the evaluation study and a copy of the Australian Catholic University's research ethics information letter. In all instances except one, the team interviewed the participant at their place of work (the remaining participant was interviewed at ACU Strathfield as this was more convenient for the participant). Informed consent forms were signed by all participants, and all interviews were recorded in audio format and treated as confidential. During the interviews, one team member also took notes.

Table 5 identifies each participant group, its number of interviewees and its relationship with the PLANE project.

Table 5: Interview participant groups

Group	Number of interviewees	Relationship with PLANE
Project Control Group	5	The PCG is the project's peak advisory group. Interviewees representative the three school sectors and the Council of Deans of Education.
Professional Learning Advisory Group	4	PLAG offers guidance to the project. This group includes Mark Treadwell, an independent education consultant with interests in digital education and digital learning.
PLANE Evaluation Reference Group (PERG)	2	PERG provides advice to the PLANE team on the evaluation process. The chairperson of PERG is the evaluation coordinator.
PLANE team	11	The PLANE team is responsible for developing the main ideas and concepts of the PLANE project. While the initial intention was that the team would develop concepts into code and functioning systems, increasingly it has become the role of the team to identify means of outsourcing major concepts of the project to code developers, and hence to oversee the development of this code into final operating components.

Analysis of PLANE documents and trial data

The chairperson of the PERG arranged for relevant project documents to be available on a SharePoint account and provided access to the evaluation team to this account. The documents were grouped into the following categories.

- **Background information** This category include documents that introduced PLANE and its major components, such as 'What is PLANE?'
- **Administrative information** This category included documents that described the administrative and organisational structure of PLANE, such as the governance model.
- **Technical information** This category included documents that introduced some of the major components of PLANE, such as self-assessment.
- **Trial reports and data** These were collected by the PLANE team collected in 2011 and 2012. Most of these reports were limited to one specific trial and recorded the perceptions of a small number of participants.

All reports and other documents were analysed holistically in order to identify their main messages. The results of these analyses are presented in the findings section of this report.

Observation of PLANE trials and other activities

At least one evaluation team member participated in each of the following PLANE trials and training activities:

- key learning area (KLA) writing workshops
- Virtual World Bootcamp
- peer coaching workshop
- users' experience trials.

Each member then submitted a report on the trial or workshop attended, which included:

- a description of the activity, its objectives and format
- its strengths and benefits to PLANE
- any challenges or issues.

Phase Two

The following data-collection strategies were used for Phase Two of the evaluation study.

Online surveys

The main online survey, titled 'Teachers' ICT and PLANE Experience Survey', was purpose built. It included questions designed to gather data on the following aspects, in addition to respondents' background and biographical information:

- attitudes and skills relevant to embedding ICT into teaching and learning
- professional learning history of the participants, particularly in relation to ICT
- communication and networking through professional and social media
- evaluation of participants' PLANE experience.

Three additional versions of the main survey were developed. One of these versions was limited to questions relating to respondents' attitudes towards ICT integration, professional learning, and communication and networking. The questions designed to gather data on respondents' PLANE experience were not used. This version was made available to in-service teachers with no PLANE experience. It was titled 'Non-PLANE Teachers' ICT Experience Survey'. The other two versions were designed to gather data from pre-service teachers. One of these versions included questions relating to attitudes towards ICT integration, communication and networking and the PLANE experience. This version was titled 'Student Teachers' ICT and PLANE Experience. The third version included questions relating to attitudes towards ICT integration, communication and networking only. It was designed to gather data from pre-service teachers with no experience of PLANE. It was titled'Non-PLANE Student Teachers' ICT Experience Survey'.

Survey participants

The following three data sources were used for the survey.

- **Universities** It was decided to approach the education faculties of three universities to gain their permission to invite their students to participate in the survey. Access was denied to one of these universities because their students had recently completed a similar survey on ICT. Students from the two participating universities were invited to register their interest to participate in the online survey.

- **A list of PLANE users (pioneers) obtained from PLANE management** These teachers had registered their interest in PLANE and most would have accessed it at least once. The list included 516 teachers. Of these, invitations went out to 422 teachers who had provided their career stages. Almost 50 per cent of those invited were in-service teachers, about 46 per cent were school leaders and 4 per cent were pre-service teachers.
- **A stratified random sample of 91 schools selected from a list of state, Catholic and independent schools** The principals of these schools were approached first by mail and then by phone to inform them of the evaluation study of PLANE. They were asked to invite their teachers to register their interest in participating in an online survey. It was made clear to them that experience with PLANE was not a prerequisite to participate in the study. Eighty-three teachers registered their interest to participate in the survey. Two reminders were sent to the principals encouraging them to invite their teachers to participate in the study.

A list of the names and email addresses of potential participants was created. Lime Survey was used to store the surveys and the names and email addresses of potential participants. Invitations were generated and sent out by the program. Each participant was given a unique code that was known only to them to ensure anonymity of the responses. The data file contained 926 potential participants. Of these, 483 teachers responded. Thus, the gross response rate was 52.3 per cent. Table 6 shows the distribution of respondents by career stage and PLANE experience.

Table 6: Distribution of respondents by career stage and PLANE experience

	Pre-service teachers		In-service teachers		School leaders	
	N	%	N	%	N	%
Respondents with PLANE experience	13	4.7	66	67.3	65	60.7
Respondents with no PLANE experience	264	95.3	32	32.7	42	39.2
Total	**278**	**100.0**	**98**	**100.0**	**107**	**100.0**

In-depth interviews

The final stage of the evaluation process incorporated three sets of individual in-depth interviews. These were held with teachers, peer coaches and stakeholders, respectively.

Teacher interviews

These were semi-structured interviews. Seven teachers were interviewed. The management of PLANE was asked to nominate teachers who were active PLANE users. Seven of these teachers were selected at random and agreed to be interviewed. Five of them were professional or role school leaders. Four of them worked in secondary schools, one in a central school, one in a primary school and one in a K–12 school. Two teachers were from a rural setting. Six of the teachers interviewed had been working for at least five years;the other was an early-career teacher. Two of the teachers were from non-government

schools,while the others were from DEC schools. All of the teachers interviewed were peer coaches for PLANE or were planning to train to become one. All of the teachers interviewed had high-level ICT skills.

The teacher interviews were developed by the evaluation team, and all interviews were conducted by the same two team members. The interview schedules sought participants' responses to the following themes:

- teaching background and experience
- length and type of PLANE experience
- PLANE as a professional learning site for teachers
- quality of the teacher's experience within PLANE
- outcomes of PLANE experience and PLANE potential.

Peer coach interviews

Two teachers involved as peer coaches on PLANE were interviewed. Both were experienced teachers with leadership role in their respective secondary schools. A third interview was conducted with Les Foltos, founder of Microsoft's Peer Coaching Program, who is considered an expert in this field and has been advising the PLANE team on this aspect of professional learning.

The peer coach interviews were semi-structured, and included questions relating to the themes of:

- teaching background and experience
- length and type of PLANE experience in general and peer-coaching experience in particular
- quality of experience of peercoaching with the PLANE environment
- outcomes of the peer-coaching experience with the PLANE environment and its potential.

Stakeholder interviews

Individual interview with five stakeholders from the PLANE Project Control Group and the management of PLANE were conducted. The majority of the interviews were conducted during the third week of September 2012 by two members of the evaluation team. They sought to understand the stakeholders' understanding and appreciation of the development of PLANE, as well as the potential of the project. The questions used to prompt discussion were as follows.

- How would you describe the major changes that have occurred within the PLANE environment?
- How do you view the cross-sector approach being promoted and enhanced?
- How do you see the pre-service teacher, in-serviceteacher and school leader approach being promoted and enhanced?
- Can you describe any strategies that could be employed to ensure that PLANE is sustainable into the future?
- How would you describe the potential of PLANE?
- How do you envisage PLANE being used in two years' time?

Case studies

The PLANE management team wasasked to nominate as potential case studies a number of schools that had been involved at any level of engagement with PLANE. A list was provided, and from it three schools were selected at random. Permission was sought and gained from each of these schools and relevant contact people identified. A member of the evaluation team then visited each of the schools and met with one or more of the teachers.

One of the schools studied was a primary school in a remote rural setting with an enrolment of 15 students and five staff. The second was a large secondary school in south-western Sydney with more than 650 students. The third was a primary school in a regional suburban setting with around 250 students.

The visits mainly involved interviews with participating teachers both individually and as groups. The interviews sought responses to the following guiding questions.

- Tell me about your school. What is special about this school, and are there any unique challenges or needs?
- To what extent has the school been using ICT – classroom learning technologies, online learning programs, social networking within the school prior to your exposure of PLANE? Please provide examples.
- When and how did your school and you get involved with PLANE?
- Why did the school choose to become involved with PLANE?
- What impact has PLANE made in the school, if any? How?
- Is there one area you feel that PLANE could help with? Are there any other areaswhere you feel PLANE could help?
- Which aspects/components of PLANE do you consider would have the potential to assist schools like yours? Why?
- From your perspective, what do you anticipate PLANE to do for your school as a whole? For your teachers? For your school leaders?

Findings

This section comprises two components. The first is a summary of the findings of Phase One of the evaluation study. These findings were published in full in May 2012 in the report' Interim report: An evaluation study of PLANE'. The second comprises the findings of Phase Two of the evaluation study. This method of presentation is intended to facilitate comparison between the findings of the two phases.

Phase One findings (summary)

'Interim report: An evaluation study of PLANE' was published in May 2012. The findings presented in that report were based substantially on a series of interviews with stakeholders. Other data sources were also used,including observation of and participation in trial activities, analyses of PLANE trial data and supporting documentation. The purpose of Phase One of the evaluation was to explore the rationale behind PLANE,to explore its mechanisms and to clarify its intended outcomes.A complete version of the interim findings can be found in Appendix 1 to this report.
The following is a summary of the main findings of Phase One.

1. PLANE is believed to be an innovative program, mainly because of its:
    - cross-sectoral approach
    - attempts to use of open-source software
    - use of cutting-edge technology and game-based learning
    - focus on building educational communities among participants
    - use of professional portfolios.
2. The most commonly agreed-upon benefit of PLANE was the development of teacher skills. In particular, the SkillsSnacks feature and the professional learning communities were perceived to benefit teachers.There was a strong presumption that teachers' increased ICT skills would articulate into the classroom and would also facilitate the use of ICT skills by students as part of their learning.
3. The action learning iterative style that was observed in the development of ideas by PLANE teams has the potential to facilitate achieving the stated goals of the network. The iterative style included piloting specific ideas and innovations under simulated conditions, gathering data during the implementation, discussion and reflection on the outcomes and finalising the actioned ideas.
4. There was a tendency among the interviewees in particular to believe that some of the changes resulting from PLANE would increase the use of ICT in the classroom. Some participants suggested that learning in classrooms would use a lot more ICT and that students would work more independently in classrooms using a range of ICTs.
5. There was a strong line of thinking among participants that PLANE could assist with the move away from 'teacher as knowledge dispenser' towards 'teacher as learning facilitator'. There were strong statements made about this shift.
6. Some participants mentioned an increased connectedness of teachers. This connectedness was seen to be in contrast to a former, and still prevalent, 'bunker' mentality where teachers might be prone to seeing themselves as being in one particular school, teaching a particular grade or subject. This proposed connectedness

would be seen in conversations of teaching techniques and skills shared, and in shared resources within the virtual community or communities formed within PLANE.

7. The slippage of achieved implementation was viewed as a challenge. At the time of these interviews, the deadline for implementation appeared to be uncertain as the level of complexity in development grew.
8. Funding sustainability was also seen as a challenge, in conjunction with the need to develop software and maintain content.
9. Differing understandings of pedagogy emerged during the interviews, and this was also seen as a concern by the interviewers.
10. Concerns were expressed about the technical foundations: reliability of software, internet backbone and different levels of access across the sectors.
11. The organisational processes of the project and staff fluidity were also seen as challenges.
12. It was observed that PLANE needed better promotion in order to attract the target audience. There was an obvious need to develop the accreditation line and the recognition of its professional learning activities.
13. The use of virtual worlds was viewed as a challenge by some of the interviewees. This aspect of PLANE was receiving much attention in the form of personnel and funding, with no assurances that it would appeal to the target market.
14. The overall impression of those interviewed was that PLANE was innovative and had the potential to empower teachers in their teaching and learning.

Phase Two findings

Phase Two of the evaluation process continued to explore PLANE's potential. Data were collected from teachers who had used PLANE for professional learning and from a sample of stakeholders who had been involved throughout the development process.

This report was developed prior to the official launch of PLANE at the Festival of Learning on 19 October 2012, so is unable to comment on the implementation process.

This phase of the evaluation continued to address the evaluation questions, as follows.

- Does PLANE have the potential to contribute towards the betterment of teaching in particular and learning in general?
- What are the factors that would ensure the potential contributions of PLANE?
- What are the challenges that are likely to influence the potential of PLANE in the near future (in the next two years) and beyond (within the following five years)?

As indicated in the methodology section of this report, several data-gathering strategies and sources were used to gather evidence on the potential of PLANE. These included:

- interviews with teachers who had experience with PLANE
- interviews with teachers involved in peer coaching within the PLANE environment
- in-depth interviews with representatives of three 'case study' schools actively involved with PLANE

- in-depth interviews with stakeholders comprising representatives of the control, managing and advisory groups directly involved with PLANE but from different perspectives
- online surveys completed by teachers from the three career stages.

Thus the findings in this section are based on data collected for the purpose of the evaluation study. Internal PLANE data and logs for the period May to September 2012 were not made available.

The findings are presented below by data-gathering strategy.

Teacher interviews

Seven teachers were interviewed, five individually and two as a pair. Five of them were professional or role school leaders. Four of them worked in secondary schools, one in a central school, one in a primary school and one in a K–12 school. Two teachers were from a rural setting. Six of the teachers interviewed had been working for at least five years; the other was an early-career teacher. Two of the teachers were from non-government schools, while the others were from DEC schools. All of the teachers interviewed were peer coaches for PLANE or were planning to train to become one. All of the teachers interviewed had high-level ICT skills.

All the teachers interviewed were highly enthusiastic about PLANE and could see great potential once the official launch has been undertaken. As one teacher stated:

> What interests me is the professional learning network – the value of that. For me, it's been very valuable in lots of different ways, not just with PLANE but in other areas … I see the value of teachers sharing. The more that we share, the more knowledge we gain.

The majority of teachers interviewed were the only ones at their school using PLANE.These teachers had heard about it or seen it through their existing professional networks or in meetings. One participant had heard about it at a Microsoft training course in 2010.

School principals were generally supportive of the teachers using PLANE. One teacher interviewed expressed frustration that her principal was not at all supportive of her using PLANE, although another teacher at the school was given support. This particular interview was conducted at a cafe, as the principal would not give permission for the interview to be held on school grounds, according to the teacher.

One participant suggested providing opportunities for principals to use PLANE to get an idea of its potential. This person felt that a principals' meeting could be a good venue, with all the computers set up. ICT teachers in schools were another group suggested to target to try to increase awareness and uptake of PLANE within schools.

A mix of ideas was expressed in relation to the professional learning opportunities of PLANE. All the teachers interviewed felt that the opportunity to be accredited for professional learning in PLANE was highly desirable. The two country teachers were very enthusiastic about the opportunities for professional learning through PLANE, as a result of limited opportunities to attend professional development workshops in the rural setting.

Many of the city teachers stated that they had enough professional development opportunities through their school and did not place high value on this aspect of the site, although they felt that this would be a good opportunity for early-career teachers. One city teacher did state that the free nature of the site made it attractive for professional development, particularly given that for a teacher to attend a one-day training course the

school would need to cover the cost of the course as well as the cost of replacing that teacher with a casual teacher for the day. A number of participants indicated that they enjoyed the face-to-face experiences associated with professional learning, and saw the site as an adjunct to this.

The professional development model used in many schools is the 'train the trainer' model, whereby schools nominate several staff to undertake training and then come back and share what they have learnt with the rest of the school; it is very targeted process. It was observed that the PLANE site allows teachers to undertake professional learning as a choice rather than as part of a school master plan. The possibility of some professional development in PLANE addressing whole-school needs rather than only those of individual teachers may be a worthwhile consideration. Addressing whole-school needs will make it more likely to be included as part of schools' professional learning plans.

The Skills Snacks feature was seen as useful, although many of the participants interviewed had the skills already. One participant felt that the Skills Snacks could be more KLA related. Being able to add to these skills was a desirable feature mentioned by one participant. One participant stated: "My role would be to develop music resources for the Skills Snacks and the Gateways. As a head teacher in the performing arts I am flat chat, and I think I can offer, rather than peer tutoring, I can offer the resource building and directing people towards that."

Participants were asked about the design and navigation features of the PLANE site. There were almost universal comments that the site could be improved. The front entry point of the site was described as being 'busy' and elements difficult to locate. The navigation of the site was also described as difficult and the forums 'clunky'. However, since the participants commented on different aspects of the site that they felt could be improved, it would be difficult to design a site that would appeal to all.

The gamification aspect of the site was generally greeted with enthusiasm, although this appeared to be with respect to students' use rather than teachers'. As one teacher stated, "What interests me most on PLANE is the gaming. Gaming in education is going to be the next big thing." The virtual worlds received mixed reviews: some teachers liked them and others did not.

The fact that the site is a joint initiative of the Department of Education and Communities, the Association of Independent Schools and the Catholic Education Commission was viewed as favourable by around half of these teachers, who felt this gave the site more credibility. According to one participant, "The cross-system – bringing together public, independent, Catholic – it is way overdue. It brings people together for the right reasons." A number of the teachers reported that they attend Teach Meets, where there is a cross-sectoral approach, and that they saw some compatibility between PLANE and Teach Meets.

All of the teachers interviewed had a rich online professional network. OzEdmodo, Twitter and Yammer were the three main sites that participants referred to. They all felt that PLANE had something different to offer and that a number of their contacts from the other three sites mentioned were also members of PLANE. One teacher did comment that many of the teachers at his school did not network outside the school. Another teacher suggested that while many teachers like to download and obtain resources, they do not upload or provide resources. Judging from their comments, participants would continue to use the other sites in conjunction with PLANE.

The forums were commented on favourably by the majority of the teachers. Several teachers stated that they wanted to set up their own forums, including one on music and one on Italian. These two participants felt that these areas were underrepresented and that they could develop a useful network among teachers from across the different sectors through

the forums. One teacher felt that the forums were more democratic than Yammer or OzEdmodo, which tended to be dominated by some individuals.

