

2014

The Long Journey: Developing a Model of PLD for the Future

Hazel Owen

Ethos Consultancy NZ, New Zealand, hazelowendmc@gmail.com

Merryn Dunmill

CORE Education, New Zealand, merryn.dunmill@core-ed.ac.nz

Recommended Citation

Owen, H., & Dunmill, M. (2014). The Long Journey: Developing a Model of PLD for the Future. *Australian Journal of Teacher Education*, 39(1).

<http://dx.doi.org/10.14221/ajte.2014v39n1.9>

This Journal Article is posted at Research Online.

<http://ro.ecu.edu.au/ajte/vol39/iss1/9>

The Long Journey: Developing a Model of Professional Learning and Development for the Future

Hazel Owen

Ethos Consultancy NZ, New Zealand
<mailto:info@ethosconsultancynz.com>

Merryn Dunmill

CORE Education, New Zealand
merryn.dunmill@core-ed.ac.nz

Abstract: This paper presents the longitudinal learning journey of two educators who participated in the Virtual Professional Learning and Development programme (VPLD) between 2010 and 2013. Each participant's story of change describes the process and outcomes of their involvement in a future-focused environment of virtual mentorship supported by a tailored online community of practice. The paper discusses and conceptualises (via an inclusive framework for professional development) key findings. Evidence is shown of shifts in the educators' beliefs about learning and teaching, corresponding changes in professional practice, and the impact on student learning experiences.

The three interconnecting dimensions of the Inclusive Framework for Professional Development - personal, professional and political - provided a tool to encapsulate the tensions, challenges, aspirations and inspirations of the two participants' respective experiences. While the focus is not specifically novice educators, the authors highlight some of the implications for pre-service educator providers, as well as providing a framework that should prove useful for other practitioners involved in educator professional development.

Introduction

With education systems around the world being challenged to meet the demands of 21st century living, it is no surprise that education practitioner Professional Learning and Development (PLD) provision (for educators at all stages along the continuum, from novice to experienced), is in the process of being reconceptualised. The more traditional face-to-face generic workshop that once focused on a 'one-size fits all' approach to professional learning, is being replaced by approaches that enable individualisation and flexibility of access - in particular those that exploit the affordances of the virtual environment. The range of affordances that a virtual environment offers can be used to provide more formal PLD that has flexibility of choice, time and approach for educators, thereby enabling them to build their knowledge and skills, all within their own context, and supported by mentoring and an online Community of Practice (CoP).

One of the keys to designing and facilitating effective educator PLD is understanding not only the underpinning professional theories and practice, but also appreciating the person as a whole - the character, likes, dislikes, concerns and aspirations of the educator - as well as the context(s) in which they live and work. Without an understanding of the person, and without profound alterations in the bureaucratic, andocentric, control-centred ways in which many schools (and PLD programmes) are run, innovative professional development

initiatives are likely to prove temporary and localised in their impact, while also being unsuccessful in their overall impact.

Studies into educators' knowledge have revealed convergences of both personal and ecological frameworks. For the novice educator in particular the translation of knowledge from pre-active to interactive to reflective, may not be a simple process. Beginning educators may even have difficulty in recognising any divisions at all. Because of this likelihood repeated practical experiences that enable opportunities to synthesise the knowledge components are necessary. Traditionally, in pre-service education, for example, these occur during school-based teaching experiences where 'expert' associate educators / mentors work with beginning educators. The role(s) of the experienced mentor /educator is therefore critical, with the formal and situational knowledge of both the expert and the novice playing as important a part as their respective personal knowledge.

It was the potential to design PLD that was personalisable (as opposed to whole school PLD, for instance), and based mainly in a virtual environment that inspired the design of the Virtual Professional Learning and Development (VPLD) programme that was instigated in October 2009 by the New Zealand Ministry of Education. Eight stories of change have been developed since 2009, and, in this paper two have been chosen to illustrate some of the dynamics and results of the VPLD approach. The three interconnecting dimensions of the Inclusive Framework for Professional Development (Fig 2) (adapted from the Teacher Thinking Framework, Dunmill, 1999) - personal, professional and political - are used to underpin the overall discussion of the findings. While the focus of the study was not specifically pre-service teacher education, the authors provide some suggestions how the VPLD programme model and framework might be adapted to enhance existing provision, as well as discussing some possible implications.