The teachers were asked about the general level of ICT proficiency among teachers within their schools, and there appeared to be a low level in most schools. This may affect the potential use of PLANE by teachers, who may find navigating around the site even more difficult than the experienced ICT users interviewed.

Participants also felt that creating ane-portfolio on this site may be safer than using a commercial website, which could close down, meaning all the work would disappear. The site was also perceived to have more credibility as it is an initiative of the education sector.

Having an e-portfolio on PLANE was viewed as beneficial, as this would allow teachers (particularly early-career teachers) to be seen by potential employers and would increase their employment prospects. One participant felt that the e-portfolio could be more clearly linked to the New South Wales Institute of Teachers (NSWIT) outcomes.

The ability for problems to be quickly fixed by PLANE staff members was commented on by a number of participants. One participant had lost his profile after spending a considerable amount of time on it but was able to have it retrieved.

The majority of the teachers interviewed had some leadership role in their school, in many cases associated with ICT. Several of the participants felt that there needed to be more content in the school leader section.

None of the participants commented on the pre-service teacher section, although at least one noted that he would encourage pre-service teachers under his care to engage with the site. Another teacher emphasised the role that PLANE could play in bringing pre-service teachers into contact with in-service teachers. She noted that sites such as OzEdmodo don't allow pre-service teachers and also don't use profiles, so "we don't know who we are sharing information with."Another teacher noted the importance of getting pre-service teachers involved in PLANE so that they would then use it as teachers.

The vernacular of the site was commented on by several teachers, who felt that the terminology used did not always reflect the contents of the different sections and was not always closely aligned to the terminology used in schools, although no examples were provided. Aligning the language to more closely reflect teachers' language may make the PLANE site more user friendly.

Summary

The following points sum up the findings gathered from this data source.

- All the teachers interviewed were enthusiastic about the potential of PLANE.
- There was a low level of awareness of PLANE in the schools of the participants interviewed.
- Raising awareness of PLANE among executives in schools is important.
- The cross-sectoral aspect of PLANE was viewed as positive.
- Navigation of the site was a problem for many.
- The site was seen as especially relevant to early-career teachers.
- There was no whole-school approach to the use of PLANE at the schools of the participants we spoke to.

- Rural teachers in particular saw the benefits of PLANE with regard to professional learning.
- There is potential for pre-service teachers to communicate with in-service teachers through PLANE.
- Use of language needs to be reflective of all three sectors using PLANE.

Peer coach interviews

Two teachers involved in peer coaching on PLANE were interviewed. A third interview was conducted with Les Foltos, founder of Microsoft's Peer Coaching program, which trains teacher leaders to help colleagues to integrate technology into classroom activities. Les is considered an expert in the field and has been advising the PLANE team on this aspect of professional learning.

The literature indicates, and our interviewees agree, that peer coaching is a very valuable form of professional development and a welcome inclusion in the PLANE environment. As one interviewee stated:

> Peer coaching is one of the most useful pieces of professional development I have been on for a very long time, because it was so hands-on. It was powerful and achievable and there was follow-up.

Les Foltos observed hat collaboration is the key:"Teachers work largely in isolation, so innovation doesn't spread from classroom to classroom without assistance".

Teachers must make changes to improve their own teaching, but they need to decide for themselves how to do it: improving practice can only be done *by* teachers, not *to* teachers. Empowering teachers is part of the answer that peer coaching offers. Experienced teachers want expertise, not an expert telling them what to do. Peer coaching offers them a trusted colleague to help with the process, who might model good practice or discuss what they might do differently next time.

Peer coaching has been shown to change teacher practice 85 per cent of the time. However, this is not an overnight change but one that continues slowly in increments. As a concept, it has been more successful than many approaches to teacher professional development.

As outlined earlier in the literature review, peer coaching is a very successful professional development strategy for teachers, and makes a valuable addition to the PLANE suite of tools. The effectiveness of its implementation via the virtual worlds has not been determined to date.

The idea of virtual worlds in PLANE is a good one, but many DEC school staff use DEC computers and the PLANE virtual worlds cannot be accessed from these. This presents a major problem in DEC schools. The teachers we interviewed had had technical issues with peer coaching within the virtual worlds even when using equipment in their own homes; however, they could see the potential of peer coaching in the virtual worlds once the technical issues have been resolved.

Les Foltos stated that in his opinion the optimal environment for peer coaching is face-to-face, especially in the initial stages when trust is being developed. Peer to peer within the same school seems to be the most successful scenario. However, some of the activities he had witnessed the PLANE team working on had given him some hope for the program's success in virtual worlds, as the team had demonstrated an understanding of what builds

collaboration in the virtual environment. Les stated that he was still unsure as to whether two teachers who had never met could build the trust required to successfully work in a peer coaching relationship. As the key to successful peer coaching is making sure both partners have developed an acknowledged understanding, this is a bit more of a challenge when meeting in a virtual world.

Summary

The following points sum up the findings gathered from data source.

- Peer coaching is a valuable part of PLANE.
- Peer coaching should be maintained.
- Peer coaching reflects PLANE's aim to empower teachers.
- A blended approach is preferable.
- Alternative forms of online delivery (e.g. Adobe Connect) should be fully explored.
- The technical issues associated with the virtual worlds need to be resolved.

Stakeholder interviews

Five interviews were conducted in September 2012 by the same two evaluation team members. They sought to understand participants' understanding and appreciation of the development of PLANE as well as the potential of the project. The foundation questions used to prompt discussion were as follows.

- How would you describe the major changes that have occurred within the PLANE environment?
- How do you view the cross-sector approach being promoted and enhanced?
- How do you see the pre-service teacher, in-service-teacher and teacher leader approach being promoted and enhanced?
- Can you describe any strategies that could be employed to ensure that PLANE is sustainable into the future?
- How would you describe the potential of PLANE?
- How do you envisage PLANE being used in two years' time?

Participants were chosen from the group of stakeholders interviewed in Phase One. Their responses are grouped below by foundation question.

How would you describe the major changes that have occurred within the PLANE environment?

All participants agreed that many changes had occurred in the structure and content of the PLANE site. All were enthusiastic about the changes and confident that the launch in October 2012 will demonstrate an excellent product. Some of these people had been hesitant about the future of PLANE in the first round of interviews but were now very supportive. One commented that the project had moved from being "in conception" to being "operational".

The site itself was described as being "more welcoming", "more coherent", "tighter""streamlined", "simplified" and "creating much excitement". The success of the soft

launch in May was evidenced by an influx of participants. It was noted that there are now a few thousand people accessing PLANE, but many may not be frequent users. PLANE is using a lot of social media and that has become a good promotional avenue for the project. One interviewee commented on the use of social media as the entry point, and remarked that it was a very efficient and effective method. The project manager described the rationalisation of the architecture and the move to the sections 'discover', 'learn' and 'lead' in response to feedback.

Becoming an endorsed provider for the NSW Institute of Teachers (NSWIT) was seen as a real positive for PLANE. It has involved much time and effort in making the language more specific and in the modification of courses to meet NSWIT's needs, as well as the consolidation of data capture to ensure that teachers can be certified. Teachers receive an e-portfolio page once they sign up to PLANE, and these e-portfolios are now linked to NSWIT's standards. With teachers creating the pathway they wish to follow, this relationship to certification is quite complex, and very important to the future of PLANE.

Since the Phase Two interviews, the sharing aspect of PLANE has developed comprehensively and this is the most active part of the site at the time of writing. This is where teachers are discussing what happens in the classroom, and the PLANE team views this as crucial to meeting their aim of empowering teachers. PLANE has recruited 150 Highly Accomplished ICT (HAICT) Educators, with more to come in November 2012, and these teachers are providing feedback and sharing their work on the Share Club. It was noted that teachers need to improve their use of the tagging facility. This facility has provided interesting data showing the current interests of users, but at times the PLANE team has had to edit the tags to ensure that resources are retrievable by other users. The need to monitor shared material was recognised and is being factored into the workload of team members. Getting the balance right between being teacher driven and having some form of quality control is a recognised challenge. The recruited HAICTEducatorsare being immersed in the PLANE philosophy and it is hoped that this philosophy will spread into the wider community.

Peer coaching is recognised as a valuable aspect of PLANE, although there were differing views as to how this was occurring. The true concept of peer coaching training and operation is very time consuming and is seen as an expensive option for PLANE,as it is heavy on staff resources and not easily scalable. There was some criticism of the use of virtual worlds in peer coaching, supporting the belief that face-to-face time is needed to build the essential element of trust. One PLANE team member described a blended model, where 85 per cent of the coaching occurred online. It appears that the use of virtual worlds in this process is still at experimental stage. This approach is seen as innovative and one that should be pursued as part of the PLANE platform, with further development of coaching and virtual world technologies.

Gamification is another innovative aspect of PLANE, which has a small dedicated group of followers. Gamification is in its early stages, with the Leornian game receiving accolades from those with a particular interest in gaming. Research indicates that this methodology will continue to develop and become an accepted teaching methodology in time. Thus it was seen by those interviewed as an aspect of PLANE that should continue to receive attention and be promoted to the wider education community. It is expected that five levels of gaming will be available to participants by October 2012.

How do you view the cross-sector approach being promoted and enhanced?

The concept of a cross-sectoral approach was praised by all. Comments included that it was "becoming stronger", "receiving great coverage", "conversations at meetings are very cooperative" and " all supportive".

The sector representatives interviewed were positive about the support from each of the sectors, and keen for it to continue and grow. The operational difference between the sectors has not become an issue. There has already been some beneficial sharing,including the Catholic Education Office providing PLANE with access to two of its online courses. How these relationships will continue when funding finishes was discussed by some interviewees, with no solutions suggested. “From a financial perspective, it is not clear at the moment if systems will be able to buy into PLANE,” was one comment. The relationship between cost and benefit to the individual systems will also need to be debated.

The PLANE team is confident that it is receiving good attendances on PLANE from the different sectors and that these participants are collaborating across sectors, but the Association of Independent Schools and Catholic Education Office interviewees had no evidence that this was actually occurring. One Department of Education and Communities teacher interviewed was extremely enthusiastic about this concept of collaborating with other teachers from different regions and different sectors. The Teach Meet concept is an existing initiative that showcases a cross-sectoral approach, and PLANE has taken this concept to the online environment to facilitate this collaboration further. The ability to record these sessions so that teachers can view them in their own time through PLANE is a plus.

The transferability of the PLANE e-portfolio was viewed as a cross-sectoral activity, since the e-portfolio can be stored in one place and used as evidence in any sector. If PLANE goes national thee-portfolio will have even wider transferability.

The strength of PLANE is that it is not mandated by any one sector, but gives choice to the sector, the school, the principal and the teacher.

How do you see the pre-service teacher, in-service-teacher and teacher leader approach being promoted and enhanced?

The majority of users on PLANE are in-service teachers. The PLANE team is aware that the involvement of the other teaching levels needs to be improved, and is working on this aspect. Promotions have been held at some universities to encourage pre-service teachers, university deans have been contacted and social media is being used in the belief that members of this target group are prolific users of these networks. It is noted that the pre-service and teacher leader levels have not had the same attention as the in-service group.

At present the PLANE team is developing programs to attract school leaders. Many middle management personnel have been attracted through the HAITCE initiative, but positional leaders are new to the agenda. “Getting principals to [PLANE] is going to be a challenge,” according to one interviewee. It was stated that much lip service is paid to ICT by principals, but converting that into professional learning is a different matter. There was agreement that to get leaders on side, PLANE must be good quality and must be shown to make a difference to them and their school. Where principal support for PLANE is prominent, the potential is boundless. With a new team member with extensive experience in working with educational leaders, this dimension should receive the focus it deserves. It is recognised that the leaders of the educational environment must be convinced of the long-term benefits of PLANE for it to receive the support it deserves.

Can you describe any strategies that could be employed to ensure that PLANE is sustainable into the future?

Sustainability was an issue discussed in the first round of interviews and is still is seen as a challenge. As the project’s funding nears its end the challenge becomes greater. There was no doubt that all those who were interviewed wanted to see PLANE continue to operate in the long-term future. Just the same, all those interviewed were realistic in acknowledging

that financial support will be needed to continue its development. “Systems need to ensure that [PLANE] is going to last, otherwise it is not worth the effort,” observed one participant. Many funding models were suggested, including user pays, establishment as a not-for-profit organisation, corporate funding, overseas cooperation, putting a cost on the e-portfolio facility to be paid by schools, privatising some aspects and charging for qualifications. Although we are realistic about the need for funding, the ideal situation would be to have this resource available free to teachers. The fact that spending in all sectors is being cut back was highlighted. A pertinent comment was made that “the promotion has whipped up interest, but no dollars”. At the same time it was also noted by a few of the interviewees that these budget cuts could be used to PLANE’s advantage as a provider of free professional learning for teachers.

The Project Control Group has employed the services of two specialised financial institutions to provide business plan proposals to take PLANE into the future. This creates an atmosphere of uncertainty for staff and any participants who are aware of the situation. As one noted, “We must hang on to key people. Once you have people who understand the project, it is a great investment. PLANE has attracted people with passion. They are fantastic [at] what they do. If they leave that would be a setback.”

The e-portfolio was of particular interest to all stakeholders. It is an important tool in the professional pathways of teachers, particularly new teachers, and is of importance to those leaders who may not use it themselves but are charged with monitoring the portfolio development of their early-career staff members. If adopted, it has the potential to bring teachers back to PLANE and to keep teachers involved throughout their career as they use the e-portfolio to document their professional learning. One interviewee suggested that the e-portfolio could create a means of generating funding. He proposed that each sector or school could nominate a number of teachers who would use this avenue to become accredited with the NSW Institute of Teachers, and that the sectors or schools would pay a fee for each teacher taking up that option.

Another concern expressed with regard to sustainability was the need to keep up with technological changes – and these are changes that we cannot predict. It will also be essential to have the content of PLANE continue to keep pace with teaching trends and curriculum changes. Maintaining some form of quality control over content is already taking much time, and it is hard to imagine how much monitoring will be needed if it grows to the proportions anticipated. PLANE has been built to constantly refresh itself, but there are always risks involved if technology changes.

How would you describe the potential of PLANE?

Participants’ views of PLANE as innovative have not changed. The level of excitement about the project is contagious. People talked about gamification, virtual worlds, vehicles for sharing, the cross-sectoral aspect, providing choice of pathways, live feeds, tagging, the push beyond content, catering for needs in remote areas, autonomy of learning, breadth of experiences and the provision and support for PLANE to constantly evolve.

Those interviewed believed in the potential of PLANE to enable and empower teachers. They supported various aspects to different degrees but there was no doubt that each of these leading educators believed that PLANE has a valuable place in the current and future educational environment. It was hoped by one participant that PLANE would “move into the normal practice of teachers, and no longer be considered an innovative initiative”.

How do you envisage PLANE being used in two years' time?

There was consensus among interviewees that PLANE should become part of the everyday life of teachers. It aims to lead to change in classroom practice, but that will be difficult to measure. However, through the accreditation system it will be possible to monitor the professional learning pathways of PLANE users, and it is hoped that this will occur through PLANE. As teachers become lifelong learners there is more chance that their students will also. As noted by one interviewee, "Teacher improvement leads to improved learning".

It is hoped that the concept of sharing and supporting peers will be a normal part of life for teachers, and that pre-service teachers will be mingling with in-service teachers in the PLANE environment as part of their everyday activity.

Another idea for the future was to have a PLANE environment for school students.

It was also suggested that there should be a link between professional development and teachers' salaries.

As one participant stated,"We are trying to evaluate the potential of PLANE when we don't know what teaching and learning might look like in two years' time."

Other issues

The concept of co-responsibility is important. Systems need to consider how they translate their commitment to PLANE. At the end of the day, we need systems to show they are committed.

It is important to remember that the foundation ofPLANE is teacher professional learning with an ICT focus. This focus may change over time to include support for specific curricula, but at the moment it is not a receptacle for curriculum resources.

Summary

The following points sum up the findings through this data source:

- The PLANE environment has become far more welcoming and easier to navigate. The site will continue to evolve and the team will respond to feedback.
- A positive relationship has been developed with the NSW Institute of Teachers. Improvements to learning on PLANE have been made to ensure certification for participants.
- Highly Accomplished ICT (HAICT) Educators continue to be trained and will provide collaborative environments for PLANE participants. The Share Club has become a popular element with a high standard of discussion, sharing and support occurring.
- Peer coaching is recognised as a powerful professional learning strategy. The PLANE environment is using a blended model of online and face-to-face training. Virtual peer coaching is still at the experimental level.
- Changes have been made to the e-portfolio to tighten its links to the NSW Institute of Teachers and ensure certification for participants.
- Gamification is well supported, and five levels in the Leornian game will be available for the launch in October 2012.
- The cross-sectoral approach is highly valued and is working effectively at present.

- The PLANE team is working to improve the participation of all three levels of educators. The teacher leaders group is a focus at present.
- Financial sustainability continues to concern stakeholders, and two potential business plans are due to be considered in November 2012. The design of the project for the future will be linked to the chosen business plan.
- A high level of support for PLANE is evident, and the findings from these interviews support the potential for PLANE to engage and empower teachers.
- Pre-service teachers' needs have yet to be addressed in any substantial manner.

Case studies

Three case studies are presented in this report. The PLANE management team was asked to nominate as potential case studies a number of schools that had been involved at any level of engagement with PLANE. A list was provided, and from it three schools were selected at random. Permission was sought and gained from each of these schools and relevant contact people identified. A member of the evaluation team then visited each of the schools, met with one or more of the teachers playing a key role in the implementation of PLANE at that school, and prepared the following case studies for this report.

One of the schools studied was a primary school in a remote rural setting with an enrolment of 15 students and five staff. The second was a large secondary school in south-western Sydney with more than 650 students. The third was a primary school in a regional suburban setting with around 250 students.

The findings presented below demonstrate through the perceptions of the case study participants the potential of the PLANE project. The following guide questions were developed by the PLANE evaluation team to focus specifically on the relevant school but also for consistency with the survey and individual interview questions. Participants were emailed the guide questions prior to the visit.

- Tell me about your school. What is special about this school, and are there any unique challenges or needs?
- To what extent has the school been using ICT – classroom learning technologies, online learning programs, social networking within the school prior to your exposure of PLANE? Please provide examples.
- When and how did your school and you get involved with PLANE?
- Why did the school choose to become involved with PLANE?
- What impact has PLANE made in the school, if any? How?
- Is there one area you feel that PLANE could help with? Are there any other areas where you feel PLANE could help?
- Which aspects/components of PLANE do you consider would have the potential to assist schools like yours? Why?
- From your perspective, what do you anticipate PLANE to do for your school as a whole? For your teachers? For your school leaders?

All participating schools and teachers have been provided with pseudonyms here for anonymity.

Case study 1: Countrylink Public School

School context

Countrylink Public School (pseudonym) is a two-teacher rural school established in 1891. Countrylink is not like other country towns that have a small shopping centre, a community hall and a local school.In Countrylink, the school is the centre of the community. There is nothing else. The school brings the community together and is its social hub. As one participant described it, “There is no community in Countrylink apart from the school.”

There are 15 students enrolled at the school, approximately 30 per cent of whom identify as Aboriginal. The main challenges the school faces are the low socioeconomic status of its students’ families, the majority of parents having a low level of education and being dependenton welfare, and some generational welfare. Countrylink has been identified as one of the poorest postcodes in Australia. Another concern has been falling enrolment numbers, with loss of teaching staff and the likely impending relocation of the teaching principal.

The school has five staff members: a full-time teaching principal, a part-time school manager, a part-time teacher, a part-time assistant teacher and a part-time community liaison officer. This staffing arrangement provides its own management issues, with not all of the staff present on any one day during the week.

The school physically consists of three main buildings: a classroom, a teaching library and an administration building. The classroom is well resourced with computers, iPads and interactive white boards.

All the students at the school are in one class, but this class is divided into two groups based on the NSW Department of Education and Communities curriculum guidelines: Stage 1 and Stage 3. At present there are no students in Stage 2. The teaching principal and the part-time teacher share the teaching load.

The school and community have embraced their historical and cultural heritage, and recognise that their school is part of the local Indigenous land and culture. As part of the school curriculum, an Indigenous elder teaches the children the local Indigenous language.

Current ICT engagement

The school considers itself an early adopter of ICT. It was proactive in being one of the first schools to procure interactive white boards using discretionary funds. It was conscious of not wishing to fall behind. According to one participant, “We need to make a conscious effort to be up to date with technology and [put] in the infrastructure, like wireless networks. We’ve got iPads, laptops that connect wirelessly and wireless coverage throughout the whole school, which is good, and in teaching we use a lot of Web 2.0 tools”.

The literacy and mathematics lessons that were observed confirmed that there was integration of ICT in the teaching and learning of students. In the literacy lesson observed, the Stage 3 students were using iPads and computers to write a scary story with appropriate sound effects. These stories were emailed to the teacher and then the published on the school blog. Parents were able to view the blog. One participant commented, “With the older students, looking at digital media …[and] different ways to represent work, I don’t think they’ll ever go back to making the old cardboard poster.”

During the mathematics lesson observed, the students researched various tower designs on the internet and collectively worked on subtraction, algorithms and the measurement of towers using two- and three-dimensional materials.

Social networking is currently being trialled at theschool, including the use of Facebook and Twitter to communicate with parents and the general community. One participant observed that these tools were especially suited to this particular school community.

> [B]ecause parents change their phone number or get their phone cut off regularly, the best way to contact them is [via] the free Facebook on the Telstra phone. There are times when I need to get a message out to the families… I'll get onto one of the parents, who will communicate with her Facebook network. We are getting the policy in place [and plan to] start a Facebook page on our site by the end of the year.

Teachers' uptake and use of technology is a critical element in all schools' successful engagement and deployment of ICT, and Countrylink Public School is no exception. The effectiveness of ICT in any school is dependent on the willingness of the classroom teacher to embrace and use technology in their classroom. All schools face this challenge, but the story of how Countrylink Public School has embraced the use of technology is noteworthy. The teaching principal's challenge was to motivate his staff in the use of ICT. He reflected on how they had embraced the technology and were now leading the way.

> [One teaching staff member] has just taken off like a house on fire. I'll take some credit for that, because two-and-a-half years ago she wouldn't even check her emails, and now she's totally into the social networking thing!

When asked how he had brought about that change, he simply said, "I said, 'Come on, we've got to get into it, we've got to learn these things.' Now she engages with it and she's overtaken me."

The staff member herself, however, recalled in more detail how the principal had effectively motivated his team in the use of ICT.

> Two years ago … there was another teacher here, and both [she] and I wouldn't use our DEC email at school. [The principal] wanted to be able to email us with important information so it wouldn't get lost, so to make us use our emails, he told us that he had sent us an email and the first person to reply would get a pack of Tim Tams! We, being women, decided not to be competitive, so we got ourselves all set up with our replies … and we both hit send … at the same time and shared the Tim Tams!"

PLANE involvement and impact

The school's involvement in PLANE had come about through the online social networking site Yammer. The staff member mentioned above had been using Yammer for some time as a means of networking with fellow teachers, sharing resources and ideas.

The initial impact of PLANE in the school has taken place on two levels: intra-school planning and management, and inter-school engagement and collaboration. PLANE has affected the teachers' professional knowledge in the use of ICT and increased their shared learning with colleagues in other schools.

At school leadership level the principal has found PLANE useful in facilitating and improving collaboration and teamwork. The school's staffing arrangement is such that not all of the staff is present on any one school day. This is particularly challenging for a small school. The

principal observed that PLANE has provided a potential solution to this issue and enabled him to develop a more cohesive team.

PLANE was also seen as a means of increased shared learning with colleagues in other schools. One staff member explained that as a New Scheme Teacher she now had the opportunity to demonstrate her professional growth without having to transfer to another school.

Two components of PLANE proved particularly useful to teachers at the school: the virtual Teach Meets facility and the gaming feature. Teach Meets has proved useful because staff no longer need to drive three hours to the nearest large school for professional development but instead can do participate in these sessions from home. The gaming feature was seen to be particularly beneficial for teaching mathematics.

Participants reported that the e-portfolio facility was less useful to them, because:

> they actually want you to have a plan about what [you want] to learn, whereas I learn by having other people talk about it, and then thinking that I could use that … I find PLANE a bit difficult because I can't plan properly. They say,'What's your learning plan?' and I can't think.I don't have a learning plan – I just learn.

One suggested improvement of the PLANE site was the addition of a chat facility.

> At the moment when you're talking on the forums you don't actually get a sense of all the people out there as people, whereas when you join Yammer, you get to see the professional side as well as the fact that they like chocolate and … this music. I think PLANE really needs to have this sense of community created by [a] chat section. At the moment … we're talking about PLANE all the time on Yammer but we're not talking like that on PLANE itself.

Another suggestion related to the search function.

> The other thing [PLANE could] be good at is allowing other small isolated schools like us to not feel so alone, [but currently] there's no way for me to actually pick out and make friends with people coming from small schools. You can't even do a search on there for 'north coast' –you can do a search for people's names and groups, but you can't search for the north coast… I can't search for small schools or anything like that. I can't identify the people I would like to be friends with on there. When you're in a small school you can be pretty isolated, and being able to make friends with other people is important. PLANE has potential for that, but … it's not doing it properly.

The collaborative nature of PLANE was seen to have great potential.

> [After using PLANE] I realised the way I'd been using social media was very shallow. I was collecting resources from other people and occasionally answering questions, but I didn't realise how you could have deep conversations and create things together.[PLANE] gives the potential for that. That's where I want to head next – to actually create something bigger than what I can do by myself, with other people, but not necessarily be anywhere near them. That's the sort of thing I want to use PLANE for – to totally collaborate with people who are nowhere near me, and build things I can't build for myself.

Findings

PLANE has the potential to provide professional development and mobility in education career pathways for any teacher at any time at any location. For Countrylink Public School, PLANE has the potential to provide a network of support outside the school community.

A chat facility that enables teachers to communicate on a social level would be useful. This would provide a more fluid and vibrant discussion and open up greater potential for sharing of resources and ideas. There also needs to be a way for participants to identify certain characteristics of other participants, so that they can choose to work with others in similar schools or situations. In order for PLANE to expand, it also needs to link to other social networking sites and/or other educational sites.

The e-portfolio function, while valued, was perceived as being too rigid, prescriptive and inflexible, and not allowing room for teacher creativity. Participants wanted the ability to design theire-portfolio in a way that reflected themselves and their ideas and that they felt best demonstrated their skills and achievements.

The passion, positive energy and enthusiasm of these teachers for their school and for the students they taught were striking. They greatly valued the PLANE project and saw its potential as a vehicle that would enable them to build their school and themselves professionally. PLANE has the potential and capacity to redesign the educational landscape. The geographically and social barriers that currently exist between schools can be removed and professional conversations can begin.

Case study 2: Riverside Public School

School context

Riverside Public School (pseudonym) is an urban public school located in a major capital city of Australia. The school was established in 1898 and has a current enrolment of 667 students and 24 teaching staff. It is located at a major intersection and is physically characteristic of many schools in the city, with high security fencing and a mixture of new and old architecture. Older buildings have been fully refurbished. A new library and hall have recently been added.

Riverside Public School has grown and reshaped itself over the years, starting out as an outer suburban school and gradually becoming a multicultural school now surrounded by high-density living. One of the main challenges the school faces is that English is a second language for the majority of its students. Approximately 80 per centof students come from a non-English-speaking background, predominantly Assyrian and Cambodian. The school runs programs in community languages including Vietnamese, Spanish, Khmer and Assyrian.

Current ICT engagement

The school has a full-time ICT mentor, who has been in place for a year. This was an initiative of the school principal. The role of the mentor is to work across the whole school, supporting teachers from Kindergarten to Grade 6 in the use and integration of ICT in the classroom. The ICT mentor works with all 24 classes in the school, visiting each class per fortnight. The classrooms are networked and have interactive whiteboards, and three computers and a class set of iPads are available through the ICT mentor. There is also a class set of Nintendo DSs available through the school's literacy program.

The ICT mentor sees her role as supporting colleagues to use ICT within the curriculum to facilitate better learning outcomes:“For me, it’s the philosophy that you’re not just using technology for the sake of it – what’s the teaching behind it?”

The level of ICT knowledge and skills varies greatly between teachers at the school. Some require substantial support and direction in quite basic tasks, while others are keen to trial new software or technology.

PLANE involvement and impact

The ICT mentor’s involvement in PLANE had come about through advertisement on Scooter and the online network of Yammer. There has been virtually no whole-school involvement, and the ICT mentor commented that she was reluctant to involve others until what she perceived as “a pilot project ”had been better established. She commented that there were “a lot of bumps that needed to be ironed out –but it’s looking good now.”

The ICT mentor had discussed PLANE with the school principal and had his support, but not all of the school’s leadership had been informed about PLANE. When the interviewer visited the school, the deputy principal asked many questions which showed that she had no clear understanding of PLANE or its role. She stated, “I don’t know very much about it right now, but I’m going to the induction … in my holiday time”.

The interviewer’s visit resulted in the school developing greater awareness and understanding of PLANE.

> They’re all excited – the fact that you were coming here has already lifted [awareness]. They made me get up in the staff meeting and explain [that you were] coming to interview us. I actually did say to some of our staff … that it’s an actual way to offer professional development via ICT anytime, anywhere. I said it’s important for us and [that you were] coming to see where our plans are for the future, and what we think.

The ICT mentor saw the value of PLANE for her own professional growth and job security, noting that the professional learning aspect was a key factor. At present she is employed as a New Scheme Teacher,along with seven other teachers at the school, and she stated that she sees PLANE as valuable to her and her colleagues who need to meet the requirements of New Scheme Teachers.

> I’m accredited as a New Scheme Teacher so I need the hours … I still have to prove I can teach. For me this is going to be a way for [me and the school’s other New Scheme Teachers] to get the ICT help [we] need, network with a lot of teachers, get [our] hours and get them approved. A lot of the New Scheme Teachers are casuals,[so] they won’t get much professional development. It’s hard for them to ask to go, because it costs the school money.

She particularly valued the Skills Snacks feature of PLANE and its relevance to classroom teachers. She also believed that the delivery and structure of the Skills Snacks provided good support to those teachers who were less confident with using ICT or who were not comfortable learning in group situations.

> I love [Skills Snacks] because it can be ability based, in your own time and pace. A lot of staff here … are a bit phobic [sic]. Whenever we’ve done workshops, they have two hours to learn to do something and are surround by people who seem to be OK and can do [it].They tend to go into their shell, and I hate it because I myself hate it when someone is standing over me [and] there’s pressure … I think this is going to help learners who are introverts and afraid to show they need to ask questions.

> One of the things I saw when I [went] onto PLANE is you can see how this is used in real classrooms. You can see real people and what they've done in their classes, and you connect with real educators. That's what makes it stand out. You're not going to a course by an agency trying to sell you something. You are learning [from] a network of teachers and they are going to show you, without having to spend a lifetime trying to find things to make life easier for others. This won't be just me helping people, but a whole community of learning helping each other.

A final interesting observation was made by the interviewer himself.

> In the interviews it came to my knowledge that the participants from Countrylink Public School [see above] were communicating with teachers at Riverside Public School through Yammer. They knew each other through the social networking site, but they had never met in person. The participants at both schools had chatted online and had discussed everything about me before I arrived at the second interview. PLANE does not provide this online social networking capacity, and participants were of the opinion that having this facility would assist greatly in the exchange of ideas.

Findings

Riverside Public School has a committed ICT mentor and the school is proactive in the use of ICT within the classroom. Since the school as a whole lacked knowledge of and involvement with PLANE, it was not possible to determine a whole-school impression of PLANE's potential. This could only be gauged from the perspective of the ICT mentor.

The potential of PLANE as perceived by the ICT mentor lay primarily in its ability to assist New Scheme Teachers to meet their accreditation requirements. There were seven New Scheme Teachers at this school, two of whom were experienced overseas-trained teachers. Because of its strong multicultural profile,a school such as Riverside Public is likely to attract teachers from other cultural backgrounds who have trained overseas. PLANE could provide a means to assist these teachers to meet the necessary accreditation requirements, particularly that many of them are casual teachers who cannot easily access school professional learning funds. They are often responsible for their own professional learning and accreditation.

As noted above, participants were of the opinion that asocial networking function on PLANE would assist greatly in the exchange of ideas and should be explored.

Case Study 3: Pleasant Meadows Public School

School context

Pleasant Meadows Public School (pseudonym) is part of a new outer-suburban housing estate located approximately one-and-a-half hours' drive outside a major capital city of Australia. The school was established in 2009 and has an approximate enrolment of 270 students with 13 teaching staff and nine support staff, including the principal. The teaching staff includes an ICT mentor and a teacher librarian, both of whom were interviewed.

One of the main challenges facing the relatively new school is resourcing as it grows. The school's ICT mentor and teacher librarian have worked together to ensure that adequate teaching resources and ICT are provided in the school.

The majority of the school's students come from young middle-class families who have recently moved into the area, attracted by the opportunity to purchase a home in a new estate that has a rural atmosphere within reasonable driving distance to the city.

Note: Unfortunately, the majority of the digital recordings of the interviews conducted at this school were accidentally erased. Only the last 10 minutes of a 60-minute interview could be retrieved. It was decided that due to certain circumstances it was not appropriate to return to the school and conduct a second interview. Therefore, anecdotal evidence and the 10 minutes of available audio recording provide support for the following impressions of the interviewer.

Findings

The only person at the school who had knowledge of PLANE was the ICT mentor. As in the previous case study, the interviewer's visit provided other staff, including the teacher librarian, with awareness of the project.

While two 'Tech time' meetings are held each term, the use of ICT in the school varied greatly, ranging from using email to fully integrating ICT into lessons. This was made evident as the two interview participants described how they supported their colleagues. An online copy of the school's current strategic plan supported this perception: knowledge and use of technology within the classroom were identified as priority areas. The intended outcomes listed in the plan were to increase teacher capacity in the use of ICT, embed ICT into classroom practice, increase the number of computers in classrooms and increase the use of technology in student assessment and monitoring. One of the interesting indicators listed in the plan was "All staff matched with an ICT buddy". There is potential for PLANE to be used to support the school in achieving its desired ICT outcomes.

The majority of the teaching staff comprised, as described by the ICT mentor and teacher librarian, "young mothers in their early 40s" who did not perceive a need to use PLANE as a vehicle for professional mobility or to demonstrate outcomes to meet accreditation requirements, which they had already acquired. The convenience of teaching close to home with a young family far outweighed the desire for career advancement at this time in their careers. Their interest in PLANE focused on its ability to build their professional knowledge in effectively incorporating ICT into the classroom, and to access and share ideas.

> I think there needs to be a wider sharing of [resources] … You need to share it with a larger community… These ideas are in there, and [people are] willing to share them with everybody, and this is awesome … I could use that in my own school.

Summary

- The three case studies provide a representative cross-section of the types of schools located in and around New South Wales, with the exception of remote Indigenous community schools. The three schools also represent a profile of the types of teachers currently employed in Department of Education and Communities schools and their respective career aspirations.
- While there differences between the schools, overall they provided an insight into the potential impact that PLANE can have.
- The success and sustainability of PLANE are strongly dependent on understanding and meeting the needs of schools and their teachers.
- The case studies have highlighted the fact that participants can see the potential uses of PLANE and have identified certain components that they believe to be most useful.
- Overall, the three schools have shown that PLANE does have the potential to make a significant contribution to the professional development of teachers anywhere and at anytime.

Online surveys

Three groups of teachers took part in the online surveys: in-service teachers and school leaders with PLANE experience; in-service teachers and school leaders with no PLANE experience; and pre-service teachers.

As indicated in the Methodology section, the pre-service teachers came from the education faculties of three universities approached by the PLANE evaluation team, while the in-service teachers and school leaders came from the following two sources.

The first source was a list of 516 teachers who had registered their interest on the PLANE website. These were known as PLANE 'pioneers'. Invitations were sent to 422 of these teachers to participate in the evaluation study.

The second source was a list of 91 schools randomly selected from across the three school sectors (public, Catholic and independent). The principals of the schools were asked to inform and encourage their teachers to participate in an evaluation study of PLANE. They were provided with a URL at which to register their interest in participating in the study. This process resulted in gathering the email addresses of 83 in-service teachers and school leaders who registered their interest to participate in the survey.

The aims of the online surveys were to:

- estimate the current use of PLANE among teachers of all career stages
- gather the perceptions of teachers of all career stages about the quality of their experiences with PLANE as a professional learning network
- compare teachers with PLANE experience (denoted as 'PLANE' in this section) with those who with no PLANE experience (denoted 'NPLANE' in this section) with respect to their perceptions of their ICT skills and their attitudes towards the use of networks to communicate with other teachers
- compare the attitudes of PLANE and NPLANE teachers towards the integration of technology into the curriculum and student learning programs, and professional learning in ICT.