Overview of the Virtual Professional Learning and Development Programme

The VPLD initiative was instigated in October 2009, trialled and evaluated in 2010 with nine educators across a wide range of disciplines and sectors, and then rolled out in 2011 with a total of twenty educators and principals. This number increased to twenty-six in 2012, and forty-six (including 3 provisionally registered, novice teachers) in 2013. In 2013, there were five funded part-time virtual mentors (total of 1.2 equivalent full time staff). The aim of the VPLD programme and associated research study has been to develop a model of PLD for education practitioners based on authentic and meaningful learning and teaching contexts using virtual tools and services. Key foci have been 1) student achievement; 2) improving capability of participants; 3) development of effective online CoPs; 4) the use of virtual mentoring; and 5) working with the wider education community (Owen, 2011).

The VPLD programme has no formal 'content', associated accredited institution, or formal assessment; rather the programme offers a customisable, individualised PLD experience in which there are multiple ways to participate (see Fig 1). The programme is available for three years duration; in the first two years education practitioners work on projects that interest them, driven by their own investigation and based on the needs of their students, school and school community. In the third year, participants focus on transitioning into a mentor role, but can also choose to continue work on their own project. The PLD itself is subsumed within the participant's function of being part of their own school's/institution's community, rather than being the central focus as can happen with more traditional approaches to PLD.

The VPLD online CoP is an active space, with 277 members at the time of writing, which offers a safe environment to discuss and challenge theories, and views about pedagogy and practice - an aspect that appears to be enhanced by the participants' eclectic combination

of disciplines and sectors. Social structures (including agreements about interactions, processes, norms, and rules) are negotiated on an ongoing basis.

Each participant is partnered with a virtual mentor with whom they meet online once a month for an hour. Mentoring strategies are customised to suit the needs of both the mentee and the mentor, and during meetings a variety of subjects are discussed including pedagogy, what the participant has been working on, and how things have gone. The participant also identifies areas of support they need, and plans 'next steps' and interim goals (Owen, 2011).

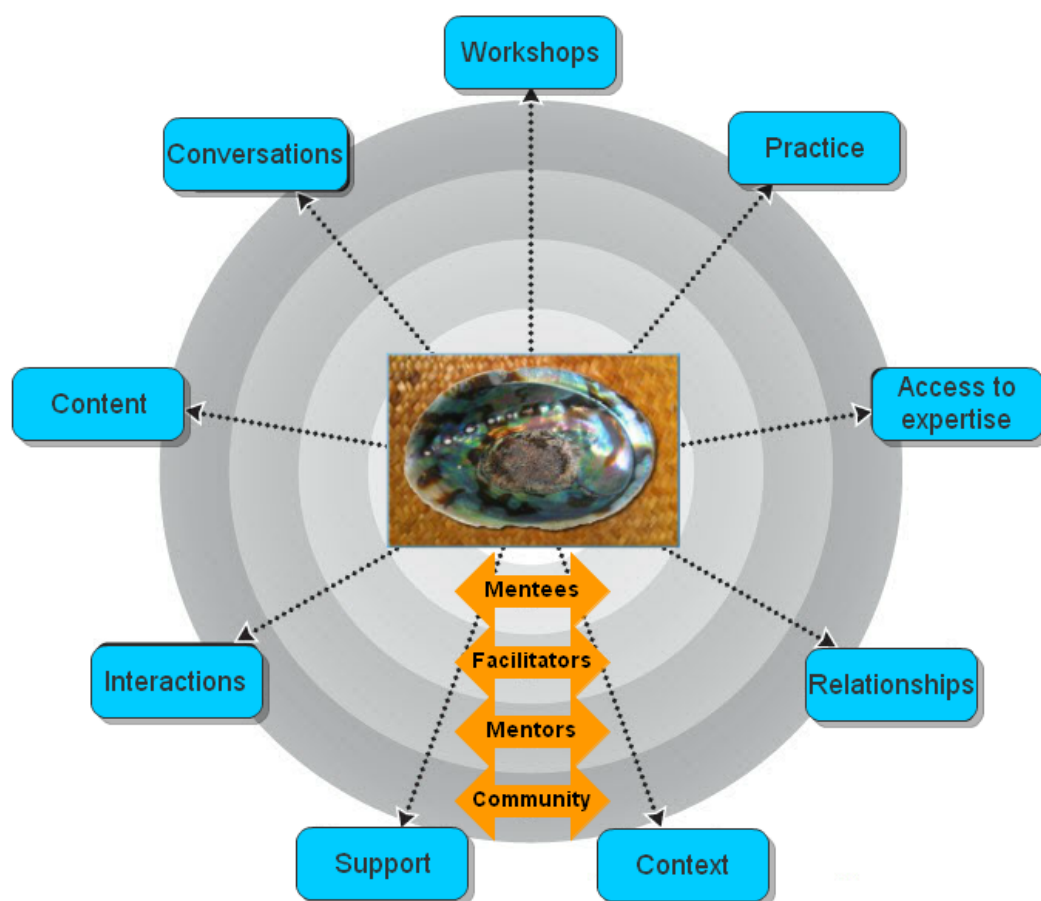


Fig 1: Components of Virtual PLD that meets diverse requirements and interests of participants (Owen, 2012, adapted from Wenger, White, & Smith, 2009)