The latter two aims were intended to provide a comparative dimension to help in predicting the potential of PLANE.

Use of PLANE

The survey data indicated that the proportion of teachers who have experienced PLANE is very small. This observation is based on the following collected information.

- Approximately 87 per cent of the teachers who participated in the evaluation study and who came from the sample of schools that was randomly selected indicated that they had no PLANE experience. This group comprised in-service teachers as well as school leaders.
- Approximately 5 per cent of pre-service teachers surveyed indicated that they had accessed PLANE. Of these, approximately two-thirds indicated that they had used PLANE only once.
- Approximately 10.7 per cent of the teachers who participated in the evaluation study and have mainly come from the list of pioneers indicated that that PLANE is their first entry to professional learning resources (see Figure 2).

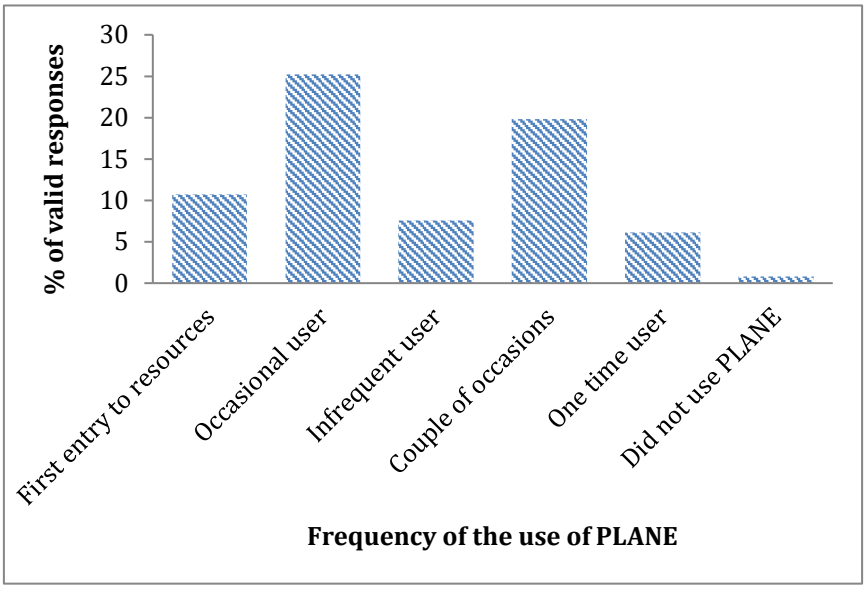

Figure 2: Use of PLANE among pioneer teachers

Teachers' perceptions of their own ICT skills

The survey data indicated that the majority of teachers, whether users or non-users of PLANE, tended to feel comfortable about the use of ICT in the curriculum (see Figure 3). At the same time, the data showed that:

- the level of confidence among users of PLANE was very high; none of the respondents among this group choose the option 'I do not feel comfortable with the use of ICT in the curriculum'
- a substantial minority of non-PLANE users (referred to as NPLANE in the graphs) felt less than comfortable with ICT use in the curriculum
- approximately 57 per cent of the pre-service teachers surveys felt less than comfortable with ICT use in the curriculum.

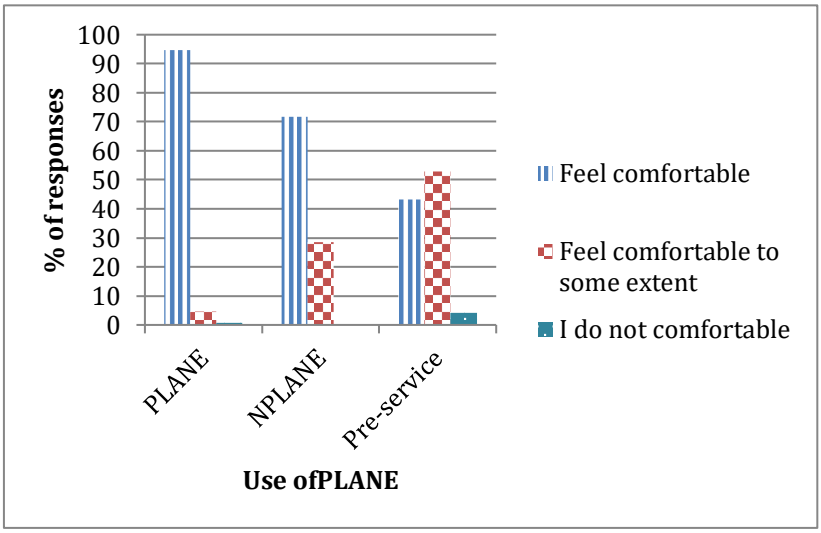

Figure 3: Comfort levels with using ICT in the curriculum

Networking with other teachers

The attitudes of teachers towards the use of networks to exchange ideas with other teachers were measured by two items, to which respondents were asked to report their level of agreement. Their choices were used to compute a score of attitudes towards networks. The scale ranged from 1 for strongly disagree to 5 for strongly agree.

As shown in Table 7, the attitudes of respondents from the three groups (PLANE, NPLANE and pre-service) tended to be quite positive. PLANE teachers tended to be the most positive, followed by non-PLANE teachers.

Table 7: Comparison of attitudes towards networking among teachers

Teacher group	N	Mean	Std deviation
PLANE	126	4.278	0.739
NPLANE	73	3.925	0.985
Pre-service	262	3.710	0.454

Teachers in the PLANE group were asked which networks they currently use. They nominated the following.

- Adobe Professional
- BlogED
- Diigo
- Dreamweaver
- ESR
- Evernote
- FileMaker Pro
- Glogster
- Google Calendar
- Google Docs
- Mahara
- Moodle
- PLANE
- School intranet
- Sentral
- Smart Notebook
- Symbaloo
- Synergetic
- Wikispaces

Professional learning in ICT

Respondents' levels of agreement to the following items regarding the attitudes of teachers towards professional learning in ICT were used to compute scores for this scale.

- I learn new technologies easily.
- I enjoy working with ICT.
- I keep up with the latest developments in technologies that are relevant to teaching.
- I have adequate skills to manage the integration of ICT with the curriculum.

The descriptive statistics of distribution of professional learning attitude scores are shown in Table 8. The mean scores of the PLANE and non-PLANE groups' attitudes towards professional learning in ICT were tested to determine whether the difference between the two groups was statistically significant.

Table 8: Comparison of attitudes towards professional learning and ICT integration

	PLANE teachers			NPLANE teachers		
	N	**Mean**	**SD**	**N**	**Mean**	**SD**
Integration	127	4.430	0.527	73	4.119	0.674
Professional learning	127	4.530	0.560	73	3.932	0.803

The responses of the PLANE group indicate that most of their professional learning activities in ICT tended to happen at school level. Less than 50 per cent of these teachers felt that enough professional learning activities were held at region/diocese level (see TablesA2.1 and A2.2 in Appendix 2 for more information).

The difference between the two groups was found to be statistically significant (see Table 9). The PLANE users tended to have higher mean scores on the scale and their responses tended to be more homogenous.

Table 9: Differences in attitudes towards professional learning in ICT

	PLANE	NPLAN
Mean	4.53	3.93
Variance	0.31	0.64
Observations	127	73
Hypothesised mean difference		0
df		113
t Stat		–5.627
P(T<=t) two-tail		0.000

ICT integration into the curriculum

Respondents' levels of agreement to the following items measuring the attitudes of teachers towards ICT integration into the curriculum were used to compute their scores on the integration scale (see Table 8).

- I learn new technologies easily.
- I enjoy working with ICT.
- ICT enables teachers to align learning activities with students' skill levels.
- Integration of ICT with the curriculum facilitates active learning environments.
- ICT assists student learning.
- Embedding ICT activities in teaching stimulates constructive interaction among students.

- ICT integration with the curriculum enriches my knowledge of the content that I teach.
- ICT facilitates small-group work in the subjects that I teach.
- Use of ICT in my teaching helps me learn more about what I teach.

Both PLANE and NPLANE teachers exhibited positive attitudes towards ICT integration; however, the PLANE group tended to be more positive (see Table 10).

Table 10: Comparison of attitudes towards ICT integration

	NPLANE	PLANE
Mean	4.12	4.43
Variance	0.45	0.28
Observations	73	127
Hypothesised mean difference	0	
df	123	
t Stat	–3.38	
P(T<=t) two-tail	0.00	

Perceptions of the PLANE experience

The data provided throughout this section is based on the responses of teachers who indicated that they had experienced PLANE. The total number of respondents was 131. These included both in-service teachers and school leaders.

As the majority of these respondents were not regular users of PLANE, it was decided to report only the perceptions of those respondents who reported that they had accessed PLANE at least a couple of times. The responses of this group of users indicated the following.

- PLANE is not easy to navigate and its navigation is not intuitive.
- On the other hand it is not hard to search for specific information or resources on PLANE nor is it hard to recognise links that are external to PLANE.
- It is not easy to locate PLANE pages and resources and the organisation of its website is not appealing to the users (see Table 11).

Table 11: Respondents' perception of the use of PLANE

Select ONE or MORE of the sentences in this question that you agree with in relation to your experience with PLANE	Agree		Disagree	
	N	%	N	%
It is easy to navigate PLANE	24	28.92	59	71.08
Navigation of PLANE is intuitive	18	21.69	65	78.31
It is hard to search for specific information or resources in PLANE	27	32.53	56	67.47
It is hard to recognise links that are external to PLANE while navigating it	5	6.02	78	93.98
It is easy to locate PLANE pages and resources	22	26.51	61	73.49
The organisation of PLANE appeals to me	26	31.33	57	68.67

Difficulties in accessing PLANE

Respondents were asked to report whether they had experienced difficulty with any of the following when attempting to use PLANE:

- accessing PLANE
- internet connection
- readability problems
- navigational difficulties
- uploading files
- some functions not working properly.

The majority of respondents indicated that theydid experience some difficulties accessing PLANE(see Table 12). The three most frequent difficulties are some functions do not work correctly, navigational difficulties and uploading files. In their comments some respondents mentioned difficulties with Imprudence in particular.

Table 12: Respondents' reported difficulties accessing PLANE

Have you experienced any of the following difficulties accessing PLANE?	Agree		Disagree	
	N	%	N	%
I did not experience any difficulty accessing PLANE	35	42.17	48	57.83
Internet connection problems	4[4]	8.3	1.7	9
Readability problems	1	2.1	47	97.9
Navigational difficulties	16	33.3	32	66.7
Uploading files	12	25	36	75
Some functions do not work correctly	17	35.4	31	64.6

Respondents also had the opportunity to report any other difficulties they had experienced while attempting to access or use PLANE. The following is a list of the difficulties that were mentioned by a small number of respondents.

- Connectivity problems at work
- Problems with becoming a member of a group and then sharing pages
- Registration problems
- Inconsistent application of images
- iPhone would only display mobile option
- Issues with some areas using iPad
- Difficulty accessing the login page
- Menus within menus
- Access was denied by the NSW DEC
- Lack of time to take part

How respondents dealt with the nominated difficulties

Respondents reported dealing with difficulties in the following ways.

- Abandoned attempt to connect to PLANE
- Posted questions on social media sites such as Twitter or Yammer, or asked questions in online forums
- Sought help from PLANE
- Put in more time exploring PLANE

4 Reporting of the difficulties was limited to respondents who had experienced problems accessing PLANE only (n=48).

Examples of responses on dealing with difficulties

Below are some examples of specific responses with respect to dealing with difficulties.

- "I feel the site has no structure. I seem to be working around the peripher[y] without achieving much."
- "I asked for help in the forums but I didn't get specific help, except from someone unrelated to PLANE who randomly mentioned a possible cause of my problem, which happened to be true."
- "I left it after trying to navigate it. I went back in on a later date but didn't really know what to do. I tried to go to [the Virtual World] Bootcamp but didn't know how to get there. I felt my skills were inadequate, because I read what other people were doing [but] it was not intuitive to me, even though my basic IT skills are good. I felt discouraged."
- "I uploaded an image I wished to use to an external website (the upload option was unavailable) and then linked it to the PLANE page I wished to use. However, now the image is unlinked and cannot be viewed."
- "[I] spent hours literally experimenting and changing file size and format to be able to upload videos to my ICT application, to no avail …[I was] unsuccessful at resolving [this] and a sub-standard application went in."

Peer coaching

Given the responses received, it is clear that peer coaching is not widely used within the PLANE environment as yet. Fewer than 5 per cent of the respondents were involved as coaches or being coached (see Table 13).

Table 13: Involvement in peer coaching within PLANE environment

Were you involved in peer coaching within the PLANE environment?	N	%	Valid %	Cum %
No, I was not involved in any peer coaching	87	66.4	66.4	96.2
Yes, I was both a coach on some occasions and a coached participant on other occasions	1	0.8	0.8	96.9
Yes, I was on some occasions coached by one of my PLANE peers	4	3.1	3.1	100
Missing	39	29.8	29.8	29.8
Total	**131**	**100**	**100**	

Networking within PLANE

Analysis of the responses received on networking within PLANE indicated the following.

- The largest proportion of respondents did not attempt to link with other teachers within the PLANE environment.

- The great majority of those who attempted to link with others (about 34 per cent of the total respondents) found it easy to do so.

Means of linking with other teachers within PLANE

Respondents reported linking with other teachers within PLANE in the following ways.

- Messaging (approximately 40 per cent of those who linked with other teachers)
- Social media (approximately 32 per cent of those who linked with other teachers)
- 'Following' other teachers (approximately 18 per cent of those who linked with other teachers)

Reasons for not linking with other teachers

Respondents reported the following reasons for not linking with other teachers.

- Difficulties within PLANE, such as lack of visibility or inadequate search options
- Online time not suitable

The following is an example of a respondent's suggestion regarding linking with other teachers.

> It would be good to see followers online, similar to Yammer and Maang. Perhaps specific notifications to response[s] instead of a whole stream of responses from all forums.

Table 14: Linking with other teachers within PLANE environment

Was it easy for you to link up with other school teachers within PLANE?	N	%	Valid %	Cum %
I did not try to link up with other teachers	42	32.1	48.3	48.3
Yes	40	30.5	46	94.3
No	5	3.8	5.7	100
Subtotal	87	66.4	100	
Missing	44	33.6		
Total	**131**	**100**		

Ease of using PLANE features

Respondents were asked to rate the following six PLANE features: e-portfolio, virtual worlds, game-based learning, Skills Snacks, Pathways and Share Club. These features were rated on the following criteria on a scale from 1 (strongly disagree) to 5 (strongly agree).

- Ease of use
- Possibility of using the feature
- Need for further training or support to make use of the feature

- Potential of the feature for the teacher
- Potential of the feature to improve student learning
- Intention to use the outcomes of the feature in the classroom
- Value of the featureto teacher professional enrichment

The average and standard deviation of the ratings for each option were then computed.The analysis was limited to respondents who stated that they had accessed PLANE at least a couple of times. The outcomes of the analysis indicate the following (see Tables A2.4 to A2.9 in Appendix 2 for further detail).

- Respondents were positive in their ratings of all the listed features of PLANE. The mean ratings on all the criteria ranged between 2.4 and 4.4.
- The variability of the ratings was consistent for all ofthese features. They were all in the vicinity of 1 except for respondents' need further training and support, where the variability was higher.
- Respondents gave the highest ratings for ease of useto the features Skills Snacks and Share Club and the lowest ratings for virtual worlds and game-based learning.
- Respondents gave the highest ratings on the possibility of being usedto the features Skills Snacks and Pathways and the lowest ratings for virtual worlds and game-based learning.
- Respondents indicated that they needed more training and support to be able to use thevirtual worlds and game-based learning and less and training support for the e-portfolio and Share Club.
- Respondents rated highly (above 4.1) the features of Skills Snacks, e-portfolio and Share Club for their potential to the teacher. The lowest ratings here were given to virtual worlds and game-based learning.
- Respondents rated the features Skills Snacks and Pathways at higher levels for their potential to improve student learning, while virtual worlds and game-based learning were given relatively lower ratings.
- Respondents rated the features Skills Snacks and Share Club at higher levels for the intention of using their outcomes in classrooms, while virtual worlds and game-based learning were given relatively lower ratings.
- Respondents rated the features Skills Snacks and e-portfolio at higher levels for being professional enriching, while virtual worlds and game-based learning were given relatively lower ratings.

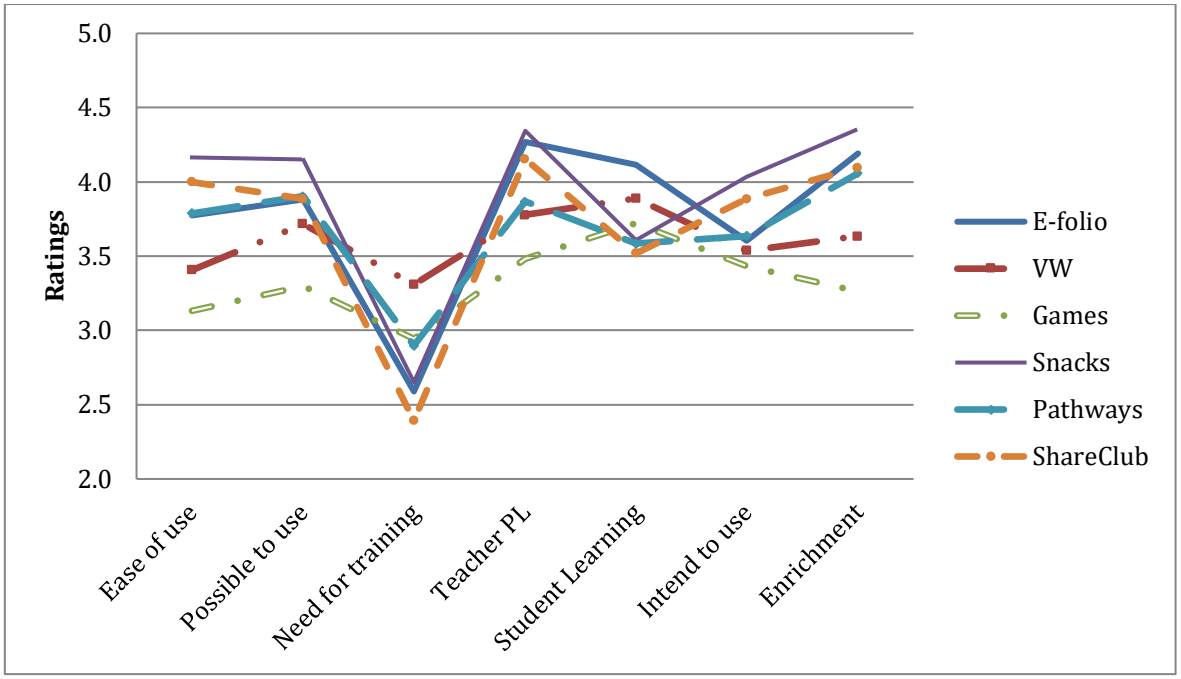

Figure 4: Respondents' assessment of features offered within the PLANE enviroment

Respondents were asked to nominate one PLANE experience that they actually used in the classroom. Approximately 25 per cent of those who reported having used PLANE at least a couple of times reported one of these experiences. The experiences reported by more than one teacher were:

- augmented reality
- audacity
- mind maps
- video in the classroom.

The great majority of these PLANE experiences are available on Skills Snacks.

Suggested resources to be offered through PLANE

Approximately 15 per cent of respondents made suggestions for additional courses, links and other resources to be made available within the PLANE environment. These suggestions may be grouped into the following broad categories:

- support to learning tools, such as animation, whiteboard tools
- curriculum-specific resources and software
- links to useful resources on other networks, e.g. Edmodo, Glogster
- programming tools for teaching
- examples of using interactive and discussion tools such as blogs
- managing student e-portfolios
- trainingin the use of applications on DEC laptops.

e-Portfolios

Approximately 14 per cent of respondents reported keeping their own e-portfolios (see Table 15),with 48 per cent of these within the PLANE environment.

Table 15: Respondents keeping an e-portfolio

	N	%	Valid %	Cumulative %
Yes, I keep an e-portfolio	18	13.7	22.2	22.2
No, I do not keep an e-portfolio	63	48.1	77.8	100
Subtotal	81	61.8	100	
Missing	50	38.2		
Total	**131**	**100**		

Respondents found e-portfolios beneficial in different ways. These benefits may be roughly grouped into:

- supporting the integration of ICT into the classroom
- organising resources and information
- encouraging reflection.

Specific comments included the following.

> It formalised and localised everything in one place. It also helped my clarity of thought and [was] a neat way to represent what I have been thinking, doing and experiencing over the years.
>
> Nicer interface, hopefully a beneficial networking space. Easier to share with relevant people.
>
> Easy to use, better connection with others, ability to make public or private.

The most common items that respondents reported keeping in their e-portfolios were:

- images
- multimedia
- hyperlinks
- contact information.

Sharing of e-portfolio entries with other teachers was not common (see table 16). Fewer than 11 per cent of respondents reported that they shared portfolio entries. Such sharing within PLANE seems to be limited to the HAICT Educators.

Table 16: Respondents' sharing of e-portfolio entries with other teachers

			Valid %	Cum %	
Yes, I share e-portfolio entries	14	10.7	17.7	17.7	
No, I do not share e-portfolio entries	65	49.6	82.3	100	
Subtotal	79	60.3	100		
Missing	52	39.7			
Total	**131**	**100**			

Summary

The following points sum up the findings through this data source:

- The proportion of teachers who have experienced PLANE is still small.
- The majority of teachers who responded to the survey seemed positive regarding the use of ICT in the curriculum.
- Current users of PLANE seem to have more positive attitudes towards ICT integration, networking and professional learning in ICT than the teachers who responded to the survey but had no PLANE experience.
- Most professional learning activities in ICT tend to happen at school level.
- Some teachers have experienced difficulties accessing PLANE.
- Peer coaching is not yet widely used within the PLANE environment.
- A large proportion of respondents had not attempted to link with other teachers within the PLANE environment.
- Survey respondents were positive about the listed features of PLANE, such as Skills Snacks and Share Club.
- Survey respondents stated that they believed e-portfolios would be beneficial in supporting ICT integration, organising resources and encouraging reflection.

Discussion

This section aims to address the following questions.

1. Does PLANE have the potential to contribute towards the betterment of teaching in particular and learning in general?
2. What are the factors that would ensure the potential contributions of PLANE?
3. What are the challenges that are likely to influence the potential of PLANE in the future?

This discussion focuses on those elements of PLANE that have emerged from the evaluation findings and that are seen to affect the potential of the project. It explores emerging issues and concerns arising from the interviews, case studies, online surveys, observations and literature review. Both positive attributes and concerns of PLANE are identified, and their implications to the success of the project critiqued.

In the interim report it was noted that the PLANE website was not yet fully operational, so it was difficult to evaluate the professional learning environment that would ultimately be provided for teachers. Since then much work has transpired and the site is now fully operational. It is has been carefully streamlined to provide easier access for users, although some of the teachers interviewed reported that they still found it 'clunky'. In the online survey, those who reported that they had accessed PLANE a couple of times stated that the navigation of PLANE was not intuitive, and that they did not find it easy to locate resources or specific information, while those who had had more access did not have any of these problems. This is a reminder that first impressions are most important, and in this case PLANE must ensure that new users have an inviting introduction to the site and will want to return.

Navigation of the site has been simplified, and entry via social media is seen as a positive approach by most. Technical glitches are reported to have been solved, and participants shouldnow have a more positive experience. The interface promotes ease of access, and the concept of having fun while learning is built into the 'journey' approach with visually appealing graphics and imagery. All this provides an appealing foundation for professional learning for teachers.

The most important development since the interim report has been the support gained from the NSW Institute of Teachers (NSWIT). This means that participants will automatically be accredited for the professional learning they undertake through the PLANE platform. The PLANE team are to be congratulated on this achievement and commended for their work in ensuring that the language of PLANE experiences meets NSWIT requirements.

It must be noted, however, that not all users are focused on the opportunity to gain recognition with NSWIT. The more established teachers interviewed as part of the cases studies were found to lack professional ambition, so links to the NSWIT are unlikely to attract them to PLANE. While they may still be in need of skills development in ICT, credentials are not a priority for these teachers. Those in the early years of their career who are required to meet designated standards, and those seeking promotion, should be attracted to the possibility of linking their professional learning to accreditation with the NSWIT. Pre-service teachers do not as yet appear to recognise the value in having accreditation linked to their learning. Those stakeholders who were interviewed for this report viewed these links as being a worthwhile addition that will encourage participation in PLANE. Once again, this is

an unproven assumption. Although this potential is accepted, there are many other issues discussed in this report that will determine whether PLANE is able to populate as desired.

Today, internet access is considered an essential part of everyday life. It is used for information, work, communication and socialising, transforming the lives of many. The development of this online medium for professional learning was a natural step. While we cannot predict how the internet will be used in the future, we can be assured that it will be an assumed element of our social fabric. Rural teachers interviewed for this report were particularly supportive of and excited by the online professional development opportunities available on PLANE. They recognised that professional learning is crucial to development, and is not easy to obtain in remote areas. This is seen as an advantage of PLANE, and a way in which it responds to a recognised need that deserves attention, particularly if we are to encourage teachers into more difficult-to-staff areas. Not only does PLANE offer professional learning opportunities to these teachers, but it can also provide the collaboration, coaching and sharing channels that are so elusive to this group of educators.

As noted in the literature review, online teacher professional learning models can provide high-quality learning opportunities. They can give teachers access to experts in a given field and allow them to collaborate with others with similar interests. Additionally, online learning allows learners time for reflection and dialogue. It can provide flexibility in scheduling, timing and the development of personal learning spaces. It can also be empowering, as teachers can take ownership of their own learning. This research has found support for the concept of online learning at every level.

Results of the teacher survey show that 80 per cent of that group of teachers were aware of informal online networks where they could communicate with teachers with common interests. Only one of these teachers identified PLANE as such a network. There is no intention to move teachers away from other online networks that are working for them onto the PLANE platform, but it will be important for teachers to see PLANE as complementary to the other online learning environments in which they are presently involved. PLANE must demonstrate a point of difference from the range of online learning experiences already being offered to support teachers.

Crucial to the success of an online learning environment is confidence in the technology. PLANE participants reported that a sound infrastructure now exists. Initial problems with communication software have been solved and the mechanisms to monitor data and provide certification for accomplishments have improved. The literature states that infrastructure instability can hinder teachers' willingness to participate in an online environment (see, for example, Hunter, 2002). Those interviewed for this report were on the whole positive about their online experiences, although some voiced concerns about the reliability of the technology for the virtual world experience.

Some comments that arose through the online survey, such as the following, are of concern.

> Connectivity at school was a problem.
>
> I tried to register [to use PLANE] at school but it would not allow me.
>
> I left it after trying to navigate it. I went back in on a later date but didn't really know what to do.
>
> [I] spent hours literally experimenting and changing file size and format to be able to upload videos to my ICT application, to no avail.

It was also reported that the Imprudence software program, which is needed for the virtual worlds component of PLANE, is not able to be used on the Department of Education and Communities computers.

The vast number of differing systems across schools makes for a complex situation. Maintenance of the technology infrastructure and an understanding of the situation in different school environments and different geographical areas will be a continuing challenge for the PLANE team. The PLANE management team has ensured the evaluation team that these initial technical difficulties have been solved, and that all will be operating smoothly for the October 2012 launch.

The provision of opportunities for collaboration, time for reflection and flexibility in timing and individual pathways are features of online professional development and form the framework of the PLANE project. The project aims to provide an online community of educators, with the added bonus of collaboration of likeminded educators and coaching support when needed. The intention of PLANE is to be available to teachers 'anytime, anywhere', fostering the concept of flexibility that is promoted as an advantage in the literature. "Educators at all levels need just-in-time, job-embedded assistance as they struggle to adapt to new curricula and new instructional practices to their unique classroom contexts" (Guskey & Kwang, 2009).

Today's professionals in all fields of work expect to be able to use the online environment in the professional life. Greg Whitby, executive director of schools in the Catholic diocese of Parramatta, reminds us that today's teachers require professional communities that share knowledge and use face-to-face, virtual and blended communities.

> We have to move from the teacher in isolation to the teacher working in teams, and that mirrors what is happening across all industries. A focus on building teacher capacity, involving them in continuing professional learning and getting them to share their practice with each other is long overdue. (SMH, 2012).

The success of any online learning community is dependent on its participants. The PLANE evaluation team feels positive about the number of educators who have registered on PLANE to date, but the challenge will be to keep them involved and to build on that number. Every effort is being made to ensure this eventuality, but without the desired population PLANE will not be sustainable and will not fulfil its aims. There is no doubt that there is the potential for PLANE to capture the numbers needed, but this is something that cannot be predicted with any certainty.

The literature review shows that over time educators have grown increasingly dissatisfied with traditional professional learning experiences. This has led to recognition that teachers need collaborative learning communities where they can articulate, reflect and share with their peers.

The Share Club has become a very important element of PLANE as participants respond to the benefits of collaboration as promoted through PLANE. This is the most active part of the site at the time of writing, and the enthusiasm of those interviewed reflects the relevance of this concept.There is no doubt that this collaboration within PLANE responds to a need, and fosters the empowerment of individuals that underlies the PLANE philosophy. It is noted that the success of this aspect is reliant on the willingness of teachers to share their knowledge and experiences, and that such input reflects the desired pedagogy. The teachers who were interviewed spoke positively about their experience in the Share Club and/or stated their intention to begin a new group within PLANE, demonstrating the potential for this form of professional growth. Some stakeholders commented on the need for some form of quality control within this collaborative learning environment. The PLANE team is immersing its

Highly Accomplished ICT (HAICT) Educators in the PLANE philosophy during training, to ensure that they reflect the desired pedagogy when leading and participating in collaborative learning.

This training of HAICTEducators in the PLANE philosophy also demonstrates a response from the PLANE team to concerns expressed about pedagogical understanding, as outlined in the interim report. The PLANE team members interviewed for this phase of the evaluation spoke with confidence and in one voice about the underlying pedagogy. There has been a move to streamline and simplify the approach to share, learn and lead as the foundation for PLANE experiences. It must be expected that deeper pedagogical understandings will differ among different groups, and some form of quality control will need to be included in the PLANE platform to ensure consistency.

This sharing across sectors and levels of teaching is unique to the NSW education environment, and is paving the way for the collaborative approach to learning that is anticipated into the future. A similar move to break down barriers and to learn from, through and with each other is promoted in many industries today. PLANE is providing a platform for this to happen in education, and this element of the project has great potential to improve teachers' learning and thus lead to better teaching. It was found that this approach is highly valued and was working effectively at this time. Teachers spoke positively about the opportunity to confer with others without considering sectoral or regional issues. This process was seen to be about teachers sharing with teachers, no matter where they were from. It was also pleasing to note that efforts have been made by the Catholic sector to share some of their online teaching resources through PLANE, making them available to all teachers registered with PLANE. The very real potential for this to occur is an exciting proposition and one that should be supported.

The ongoing support of the public, Catholic and independent sectors is seen to be crucial to the success of PLANE. Some concern was expressed that as the end of the current funding arrangement approaches, there may be pressure on the sectors to provide financial support in some way. This could cause a change in the dimension of cross-sectoral support.

Our research also found that the grouping of similar schools across all sectors (such as rural schools, special-education schools, one-teacher schools, selective schools and so on) is another area for consideration. A teacher from one case-study school commented that she would like to be able to connect with teachers from similar rural schools. Another teacher wanted to be able to search by diocese in order to find other teachers in her region. This could of course happen informally through the Share Club, but PLANE might like to consider forming some such specific groups. As time goes by, the PLANE team will gather more information through the tagging system and should be able to respond to the various needs and wishes of teachers. This research also found that PLANE can fill the need for a network for sharing ideas and resources within the school community.

As noted in the interim report, at present PLANE is designed mainly to support in-service teachers. It does have the potential to support each of the three designated levels – pre-service teachers, in-service teachers and teacher leaders – but due to time and personnel constraints each has not been equally developed. At present, in-service teachers and some leaders are well catered for. Although presentations have been made at some education faculties in the university sector, PLANE is not yet well recognised among pre-service teachers. The impetus has been weak and late in the development cycle. This lack of promotion to pre-service teachers is seen as a weakness in the implementation plan, as this group of educators is needed to populate PLANE to the anticipated level. Further investigation into the needs of pre-service teachers should be conducted and responded to. The facilityfor pre-service teachers to communicate with in-service teachers has the potential to be very powerful in the development of the next generation of teachers.

Some middle-management leaders at the schools, mainly ICT co-ordinators and similar, have become involved in PLANE, in many cases as HAICTEducators.Positional leaders such as principals have limited representation at the time of writing. Within the PLANE management there is now a strong effort being made to respond to the needs of this group. Success will make a big difference to the overall support for the project. Had this effort been made earlier in the PLANE development cycle, a greater level of support from school leadership might have led to a more expansive response from schools.

The Skills Snacks remain a popular component of PLANE and appear to be the first stop for many participants. This feature certainly has the potential to improve ICT skills among teachers, but most of those interviewed felt that their own higher level of expertise meant that the Skills Snacks were not so relevant to them.However, survey respondents rated the Skills Snacks and e-portfolio features more highly for being professionally enriching than the virtual worlds or game-based learning. Some links with key learning areas(KLAs) have also been suggested for the Skills Snacks feature. It will be important for the Skills Snacks to continue to develop, maintain currency and reflect new technologies.

Since the interim report was produced, the courses, Gateways and Quests available on PLANE have been expanded to broaden the experience. This developmentattracted positive comments from various stakeholders, but did not receive the same attention from the teachers interviewed for this report. The teachers appeared to be more interested in the opportunity to share and collaborate as part of their own personal professional learning pathway. To counter this view, there were a few teachers who used the courses as an introduction and found them worthwhile in expanding their understanding of the particular skill or knowledge, developing their confidence in sharing.It could also be accepted that through the sharing experience the HAICTEducators will direct teachers to the various courses that may meet their needs.

The e-portfolio feature is designed to facilitate the development, collection and management of digital resources for teachers, and with the links to the NSWIT will enable accreditation for learning and enable users to carry qualifications across different education systems and jurisdictions. Changes have been made to tighten the links to the NSWIT and ensure certification for participants. This provides the potential to increase the population of registered users on PLANE. The e-portfoliofeature was viewed by many participants to be the element that will attract and retain participants. Mobility of professional learning is a key facture in career development for teachers.

The e-portfolio feature received positive responses in the online surveys, which bodes well for the potential of this element of PLANE.

As 21st-century learning skills of critical thinking and literacy are promoted throughout the educational community, gaming is seen as an authentic means of developing these skills. This innovative approach has gained a dedicated following within PLANE, and those interviewed were enthusiastic about the use of gaming. It is felt that much of this enthusiasm related to the use of gaming with students rather than teachers' own use as a methodology for professional learning. This element of PLANE can face technical challenges and has the tendency to drain the project of valuable resources. However, arguments for the inclusion of gaming and the research that supports it as an educational methodology are most convincing. As a unique aspect of online learning, it has the potential to attract more teachers to PLANE.

Peer coaching is seen as a powerful strategy, but one that is time and resource heavy. In the interim report it was suggested that the implementation of the virtual worlds feature be delayed, as it was seen to sap energy, financial and personnel resources from PLANE. At this time it appears that the move to virtual worlds, although still an ideal, has been slowed

somewhat. A blended model of peer coaching with a combination of online, face-to-face and virtual world modes is in current operation, although with limited participation. It has been difficult to confirm data about the numbers and levels of peer coaching participants at the time of writing, but some teachers who participated in our interviews expressed interest in becoming a peer coach within PLANE.

The literature supports peer coaching as a methodology. Peer coaches “help teachers engage in regular, reflective discussions about instruction” (Guiney, 2001) as well as providing resources, consultation and ‘just-in-time’ support. They also help teachersto develop the necessary technology skills and instructional strategies needed to integrate technology into teaching and learning (Foltos, 2011). The blended model described above appears to be the most practical way forward for the peer coaching concept to develop within PLANE. Alternative forms of online delivery,such as Adobe Connect, should be explored and all technical issues resolved. Although the virtual worlds concept has been a drain on resources, it is also seen as an innovative approach that should maintain some presence within the PLANE environment.

Sustainability continues to be a challenge for the PLANE team. It is hoped that the employment of industry experts to develop anappropriate business plan will provide some solutions for the project’s long-term financial viability. Quality control and technical currency will also need to be maintained. The future of PLANE relies on feasible solutions and it is anticipated that a core of the expertise from the PLANE management team will be maintained into the future to ensure that the project reaches its potential. As a professional learning platform for educators it has the potential to engage and empower participants, leading to improved learning for future generations.