Literature Review

Educator Development: The Personal, Professional and Political

Separating the personal and the professional aspects of teaching is impossible. An educator's life experiences shape their beliefs about learning and teaching (Cranefield, Yoong, & Huff, 2011). In addition, their professional 'knowledge' can be seen as experiential and set in particular domains and contexts (Cranefield, Yoong, & Huff, 2011), some of which may also be personal (Carter & Doyle, 1987). It can, therefore, be postulated that an education practitioners' professional knowledge, while having a tendency to be unpredictable and volatile (Nias, 1987), is also inextricable from their interpretive frameworks (Richardson, & Placier, 2001), and routines and practices (Handal, 2004).

A further consideration identified by Palmer (2007), in *The Courage to Teach* is that:

Identity and integrity are more fundamental to good teaching than technique - and if we want to grow as teachers - we must do something alien to the academic culture: we must talk to each other about our inner lives - risky stuff in a profession that fears the personal and seeks safety in the technical, the distant and the abstract (p. 12).

Bearing these factors in mind, at the heart of the Inclusive Framework for PLD (Fig 2) (Dunmill and Owen, 2013) is the development of professional identity and practices - something that is best understood as a process of becoming (Loughran, 2006). The Framework also highlights the tensions that impact upon, and through mentoring, can transform practice. In part, the process involves the co-creation of ideas and the development of 'new knowledge' (Ayling, Owen, & Flagg, 2013) that include emergent understandings around systems, complexity, and interrelatedness and how they relate to learning (Tschofen, & Mackness, 2012). In the process, educators make sense of existing knowledge and reinterpret it in a way that fits within their existing knowledge framework, thereby, disconnecting, and reconnecting "knowledge fragments through knowledge creation" (Littlejohn, 2011, Para. 3).