Recommendations

1. The innovative aspect of PLANE should be maintained and should continue to be promoted within the relevant school sectors and the wider educational community.
2. The e-portfolio facility, as one of the most innovative features of PLANE, should be maintained. Systematic data gathering is needed to ensure the inclusivity of this facility so that it can be used easily and efficiently by teachers regardless of their level of digital literacy.
3. Consultation should continue to expand, and collected information on PLANE should be shared among all stakeholders to ensure that they are actively involved.
4. Efforts should be made to ensure wider participation of teachers in PLANE. These efforts should be directed towards teachers in the three school sectors: public, Catholic and independent. Effective marketing must be used to promote the advantages of PLANE to each of these sectors. Online platforms such as Facebook, Edmodo and Twitter as well as more traditional means of dissemination such as flyers and face-to-face visits should be used.
5. Teachers and educational leaders from the three sectors should feel that they are true partners in the development of PLANE as a professional learning network. For example, the incorporation of the online version of Teach Meetwithin the PLANE platform has been effective. Other avenues of cooperation and empowerment at individual teacher and school levels should also be pursued.
6. Consideration should be given to the creation of professional learning school-based networks within PLANE. Certain schools may be approached for the purpose of creation of such networks. These school-based networks would serve and support the specific professional learning needs of these schools.
7. The active involvement of school positional (role) leaders, particularly principals, is essential to the adoption of any change or innovation. More systematic efforts are needed to ensure that these leaders are aware of PLANE and its potential. Such efforts should include opportunities for hands-on experiences for these leaders that are packaged and promoted in manners that facilitate their participation given the ever-growing demands on their time.
8. A concerted effort should be made to publicise PLANE to the education faculties of universities that offer teacher education programs. These efforts should be preceded and informed by systematic investigation of current teacher education programs and of the needs of student teachers with respect to smooth transition into the profession of teaching.
9. The current opportunities that are available for teachers to share ideas and contribute openly through the applicable facilities within PLANE should be maintained. Teachers should be encouraged to participate freely and to share their ideas and resources. At the same time teachers should be guided to respond professionally to these shared materials and to assist in their development to ensure their quality and usefulness.
10. To maximise the benefits of shared resources and ideas, efforts should be made to tag and classify them. As the volume of shared material is expected to grow rapidly if efforts to promote PLANE are successful, there is a need to devise a workable system to review these tags and classifications. The role of Highly Accomplished ICT (HAICT) Educators as reviewers of shared materials should be emphasised and incorporated into future workable review systems.

11. A strong system of quality control with clearly and publicly communicated criteria should be introduced to ensure that all current and future PLANE facilities are consistent with quality expectations.

12. PLANE provides links to many existing websites. These links should be maintained and in fact strengthened and supported by well-developed smart search strategies to facilitate teachers' access to the resources they need. It would also be advantageous for PLANE to work with and integrate resources already offered on the websites of its partners, such as the Department of Education and Communities, the Association of Independent Schools and the NSW Catholic Education Commission and the Catholic Education Offices.

13. The channels of professional growth and learning that are currently offered by PLANE should be enhanced. These channels would benefit from an effective self-assessment facility and workable peer-coaching programs. PLANE's existing efforts to incorporate the current NSW peer-coaching program are acknowledged and appreciated; however, there is a need to further develop workable systems of needs identification and peer matching. It is recommended that a study be conducted to assist in the development of such systems. This study should be undertaken by a team that is independent of PLANE but incorporates educators with expertise in peer coaching and needs assessment.

14. Efforts should be made to develop concrete examples of ICT integration into the various subject and key learning areas that are currently taught in primary and secondary schools or would be taught as the National Curriculum is implemented. While the technological skills and creativity of the PLANE teams and their associated efforts are recognised, the curricular dimension that provides the context for these skills and efforts needs to be developed. It is recommended that teams of consultants and expert teachers from existing bodies in the public, Catholic and independent sectors be incorporated to help in the development of these concrete examples.

15. The evidence collected during the evaluation process indicated the potential of virtual peer coaching. However, this evidence was based on small numbers of participants, so the effectiveness of this facility would need to be evaluated further with a larger number and wider range of participants before wider adoption of this facility could be recommended. This further evaluation should include a critical examination of the current capabilities of schools in terms of hardware and software, and a cost–benefit analysis of the facility.

16. A relevant strategic and sustainable system should be developed to ensure the continuous development of PLANE facilities in response to identified needs. Survey results indicate that some teachers prefer greater opportunities for social interaction. It is recommended to consider including social networking facilities within PLANE.

17. Strategic plans should be developed to ensure the maintenance of current facilities. Mechanisms should be established to monitor technological developments in learning theory and pedagogy, to ensure the capacity of PLANE to adapt its operations accordingly.

18. While it would seem more workable to place the management of PLANE within one school authority, it is recommended that the cross-sectoral nature of PLANE be maintained. It is further recommended that the current group structure of PLANE should be maintained at NSW state level. Further examination of this structure will be necessary if PLANE is rolled out nationally.

References

ACARA (2012).*Shape of the Australian curriculum: Technologies* (Draft).

Adams, Jr., J. (2000). Taking charge of curriculum: Teacher networks and curriculum implementation. New York: Teachers College Press.

Aldrich, C. (2009a). Because you can't learn to ride a bicycle from a book.*T+D,63*(12), 24–26. Retrieved from www.astd.org/Publications/Newsletters/Learning-Circuits/Learning-Circuits-Archives/2010/09/Because-You-CanT-Learn-to-Ride-a-Bicycle-from-a-Book.

Aldrich, C. (2009b). Learning online with games, simulations and virtual worlds. San Francisco: Jossey-Bass.

An, Y.-J.& Bonk, C.J. (2009). Finding that special place: Designing digital games-based learning environments.*TechTrends,53*(3), 43–48.

Andrews, A., Sanchez, A.&Lee, A. (2010).Using immersive learning simulations for leadership training. Paper presented at the World Conference on E-Learning in Corporate, Government, Healthcare and Higher Education 2010, Orlando, Florida, USA. Retrieved from www.editlib.org/p/35581.

Annetta, L.A., Folta, E.& Klesath, M. (2010).v-Learning: Distance education in the 21st century through 3D virtual learning environments. New York: Springer.

Antin, J.&Churchill, E.F. (2011). Badges in social media: A social psychological perspective. *Human Factors*.

Arnau, L., Kahrs, J., & Kruskamp, B. (2004). Peer coaching: Veteran high school teachers take the lead on learning. *NASSP Bulletin,88*(639), 26–41.

Back to school. (4 August 2012). *Sydney Morning Herald*, News Review.

Barab, S., Barnett, M., & Squire, K. (2002).Developing an empirical account of a community of practice: Characterizing the essential tensions.*Journal of the Learning Sciences*, *11*(4), 489–542.

Barab, S.A., Makinster, J. G., Moore, J. A., & Cunningham, D. J. (2001). Designing and building an online community: The struggle to support sociability in the inquiry learning forum. *Educational Technology Research and Development*, *49*(4), 71–96.

Barnett, M. (2006).Using a web-based professional development system to support preservice teachers.*Examining Authentic Classroom Practice*,*14*(4), 701–729.

Beetham, H. (2004). ePortfolios in post-16 learning in the UK: Developments, issues and opportunities. JISC e-learning and pedagogy strand of the JISC e-learning programme.

Birman, B.F., Desimone, L., Porter, A.C. & Garet, M.S. (2000) Designing professional development that works.*Educational Leadership*, *57*(May), 28–33.

Borko, H. (2004). Professional development and teacher learning: Mapping the terrain. *Educational Researcher*, *33*(8), 3–15.

Brown, A.& Green, T. (2003). Showing up to class in pajamas (or less!): The fantasies and realities of on-line professional development. *Clearing House*,*76*(3), 433–472.

Bryce, J.& Rutter, J. (2003). Gender dynamics and the social and spatial organization of computer gaming. *Leisure Studies*,*22*, 1–15.

Burns, M. (2002). From compliance to commitment: Technology as a catalyst for communities of learning. *Phi Delta Kappan*, *84*(4), 295–302.

Campbell, M. (2009).Using 3D-virtual worlds to teach decision-making.*Proceedings of the Australian Society for Computers in Learning in Tertiary Education (ascilite) 2009, Auckland*.Retrieved from www.ascilite.org.au/conferences/auckland09/procs/ campbell-m.pdf.

Campbell, M.& Uys, P. (2007).Identifying factors that influence the success of ICT in developing a learning community: The CELT experience.*Campus-Wide Information Systems* (CWIS),*24*(1), 17–26.

Cassidy, C., Chrisite, D., Coutts, D., Dunn, J., Sinclair, C., Skinner, D.& Wilson, A. (2008).Building communities of educational inquiry.*Oxford Review of Education*,*34*(2), 217–35.

Castronova, E. (2007). *Exodus to the virtual world*. New York: Palgrave Macmillan.

Cochran-Smith, M. & Lytle, S.L. (2001). Beyond certainty: Taking an inquiry stance on practice. In A. Lieberman & L. Miller (Eds.),*Teachers caught in the action: Professional development that matters*, 45–58. New York, NY: Teachers College Press.

Corcoran, T.B., Fuhrman, S.H.& Belcher, C.L. (2001).The district role in instructional improvement.*Phi Delta Kappan*,*83*, 78–84.

Cotterill, S. (2005). Design, implementation and evaluation of a 'generic' ePortfolio: The University of Newcastle Upon Tyne experience. *CAL-laborate*, June 2005.Retrieved from http://sydney.edu.au/science/uniserve_science/pubs/callab/Vol13/01.web.pdf.

Darling-Hammond, L. (2009). How teachers learn. *Educational Leadership*,*66*(5), 46–53.

De Freits, S. & Veletsianos, G. (2010). Crossing boundaries: Learning and teaching in virtual worlds (Editorial). *British Journal of Educational of Technology*,*41*(1), 3–9.

Dede, C. (2004). Enabling distributed learning communities via emerging technologies. *Technological Horizons in Education Journal*, *32*(2), 12–22; *32*(3), 16–26.

Delgarno, B. & Lee, M. (2010). Where are the learning affordances of 3-D virtual environments? *British Journal of Educational of Technology*,*41*(1), 10–32.

Di Petta, T. (1998). Community on-line: New professional environments for higher education. *New Directions for Teaching and Learning*,*76*, 53–66.

Dietz, T.L. (1998). An examination of violence and gender role portrayals in video games: Implications for gender socialization and aggressive behavior. *Sex Roles*, 38, 425–442.

Easton, L.B. (Ed.) (2004). *Powerful designs for professionallearning*. Oxford, Ohio: National Staff Development Council, 2004.

Edirisingha, P., Nie, M., Pluciennik, M. & Young, R. (2009).Socialisation for learning at a distance in a 3-D multi-user virtual environment. . *British Journal of Educational of Technology*, 40(3), 458–479.

Eib, B.J. (2002). Online learning and professional development.*Principal Leadership*, *3*(4), 61–64.

European Commission (2007).Improving the quality of teacher education: conclusions of the Council and of the Representatives of the Governments of the Member States.Council Meeting. Retrieved from http://eur-lex.europa.eu/LexUriServ/LexUriServ.do?uri= OJ:C:2008:141:0017:0020:en:PDF.

Foltos, L. (2011). *Peer coaching: Changing classroom practice and enhancing student achievement.*Retrieved from www.edlabgroup.org/media/peercoachinglf.pdf.

Funk, K.P. (2004). Brief or new: Student learning portfolios: Balancing tradition with innovation. *Occupational Therapy in Health Care*, *18*(1/2), 99–105.

Gailey, C.W. (1993). Mediated messages: Gender, class, and cosmos in home video games.*Journal of Popular Culture*,*27*, 81–97.

Garber, D. (2004).Growing virtual communities.Technical Note Report #34.*InternationalReview of Research in Open and Distance Learning*.Retrieved from www.irrodl.org/content/v5.2/ technote4.html.

Garet, M.S., Porter, A.C., Desimone, L., Birman, B.F.& Yoon, K.S. (2001). What makes professional development effective? Results from a national sample of teachers.*American Educational Research Journal*,*38*(Winter), 915–945.

Granger, C.A., Morbey, M.L., Lotherington, H., Owston, R.D.& Wideman, H.H. (2002).Factors contributing to teachers' successful implementation of IT.*Journal of Computer Assisted Learning*,*18*, 480–488.

Greenfield, P.M. (1996). Video games as cultural artefacts. *Journal of Applied Developmental Psychology.* Special issue: Effects of interactive entertainment technologies on development,*15*, 3–12.

Grossman, P., Wineburg, S. & Woolworth, S. (2001). Toward a theory of teacher community.*Teachers College Record*, *103*(6), 942–1012.

Guiney, E. (2001). Coaching isn't just for athletes: The role of teacher leaders. *Phi Delta Kappan*, *82*(10), 740–3.

Guskey, T.R. & Yoon, K.S. (2009). What works in professional development? *Phi Delta Kappan*, *90*(7), 495500.

Hallam, G. (2008). Getting ahead in a complicated world: ePortfolios as a key tool for professional development.*ALIA National Advisory Congress 2008 Position Paper on Professional Development.*Retrieved from http://membership.alia.org.au/lib/pdf/governance/nac/2008/getting.ahead.in.a.complicated.world.pdf.

Hedburg, J. & Alexander, S. (1994). Virtual reality in education: Defining researchable issues. *Educational Media International*, *31*(4), 214–220.

Helleve, I (2009).Theoretical foundations of teachers' professional development. In J.O. Lindberg & A.D. Olofson (Eds.),*Online learning communities and teacher professional development: Methods for improved education delivery*, 1–19. IGI-Global: Hershey, USA.

Hills, C., Randle, R. & Beazley, J.(2010).ePortfolios a plan for success: Australian new graduate experiences. Paper delivered at the *World Library and Information Congress: 76th IFLA general conference and assembly*, 10–15 August 2010, Gothenburg, Sweden.Retrieved from www.ifla.org/en/ifla76.

Holloway, J.H. (2000). The promise and pitfalls of site-based management.*Educational Leadership*, *57*(October), 81–82.

Hunter, B. (2002). Learning in the virtual world depends upon changes in local communities. In K.A. Renninger & W. Shumar (Eds.),*Building virtual communities: Learning and change in cyberspace*. Cambridge University Press: Cambridge, UK.

ICTIF (2011). Request for expressions of interest: Research services for the evaluation of the Pathways for Learning, Anywhere,anytime –a Network for Educators project (PLANE). Sydney: Information and Communication Technology Innovation Fund.

Joyce, B. & Showers, B. (1996).The evolution of peer coaching. *Educational Leadership*, *53*(6), 12–16.

Joyce, B. & Showers, B. (2002).Student achievement through professional development. In B. Joyce & B. Showers (Eds.), *Designing training and peer coaching: Our need for learning.* Alexandria, VA: Association for Supervision and Curriculum Development.

Joyce, B., Murphy, C. & Showers, B. (1996). The River City Program: Staff development becomes school improvement. In B. Joyce & E. Calhoun (Eds.), *Learning experiences in school renewal: An exploration of five successful programs.* College Park, MD: ERIC Clearinghouse.

Kafai, Y.B. (1996). Electronic play worlds: Gender differences in children's construction of video games. In Y.B. Kafai & M. Resnick (Eds.),*Constructionism in practice: Designing, thinking, and learning in a digital world*, 25–38. Ablex: Mahwah, USA.

Kapp, K. (2012). *The gamification of training: Game-based methods and strategies for learning and instruction*. USA: John Wiley and Sons.

Kennedy, M.M. (1998). Form and substance in in-service teachers education. *Research Monograph No. 13.* Madison, Wis.: National Institute for Science Education, University of Wisconsin-Madison.

Killion, J. (2000). Log on to learn: To reap benefits of online staff development, ask the right questions. *Journal of Staff Development*, 48–53.

Kinder, M. (1996).Contextualizing video game violence: From *Teenage Mutant Ninja Turtles 1* to *Mortal Kombat 2*. In P.M. Greenfield & R.R. Cocking (Eds.),*Interacting with video*, 25–38. Norwood, USA: Ablex.

Kirriemuir, J. (2008). *A spring 2008 'snapshot' of UK higher and further education developments in Second Life*. Retrieved from www.scribd.com/doc/7063700/ASpring-2008-snapshot-of-UK-Higher-and-Further-Education-Developments-in-Second-Life.

Kohler, F.W., Crilley, K.M., Shearer, D.D. & Good, G. (1997).Effects of peer coaching on teacher and student outcomes.*The Journal of Educational Research,90*(4), 240.

Lambert, P. (2003).Promoting developmental transfer in vocational teacher education. In T. Tuomi-Gröhn & Y. Engeström (Eds.),*Between school and work:New perspectives on transfer and boundary-crossing*, 233–54. Amsterdam: Pergamon.

Lebec, M., & Luft, J. (2007). A mixed methods analysis of learning in online teacher professional development: A case report. *Contemporary Issues in Technology and Teacher Education*,*7*(1).Retrieved fromwww.citejournal.org/vol7/iss1/general/article1.cfm.

Lock, J.V. (2006). A new image: Online communities to facilitate teacher professional development. *Journal of Technology and Teacher Education*, *14*(4), 663–678.

Lombardi, M. (2007).*Authentic learning for the 21st Century*.Retrieved from http://connect.educause.edu/library/abstract/authenticlearningfor/39343.

McKenzie, A. Morgan, C., Cochrane, K., Watson, G.& Roberts, D. (2002). Authentic learning: What is it, and what are the ideal curriculum conditions to cultivate it in? *Proceedings of the 2002 Annual International Conference of the Higher Education Research and Development Society of Australasia* (HERDSA), Perth, Australia.Retrieved from www.herdsa.org.au/wpcontent/ uploads/conference/2002/papers/McKenzieA.pdf.

McKenzie, J. (1999). *Coaching for a change*.Retrieved from www.staffdevelop.org/coaching.html.

McLellan, H. (2004). Virtual realities.In D.H. Jonassen (Ed.), *Handbook of research for educational communications and technology* (2nd ed.), 461–497. Mahwah, NJ: Lawrence Erlbaum.

Mikropoulos, T.A. & Strouboulis, V. (2004).Factors that influence presence in educational virtual environments.*CyberPsychology & Behavior*,7(5) 582–591.

Mikropoulos, T.A. (2006). Presence: A unique characteristic in educational virtual environments. *Virtual reality*, *10*(3/4), 197–206.

Moore, T.& Rutherford, D. (2012). Primary strategy learning networks: A local study of a national initiative. *Educational Management Administration & Leadership*,*40*, 69–83.

Morris, M. Chrispeels, J.H.& Burke, P.H. (2003). The power of two: Linking 'outside' with 'inside' teachers' professional development. *Phi Delta Kappan*,*84*(10), 764–7.

National Commission on Teaching and America's Future. (2003). *No dream denied: A pledge to America's children.* Washington, DC.

National Staff Development Council (NSDC) (2001).*NSDC's Standards for Staff Development.* Oxford, Ohio: National Staff Development Council.

New Media Consultants (2006).*The Horizon Report*.Retrieved from www.nmc.org/pdf/2006_Horizon_Report.pdf.

North West Regional Educational Laboratory (1998).*High-quality professional development.*Retrieved from www.nwrel.org/request/june98/article11.html.

Owen, J. (2006). *Program evaluation: Forms and approaches* (3rd ed.). Crows Nest, NSW: Allen & Unwin.

Pawson, R.& Tilley, N. (1997).An introduction to scientific realist evaluation.In E. Chelimsky & W. Shadis (Eds.),*Evaluation for the 21st century*, 405–418. Thousand Oaks, CA: Sage.

Peacock, S., Gordon, L. Murray, S. Morss, K. & Gloria Dunlop.(2010). Tutor response to implementing an ePortfolio to support learning and personal development in further and higher education institutions in Scotland.*British Journal of Educational Technology*, *41*(5), 827–851.

Putnam, R.T. & Borko, H. (2000). What do new views of knowledge and thinking have to say about research on teacher learning?*Educational Researcher*, *29*(1), 4–15.

Reitzug, U.C. (2002). Professional development. In A. Molnar (Ed.), *School reform proposals: The research evidence* (pp. 325–258). Greenwich: Information Age Publishing.

Richard, A. (2003, September). The emergence of school-based staff developers.*Results*.Retrieved from www.nsdc.org/library/publications/results/res9-03richard.cfm.

Richardson, J. (1999). Making workshops work for you: Here's how to ensure those new ideas get put into practice*. Tools for Schools*, *April/May*.Retrieved from www.nsdc.org/library/tools/ tools4-99rich.html.

Riel, M. (1996).*The internet: A land to settle rather than an ocean to surf and a new 'place' for school reform through community development*. Retrieved from www.globalschoolhouse.org/gsh/teach/articles/netasplace.html.

Ross, John A. (1992). Teacher efficacy and the effects of coaching on student achievement.*Canadian Journal of Education* (*Revue canadienne de l'éducation*),*17*(1), 51–65.

Russo, A. (2004). School-based coaching.*Harvard Education Letter Research Online.*

Rutherford, C. (2011). Facebook and teacher knowledge development: An examination of how teachers are using Facebook groups to support their knowledge development. *Teaching & Learning*,*6*(1), 15–27.

Salmon, G. (2000).*e-Moderating: The key to teaching and learning online*. London: Kogan Page.

Salmon, G. & Hawkridge, D. (2009).Out of this world (Editorial).*British Journal of Educational of Technology*,*40*(3), 401–413.

Schlager, M.S.& Fusco, J. (2003). Teacher professional development, technology, and communities of practice: Are we putting the cart before the horse? *The Information Society*,*19*(3), 203–220.

Schlager, M.S., Fusco, J.& Schank, P. (2002).Evolution of an online education community of practice. In K.A. Renninger & W. Shumar (Eds.),*Building virtual communities: Learning and change in cyberspace*, 129–158. Cambridge, UK: Cambridge University Press.

Serious Games Blog (n.d.), www.seriousgames.ning.com.

Sherer, P.D., Shea, T.P. & Kristensen, E. (2003). Online communities of practice: A catalyst for faculty development. *Innovative Higher Education*, *27*(3), 183–194.

Shulman, L.S. (1987). Knowledge and teaching: Foundations of the new reform. *Harvard Educational Review*,*57*(1), 1–22.

Siemens, G. (2004). *Elearningspace everything elearning*.Retrieved from www.elearnspace.org/Articles/eportfolios.htm.

Solomon, G.& Solomon, S. (1995). Technology and professional development: 10 tips to make it better. *Learning and Leading with Technology*, November, 38–39.

Sparks, D. & Hirsh, S. (2000). *A national plan for improving professional development*.National Staff Development Council.Retrieved from www.nsdc.org/library/authors/NSDCPlan.cfm.

Sparks, G.M. & Bruder, S. (1987). Before and after peer coaching. *Educational Leadership*, *45*(3), 54–57.

Sprague, D. (2006). Research agenda for online teacher professional development. *Journal of Technology and Teacher Education*, *14*(4), 657–661.

Stein, M.K., Silver, E.A. & Smith, M.S. (1999). The development of professional developers: Learning to assist teachers in new settings in new ways. *Harvard Educational Review*, *69*(3), 237–269.

Tammets, K., Pata, K.& Laanpere, M. (2012): Implementing a technology supported model for cross-organisational learning and knowledge building for teachers. *European Journal of Teacher Education*,*35*(1), 57–75.

Thomas, W. (2004). Online professional development:Why SREB states should use it. *SREB's Educational Technology Cooperative.* Retrieved from http://publications.sreb.org/2004/04T05-OnlineProfDev.pdf.

Tosh, D. & Werdmuller, B. (2004).*ePortfolios and weblogs: One vision for ePortfolio development*. Retreived from http://benwerd.com/wp-content/uploads/2012/07/ePortfolio_Weblog.pdf.

Twining, P. (2009). Exploring the educational potential of virtual worlds: Some reflections from the SPP. *British Journal of Educational of Technology*,*40*(3), 401–413.

Vavasseur, C.B. &MacGregor, S.K. (2008).Extending content-focused professional development through online communities of practice.*Journal of Research on Technology in Education*, *40*(4), 517–36.

Vygotsky, L.S. (1978). *Mind in society: The development of higher psychological processes*. Cambridge, Massachusetts: Harvard University Press.

Ward, R. & Grant, S. (2007). *What is an ePortfolio?* Centre for Recording Achievement. Retrieved from www.recordingachievement.org/eportfolios/keydocs.asp.

Wexler, S., Corti, K., Derryberry, A., Quinn, C.& Van Barnveld, A. (2008).*Immersive learning Simulations:A 360 Degree Report*.eLearning Guild.

Appendix 1:Interim findings

This section presents the findings of Phase One of the evaluation study, based on data collected through interviews and observations and derived from PLANE documents and trial data. The findings are presented below by data-gathering source and/or method.

Trials

The following trials (listed according to order of occurrence) were held as part of the process of development of the PLANE program. The lessons derived from these trials were used to improve the targeted facilities.

October 2011 trial

This trial was held at the North Coast Leadership Centre and provided an opportunity for teachers to be trained and accredited as Microsoft Peer Coaches to assist in the implementation of ICT in the North Coast Region. An online learning module within the PLANE environment (Leading Peer coaching) was also trialled. The e-portfolio function of PLANE was introduced, tested and evaluated. This group of teachers and educational leaders formed a key group of early users who provided advice to the development of PLANE.

November 2011 trial: Virtual World Bootcamp

This trial involved pre-service teachers, in-service teachers and educational leaders from metropolitan and regional locations across all sectors. The trial provided participants with samples of PLANE experiences. Participants were invited to develop an e-portfolio, trial the Skills Snacks function and/or attend the Virtual World Bootcamp. This trial tested the functionality of each of these aspects and evaluated their value to teachers.

Participants provided feedback on the potential contributions of PLANE to professional learning and their feelings about the PLANE experience (including the log-in process, professional learning options, Virtual World Bootcamp and help and support provided). Fourteen participants provided this general feedback, while 39 participants provided feedback on the Virtual World Bootcamp.

February 2012 trial: peer coaching

This trial focused on the virtual peer coaching carried out through the ‘Coach Away Island’ facility within the PLANE virtual world. Participants were invited to participate in the Virtual World Bootcamp, orientation or walk-through events as well as the peer coaching workshops. This trial also tested the use of Adobe Connect for sound and a live link to Seattle. Twenty-three participants provided valuable feedback.

The trial comprised an initial workshop held in October 2011 with a follow-up held in February 2012. The workshop was a three-day face-to-face course, with the follow-up done online. The workshop was designed to address the need for meaningful collaborative experiences for teachers, with a focus on:

- building trust through collaboration
- strengthening lesson-design skills
- understandingbest practice in technology integration.

The workshop was organised as part of the NSW Department of Education and Communities' High Achiever Teacher Scheme (HATS).

February–May 2012 trial: user experience testing

These sessions continue at the time of writing. Initial user experience testing sessions were held over two days in February 2012. The purpose of these sessions was to review usability and identify problems and solutions. They also provide an opportunity to explore the overall value of the PLANE project.

This trial aims to evaluate the material presented in the Skills Snacks section of PLANE, and some of the learning courses on offer. Facilitated small groups of around 10 participants discuss their experience, provide relevant data and complete a formal evaluation form. At the conclusion of each session, recommendations are made that should lead to better functionality and improved user experience.

Key Learning Areas (KLA) writing workshops

This event was held over two days in April 2012. It involved groups of experienced teachers who came together to develop resources that would enable other teachers to create their own innovative lessons using the new national curriculum. The lessons were expected to include the integration of ICT with the learning area, and use game-based learning principles. The targeted KLA were Mathematics, Science, English, and Human Society and its Environment (HSIE).

Participation of evaluation team members in PLANE trials

Members of the PLANE evaluation team participated in the four trials outlined above. Summaries of their experiences are provided in Table 17.

Table 17: Summary of the experiences of the evaluation team in PLANE trials

Trial	Achievements and potential	Issues and challenges
Key learning area (KLA) writing workshops	Facilitated team work Allowed for teacher autonomy and creative work Facilitated development of new skills	Expectations need to be clearly communicated Apparent planning issues regarding commitment of participants to attend the entire course Needs to address the issue of change and tendencies to favour familiar ways of lesson planning and programming

Trial	Achievements and potential	Issues and challenges
		Needs to address skill development in game-based learning as a preliminary skill to writing of modules Needs to be adapted for online environments Needs to focus on substance and avoid limiting the experience to procedures, particularly with the use of the virtual world
November 2011 trial – Virtual Bootcamp	Involved clear instructions Demonstrated the 'why, learn, explore, create, contribute' concept Introduced the PLANE virtual world and trialled its functionality	Navigation not functioning and so not tested Many participants in the Bootcamp were PLANE team members – needs to be tested by anticipated 'typical' users Technical issues relating to downloading software No focus to the time in the Bootcamp
February 2012 trial – peer coaching	Extremely well-run Helped establish a sense of community among participants Was relevant to the PLANE virtual world	Only available to DEC schools, which is inconsistent with PLANE's cross-sectoral orientation Current program not designed for fully online environments
February 2012 user experience testing	Efficiently organised PLANE team was open to critical observations Involved clear direction from the leader Considered technology, pedagogy and teacher needs	Value of the virtual world was not clear Needs a strong focus on simplifying and consolidating Language and styles need to be consistent throughout Accreditation is a priority Teachers unfamiliar with tagging Searching of PLANE was not efficient – navigation needs attention

Trial findings

The PLANE team trials all its initiatives and innovations. All major components of PLANE were reviewed through focus groups, workshops or pilot groups. Trials were held in October 2011, November, 2011, February 2012, March 2012 and April 2012. Each trial was evaluated by participants, results were discussed, lessons were derived and PLANE initiatives were modified accordingly.

The trial reports that were made available to the evaluation team were analysed for the purpose of exploring the PLANE objectives and anticipated outcomes. It should be mentioned that most of the trials have been limited to small numbers of participants, and that many of these participants elected not to participate in evaluations. Thus, much of the trial data is based on a relatively small number of respondents. These outcomes are valuable to the PLANE team, but they do not provide strong enough evidence to use confidently in this evaluation study.

The evaluation team decided to re-analyse the data collected through the November 2011 and February 2012 trials, as these two trials involved two core components of PLANE and the numbers of respondents were large enough to provide relatively stable data.

Findings of the November 2011 trial: Virtual World Bootcamp

Evaluation forms were completed by 15 participants. Some respondents indicated that they were teachers from the public and Catholic sectors and some pre-service teachers from universities. About 20 per cent indicated that they were pre-service teachers, 40 per cent indicated that they were in-service teachers and 40 per cent indicated that they held leadership roles in the DEC.

The responses of this group indicated overall satisfaction with the measured aspects of the trials in general, and with the emails in particular (see Figure 5). The maximum rating for each aspect measured was 5. The sign-on experience was not very satisfactory for some of the respondents. Experiences of sign-on and Bootcamp varied across the group.

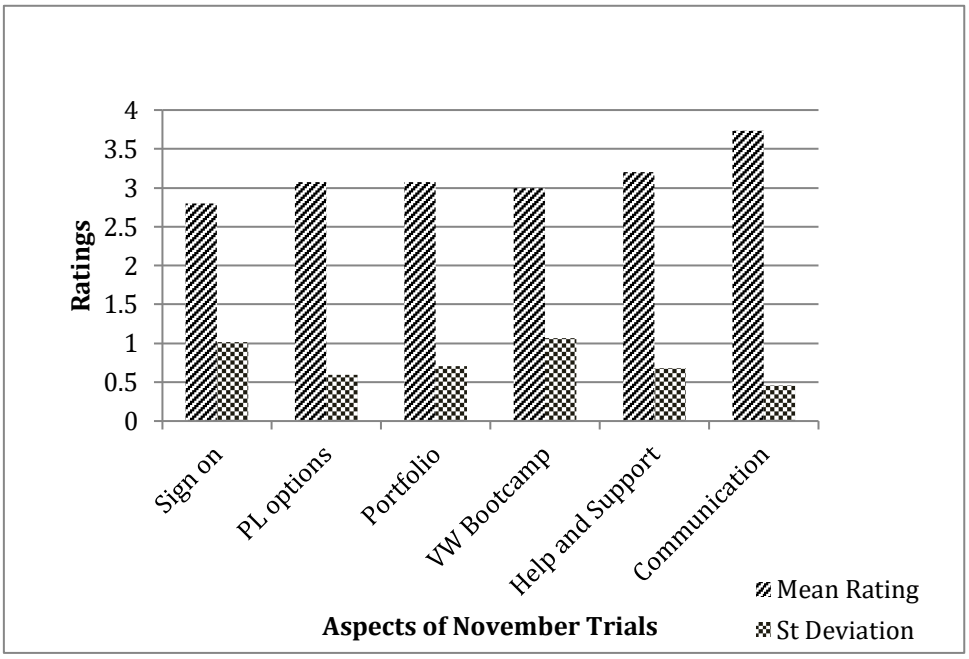

Figure 5: Perceptions of participants in November 2011 trial

The evaluation form asked participants to comment on their most engaging experience. The responses varied; however, the main theme included by most respondents was the Virtual World Bootcamp experience.

Participants were also asked to comment on the most disengaging experience they had had during the trials. These responses also varied, but most involved technological difficulties either with sign-on or with navigation within or across components of PLANE, participation in the Bootcamp and locating coaches.

Findings of the February 2012 trial: peer coaching

Evaluation forms for this trial were completed by 39 participants. Background data on the respondents were not available; however, about 68 per cent indicated that they had had experience with virtual worlds. This large percentage of participants with virtual world experience suggests that it might be worthwhile targeting this group of teachers in future in order to assess the advanced features of PLANE.

The evaluation included a small number of quantifiable data relating to the form of peer coaching experience rather than to core elements of the experience. The quantifiable data (see Figure 6) indicate very positive experiences of the participants with the virtual world forms and means.

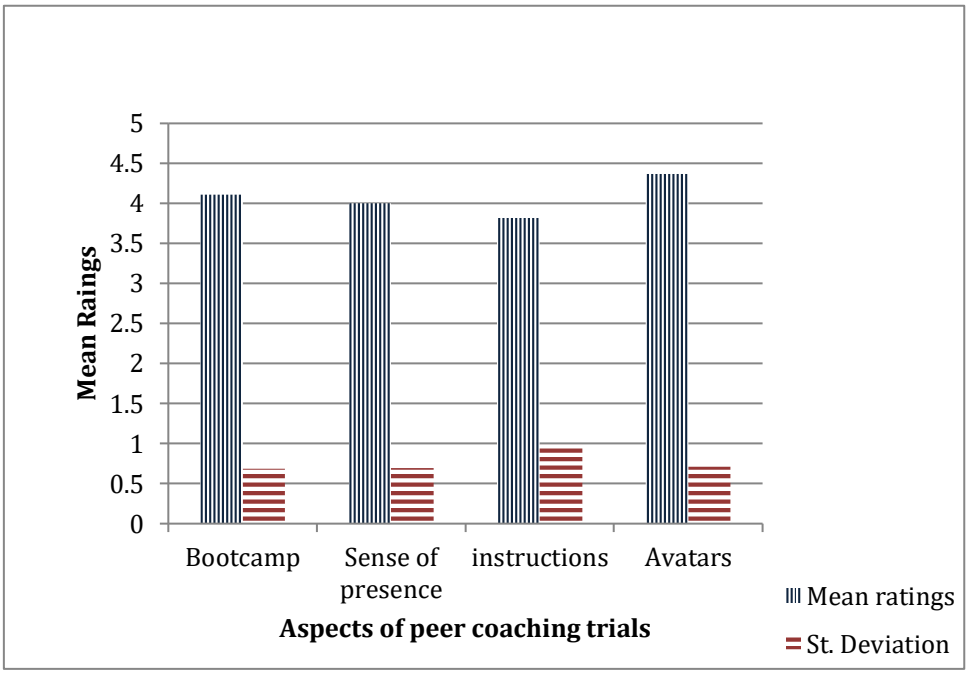

Figure 6: Perceptions of participants in February 2012 trial

The respondents' comments on the aspects of the Bootcamp that they most enjoyed are reflected in Figure 6. Almost 50 per cent of respondents were not specific in naming aspects they enjoyed. The remaining 50 per cent indicated that they most enjoyed:

- construction and personalisation of their avatar
- the'mystery box' function
- socialising and communicating with other participants.

Interviews

The aim of the Phase One interviews was to explore the rationale behind PLANE, identify its mechanisms and clarify its intended outcomes. More specifically, the interviews served the following purposes:

- to determine the main and significant contributions PLANE was making to the field as viewed by the three main PLANE teams (the PLANE management team, the PCG and the PERG)
- to gain an understanding of the PLANE project from the PLANE team's perspective
- to involve all PLANE management in the process of establishing the foundations of the PLANE evaluation study.

This section is organised according to the interview questions, with findings based on participants' responses.

What is innovative about PLANE?

There were several aspects of PLANE that participants identified as being innovative. These included its cross-sectoral approach, its use of cutting-edge technology, its game-based learning approach, its focus on building educational communities among participants, and the professional e-portfolios.

Many respondents mentioned the cross-sectoral approach. Bringing together the NSW public school sector, the Catholic systemic sector, the independent school sector and universities involved in initial or ongoing teacher education was seen as a first. While the collaboration of these partners is not without challenges, not least because the first three are of very different size and organisational forms, all partners are committed to the PLANE project and have devoted significant resources and personnel to it.

Department of Education and Communities (DEC) schools are centrally administered, staffed and resourced by DEC.

The Catholic Education Commission (CEC) does not administer schools but is an umbrella organisation for the 11 Catholic diocesan offices which through their individual Catholic Education Offices (CEO) administer Catholic systemic schools in NSW. There are also non-systemic Catholic schools in NSW which are not administered through a CEO, but are linked to the CEC, and usually also linked to the Association of Independent Schools.

The Association of Independent Schools (AIS) is a loose affiliation and clearinghouse for the independent schools of NSW. Some of these schools are religious in character – including schools of various Christian denominations as well as other religions such as Islamic and Buddhist schools – while others have no religious affiliation but might be of a particular philosophy, such as Steiner schools.

The universities involved in the PLANE project are represented by the NSW Council of Deans of Education. This group provides pre-service teacher education to the NSW school systems as well as in-service teacher development through postgraduate programs for teachers, including various Master of Education courses as well as postgraduate research degrees.

Participants also highly valued the innovative aspects of the virtual reality environment that is part of PLANE, which allows connections between teachers across NSW regardless of their geographic location, teaching speciality or level of experience. This feature has undergone

several evolutions. Initially, the introduction to the virtual world was to be based on an airport terminal metaphor and offer choices of 'destinations' and learning journeys. This model has since been altered and is now based on the metaphor of an island. This environment leads to the 'gamification' aspect of PLANE, where learning within PLANE can be presented in the form of an electronic game. It is believed that this gamification aspect will be attractive to the main PLANE user age group of Generation Y teachers.

Participants also placed great value on the development of learning communities through PLANE, stating that the present model of face-to-face professional learning is expensive and unsustainable. Learning communities established across educational sectors and based on teachers' interests are seen as a means of delivering timely and convenient professional learning. The model presumes that teachers will form and moderate their own communities within PLANE, as well as sharing resources and activities with their colleagues.

Lastly, participants identified the e-portfolio tool within PLANE as offering teachers innovative ways to evidence their achievements and document their NSW Institute of Teachers competencies in a manner that would translate across workplaces and systems. Since NSW Institute of Teachers competencies apply to New Scheme teachers, who within the next few years will become the majority of NSW teachers, the e-portfolio tool was seen as a valuable part of PLANE for all teachers.

What benefits might flow from PLANE?

The benefit most commonly mentioned by participants was the development of teacher skills. Teacher skills are presented in the Skills Snacks function of PLANE in the form of short videos. Teachers can identify skills they wish to acquire and access this digital learning easily through Skills Snacks. While Skills Snacks were one aspect of the original model of PLANE, there was also a self-evaluation tool included to help teachers locate the skills they might wish to acquire. Since the beginning of 2012, however, Skills Snacks have not been available in PLANE, and the self-evaluation tool has not yet been implemented and remains a design concept at this stage.

Another benefit that participants identified as flowing from PLANE was the development of professional learning communities. These communities have the potential to operate in two ways. Firstly, separate communities may be developed that enable pre-service teachers, in-service teachers and educational leaders, respectively, to communicate to discuss and address their specific needs. Secondly, these communities may be incorporated within the larger professional learning community of PLANE, and broader connections may be established according to subject speciality, educational sector, stage of teacher profession and so on.

What changes might PLANE offer to education and educators?

Several participants suggested that some of the changes resulting from PLANE might include increased use of ICT in the classroom. Some suggested that learning in classrooms will use a lot more ICT, and that students will work in classrooms more independently using a range of ICTs. Some questioning followed this proposal to explore why this increased use of ICT might be considered useful or valuable. Few participants linked the increased use of ICT to pedagogical ideas, rather seeming to accept that using more ICT would be an unquestionably positive change in practice.

Allied with this idea that 'more ICT is better' seemed to be a focus on using the internet and internet-mediated skills. When asked, participants did differentiate between internet use and other ICTs, and had a clear focus on internet-mediated processes.

Another change offered by participants was that there might be a move away from 'teacher as knowledge dispenser' towards 'teacher as learning facilitator'. There were strong statements made about this shift, while it was not easy to determine within these statements a sense of how or why this shift might be valuable.

Participants identified increased student learner independence within classrooms as a desired and worthwhile outcome of PLANE. This point is closely allied with the increased use of ICT, specifically internet-meditated resources, as well as with the shift in the teacher's role to that of learning facilitator. Participants who raised this point added that independence and self-regulation in learning are approaches increasingly required in the modern workplace.

Lastly, some participants mentioned increased connectedness among teachers. This connectedness was seen to be in contrast to a former, and still prevalent, 'bunker mentality', where teachers might see themselves as being in one particular school, teaching one particular grade or subject. It was proposed that this connectedness would be seen in conversations about teaching techniques and skills and resources shared within the virtual community or communities formed within PLANE.

What are the risks and challenges facing PLANE?

There are a number of challenges understood to be facing PLANE. The first, and potentially the greatest, is the delay in implementation. Initially the project was to be fully functioning for the first school term of 2012. At the moment a more likely time frame seems to be the third school term of 2012. While a number of problems have arisen and been actively addressed, as ideas and design concepts change the backlog of work seems to grow. It seems that more work than was initially anticipated has been outsourced and the management of this outsourcing has added another layer of complexity and integration that requires management.

The current funding arrangements for PLANE will expire at the end of 2012. For PLANE to exist and prosper, a funding model that is sustainable, practical and attractive to potential funding bodies must be developed and put in place. While this is a critical function of the PLANE Control Group, it is also of concern for all: almost every participant raised in one way or another this significant challenge to PLANE.

The original concept for PLANE included the development of three intersecting 'worlds': one for pre-service teachers, one for in-service teachers and one for teachers in leadership positions. Currently only the facilities for in-service teachers have been developed. If the time for the launch of PLANE arrives and there are not appreciable resources and items of interest for pre-service teachers and teachers in leadership positions, then PLANE risks losing these cohorts.

There was some uncertainty expressed with regard to the Skills Snacks facility. At an early stage, the Skills Snacks were envisaged as one of the entry points to PLANE, and one that would attract people to PLANE. Once there, these people might stay and contribute to the PLANE community. However, at times the organisation of Skills Snacks seems to be unfocused. There also seems to be a lack of clarity as to how Skills Snacks might be better or more accessible than similar content which can be found in great diversity on websites such as YouTube, TeacherTube (which includes an Australian section) and others.

Related to this is the matter of sustainability of Skills Snacks. Questions here include: Who will continue to add Skills Snacks? How will quality control be exercised over Skills Snacks with respect appropriateness, legality and usefulness? Participants did not express clear ideas on these issues, but perceived that they will need to be addressed.

When participants spoke about professional learning it was difficult, even with direct questioning, to identify a particular model of professional learning. There was confidence that sharing resources and ideas would be a valuable form of professional learning, yet there did not emerge any consensus on a theoretical model of professional learning. Participants speaking about 'pedagogy' used the term more in the sense of the particular skills and processes used in a classroom. While this is a valid use of the term, this restricted use does not have the breadth to include a theoretical perspective of why certain strategies might be employed in a learning task or on what bases particular strategies might be chosen over alternative strategies.

It has not become clear through the interviews conducted what model of pedagogy underpins the PLANE project. (The term is used here from a theoretical perspective, rather than to refer to activities or learning tasks.) The pedagogical theories that might be consistent with online education and formative learning for pre-service teachers, in-service teachers and educational leaders were not identified in discussions. Indeed, most participants seemed to be unaware of this theoretical stance to the selection and use of learning activities.

The internet 'backbone' of PLANE was rarely perceived to be a risk. However, the latest completion date for the roll-out of the National Broadband Network is in 2015. There was a presumption among most DEC participants that all schools already had access to high-quality broadband, but this is not the case for many AIS schools as well as for a number of rural and regional CEC schools. Without access to high-quality broadband, the rich multimedia on which PLANE is built will not be accessible to the spectrum of teachers within NSW, let alone sustainable and scalable across Australia.

Lastly, the interview team identified another challenge to PLANE, involving the fluidity of its personnel. Since interviewing commenced, several key members of the PLANE project have departed and the team is still acquiring staff; several of the interviewees had been employed for less than a week. Coupled with the flat organisational structure of the PLANE project, there was a noticeable sense that some aspects had 'slipped off the horizon' and that departing staff who had been responsible for particular aspects had left, with those aspects remaining unattended for some time. Associated with this concern was a strong sense that the setting and management of project deadlines was not being strongly administered.

What would success for the PLANE project look like?

One PLANE participant offered the view of success 'that PLANE would be the first place teachers would turn to locate skills or develop skills for their teaching'. The participant conceded that in order to achieve this, PLANE would need to be able to offer more than other similar sites, to offer it in a more relevant and accessible manner, and hence to grow with teacher needs, over time and technological changes.

In order for PLANE to be successful, it needs to be better known. Although there is obviously little point advertising an incomplete product, at this stage there is little awareness among teachers of PLANE. Further, the testing and focus groups used so far have involved very small numbers. Even the few online trials of selected PLANE aspects seem to have involved more PLANE-involved 'lurkers'[5] than genuine teacher participants.

[5] A 'lurker' is somone who looks at a virtual world but stays on the edges, and does not actively participate or contribute.

There has been some publicity for PLANE, including videos posted on YouTube.[6] While some information has been disseminated to peak bodies such as the DEC, AIS and CEC, there has been little penetration of this information to its intended targets.

There were reportedly concerted efforts being made to develop a sustainable plan and funding model for PLANE. While it is outside the terms of reference of this report to discuss the details of the funding model, it is clear to all concerned that the potential of PLANE rests upon its funding sustainability, and these efforts to secure a sustainable funding model are recognised as being developed with energy.

There is a second aspect to the sustainability of PLANE that rides on the back of the funding model. PLANE exists within a space of rapid technological change. While efforts are being made to use open-source software wherever possible, PLANE still needs to reside on servers and access broadband and other digital resources. There are costs associated with these resources. Moreover, there are costs related to updating the PLANE resources and keeping them current and relevant. Wikipedia, a free online encyclopaedia offered in many languages, can be used as an example for a working model. Much of its content is offered and maintained by volunteers, but these volunteers are themselves part of a large, if loose, organisation ultimately funded and administered by the Wikimedia Foundation, which is now an international legal entity. Wikipedia content is monitored by several tiers of Wikipedia-approved administrators. The means and structural processes that might be required to sustain PLANE are not yet evident, but the Wikipedia model may offer some useful ideas.

Despite raising the topic with several participants, there were no concrete notions of integrating PLANE with other, pre-existing digital resources. Indeed, there seemed to be an ill-defined concern regarding copyright as a stumbling block in this regard. While this might be a legal issue with respect to the incorporation of some DEC resources, there seemed to be no interest in incorporating AIS or CEC–offered resources. Similarly, PLANE seemed to have created no links with particular teachers' associations, such as the NSW Science Teachers' Association, the NSW English Teachers' Association, the Primary English Teachers Association of Australia or the Australian College of Educators.

Other findings

There are a number of existing websites providing services to teachers. These sites vary in quality, accessibility (some are subscription-only) and relevance (some are focused on international contexts). The AIS has its own site for its member teachers, many Catholic CEOs have their own sites of resources, as does the CEC itself, and of course the DEC has several sites. There was a strong focus within the PLANE team to get the PLANE site functioning, and it was difficult to determine how the integration of resources from partner sectors, teacher organisations and other useful sites might be achieved. This prompts the question: Does this raise the potentially divisive prospect of parochialism and the sidelining of some sites?

Another risk, only tangentially addressed by PLANE participants, relates to the virtual world tool, and specifically the game-based learning aspect of PLANE. There is considerable faith within the PLANE team that game-based learning is not only innovative in teacher professional learning but also attractive to the target teacher cohorts. However, while the numbers of younger teachers must increase over time, there is no substantial evidence that a large percentage of the teacher population will find virtual worlds and game-based learning

[6]The Global Transformation in Education (updated), http://youtube/cLD-dwDsnPQ.
PLANE Virtual Worlds Bootcamp, http://youtube/LPBe6pGtC5Y.
PLANE Learning design, http://youtube/jhGDl5Y0tQY.

attractive. Certainly, the numbers of teachers who are not familiar with computers is decreasing, teachers are becoming more ICT aware and many teachers are now adept with smartphones, tablets and so on. But it has yet to be shown that high proportions of teachers will enjoy and participate in virtual worlds and game-based learning.

Allied to the earlier discussed regarding a lack of focus on pedagogy is a further fundamental concern. From the interviews there was little evidence of systematic analysis of the following questions, which are considered key to the PLANE project.

- What skills and learning do each of the target groups (pre-service teachers, in-service teachers and educational leaders) really need?
- Of these needs, which can best be delivered through online multimedia means?
- Of these needs, which can be adequately delivered by digital online means?
- Having identified which needs can be delivered through PLANE, who is best prepared and resourced to create and operationalise these resources?

Another aspect of PLANE seen as being innovative and having value-adding potential was that of learning being accessible ‘anywhere, anytime’. This aspect was referred to in relation to the expense of face-to-face learning and taking teachers out of classrooms to learn skills. Thereis an assumption here that teachers will access PLANE in their own time. It is possible, however, that there may be resistance from many teachers to such learning if they perceive it as an encroachment on their personal time for work-related purposes. It might be that teachers prefer face-to-face instruction over undertaking professional learning in their own, unpaid time, such as during evenings of weekends.

There are also concerns of ongoing delays in PLANE completion. While it is accepted that any project at the leading edge will encounter difficulties, there may develop a threat to the potential of PLANE if the site is perceived to suffer from unfulfilled expectations.

Appendix 2: Analysis of responses of PLANE users

The following tables reflect an analysis of the responses of teachers with PLANE experience to selected survey questions. They provide additional information to thatpresented in the main body of this report.

The total number of survey respondentswas131. However, some respondentselected not to answer some questions. These appear as 'missing' in the tables.

Table A2.1: Does your school offer professional learning programs/events to develop teachers ICT skills?

	Frequency	%	Valid %	Cumulative %
Yes	112	85.5	92.6	92.6
No	9	6.9	7.4	100
Subtotal	121	92.4	100	
Missing	10	7.6		
Total	131	100		

Table A2.2: Do you feel that your school or school region (or diocese) provides enough professional learning opportunities in relation to ICT?

	Frequency	%	Valid %	Cumulative %
Yes	53	40.5	43.8	43.8
No	68	51.9	56.2	100
Subtotal	121	92.4	100	
Missing	10	7.6		
Total	**131**	**100**		

Table A2.3: Do you know of any formal or informal networks amongteachers/educators with common interest or specialisation where ideas and/or materials are exchanged?

	Frequency	%	Valid %	Cumulative %
Yes	106	80.9	90.6	90.6
No	11	8.4	9.4	100
Subtotal	117	89.3	100	
System	14	10.7		
Total	**131**	**100**		

Table A2.4: Ease of use of various PLANE features

	SD	D	NS	A	SA
e-Portfolio is easy to use	1	3	17	13	15
Virtual world is easy to use	5	5	18	15	11
Game-based learning component is easy to use	2	10	17	12	4
SkillsSnacks component is easy to use	2	1	11	17	29
PLANE pathways component is easy to use	2	2	13	23	12
Share club is easy to use	3		11	17	20

Table A2.5: Usefulness of various PLANE features

	SD	D	NS	A	SA
I can make use of the e-portfolio	2	3	10	19	16
I can make use of Virtual World	2	2	21	12	16
I can make use of Games	2	6	23	13	6
I can make use of Skills Snacks	3	3	9	11	33
I can make use of PLANE Pathways	2	4	10	17	19
I can make use of Share club	2	2	14	16	18

Table A2.6: PLANE features where further training is needed

	SD	D	NS	A	SA
I need further training or support with e-portfolio	17	10	14	9	6
I need further training or support with Virtual World	6	10	15	9	15
I need further training or support with Games	7	10	22	7	7
I need further training or support with Skills Snacks	18	13	15	14	6
I need further training or support with PLANE Pathways	11	10	19	12	7
I need further training or support with Share club	15	16	17	4	4

Table A2.7: Potential of various PLANE features for teachers

	SD	D	NS	A	SA
I see the potential of e-portfolio for me as a teacher.	1		9	16	26
I see the potential of Virtual World for me as a teacher.	3	3	16	13	19
I see the potential of Games for me as a teacher.	3	2	25	14	10
I see the potential of Skills Snacks for me as a teacher.	2	2	8	8	38
I see the potential of PLANE Pathways for me as a teacher.	2	2	15	16	18
I see the potential of Share club for me as a teacher.	3		7	18	24

Table A2.8: Potential of various PLANE features to improve student learning

	SD	D	NS	A	SA
e-Portfolio has the potential to improve student learning.	2	3	21	12	13
Virtual Worldhas the potential to improve student learning.	4	1	17	16	16
Game-based learninghas the potential to improve student learning.	4	1	22	14	11
Skills Snackshas the potential to improve student learning.	3	1	12	15	30
PLANE pathwayshave the potential to improve student learning.	4	1	21	14	13
Share clubhas the potential to improve student learning.	3	1	12	21	17

Table A2.9: Intention to use various PLANE featuresin the classroom

	SD	D	NS	A	SA
I intend to use the outcome of my experience with e-portfolio in my classroom.	3	4	17	9	15
I intend to use the outcome of my experience with virtual world in my classroom.	1	6	21	12	12
I intend to use the outcome of my experience with games -based learning in my classroom.	2	5	24	12	10
I intend to use the outcome of my experience with SkillsSnacks in my classroom.	2	2	17	9	29
I intend to use the outcome of my experience with PLANE pathways in my classroom.	2	2	23	15	13
I intend to use the outcome of my experience with share club in my classroom.	2	1	15	17	17

Table A2.10: Professional enrichment of various PLANE features

	SD	D	NS	A	SA
E-portfolio is professionally enriching.	1		11	12	23
Virtual world is professionally enriching.	3	5	16	12	16
Game-based learning is professionally enriching.	4	7	22	11	9
SkillsSnacks are professionally enriching.	2		8	14	35
PLANE Pathways are professionally enriching.	2	1	12	14	23
Share club is professionally enriching.	3		9	17	23