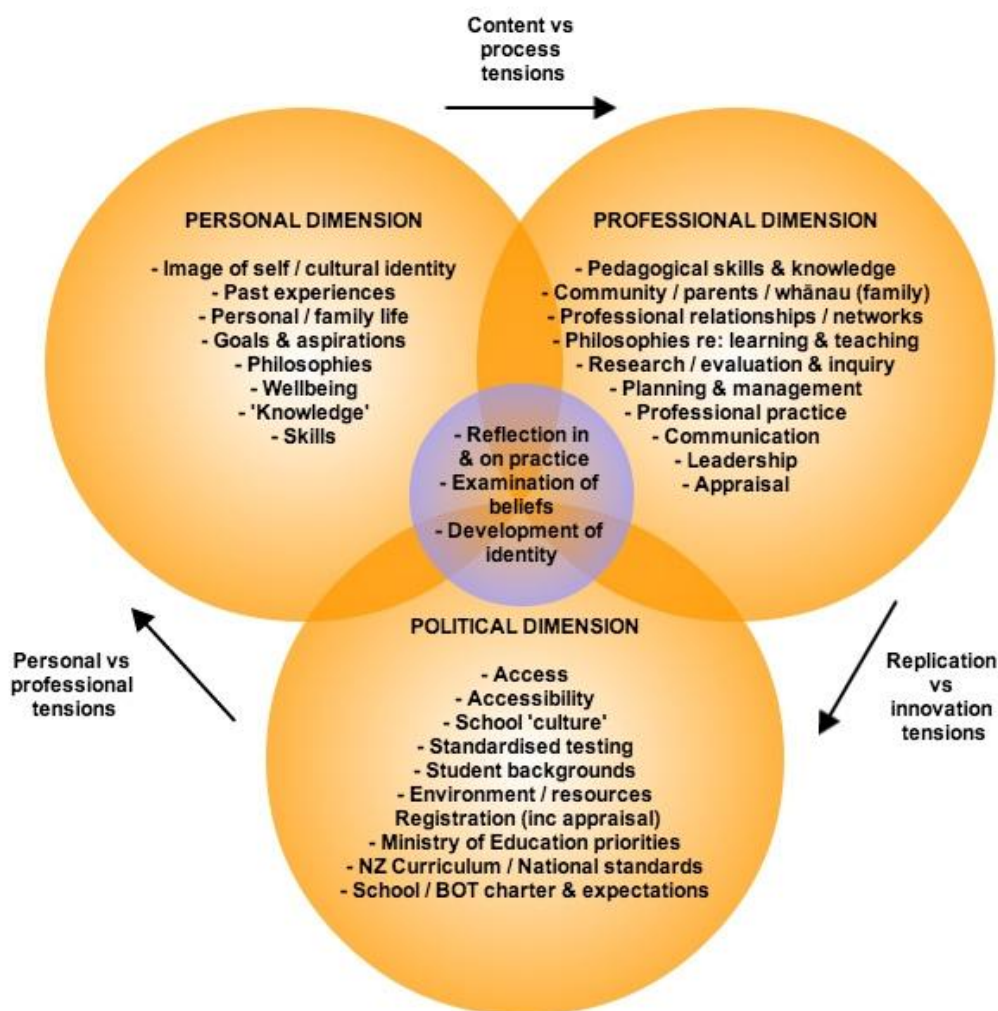


Fig 2: Inclusive Framework for Professional Development (adapted from the Teacher Thinking Framework, Dunmill, 1999)

Sherry and Gibson (2002), identified several critical aspects of PLD, which included clear recognition of the mutual benefits to all stakeholders who will be affected by any changes that occur. Changes might involve "all of the interconnected ecological systems, including classroom accommodations, school modifications, centralized policies, visions of

learning, and beliefs and attitude-based behaviours” (Sherry, 1998, p. 141). Virtual PLD provisions “cannot be separated from their ecological contexts, or from the educational activities that they enhance” (Peled, Peled, and Alexander, 1994, p. 49). As such, there needs to be recognition of the impact of an individual’s participation in PLD on relations with other staff at a school, which can be profound (Meirink, 2007). It can, therefore, be seen that an approach that focuses on the professional, while also embracing the personal, is likely to create tensions when the political is also considered.

Additional complexity is created by the fact that decisions around change in education have been increasingly driven by pressure to review teaching for improved student outcomes. Therefore, research into educator development is often based on the premise that through understanding what educators do and how they think, improvements can be made to the quality of learning experiences and learning environment, as well as to measurable increases in student achievement.

Professional Learning and Development - Future Focus Models *Online Communities of Practice*

Stoll (2004) indicates that “teaching is complex, so ...[educators] need to keep learning throughout their career...[and] many challenges [that] staff face are local challenges and need to be addressed ‘on the ground’” (p. 2). To meet these needs, PLD can offer participation in online CoPs. CoPs - a theory developed in the latter half of the 1980s and in the 1990s by Lave and Wenger, and since extended (by e.g. Hildreth, Kimble, & Wright, 2000) - encompass the notion of 'situated learning' whereby practitioners construct meanings collectively in a community (Wenger, 1998). They can also provide formal and informal learning opportunities, and opportunities for social interaction, irrespective of educational context.

Online CoPs build on the definition and practices of face-to-face CoPs, although they are necessarily distinguished by the fact that communication and collaboration is via computer mediated communication (CMC) (Owen, 2012). There is a wide range of definitions for online CoPs, but most include notions of a group of people who, via a common space on the Internet, engage in public discussions, interactions, and information exchanges (Tilley, Hills, Bruce, & Meyers, 2006). When online CoPs are an integral part of PLD they can provide formal and informal learning opportunities, as well as a space for practitioners to participate in conversations around learning and teaching and share practices (Brown & Duguid, 2000).

Virtual Mentoring

By definition, virtual mentoring is based on practices developed in face-to-face contexts, but which occur at a distance via, in this paper, CMC (which includes mobile devices) (Owen, in press). A virtual mentor works with a mentee, who is in a different geographic location, using both synchronous (webinar, text chat, Voice Over Internet Protocol such as Skype, and phones, for example) and asynchronous (including emails, discussion forums, blog posts, and comments on posts) tools.

Mentoring, either face-to-face or virtual, has many definitions, and these often vary depending on the context in which the mentor relationship is formed. In part, the range of definitions indicate some of the complexities of mentoring (Owen, in press). Hay’s (1995) definition is inclusive of a range of mentoring environments, whereby “Mentoring is a developmental alliance between equals in which one or more of those involved is enabled to: increase awareness, identify alternatives, initiate actions and develop themselves” (p. 3).

A key focus here is the developmental aspect of mentoring, as opposed to a more functional approach, where the mentor works with a mentee to help them develop personally and professionally. From a political perspective there is also trust that, when a school, institution or organisation is funding and/or supporting the initiative, the mentee's development will benefit all parties involved. In this model, therefore, there is respect for the individual, as well as a focus on school, institutional and/or organisational goals.

Research Approach

The research study associated with the VPLD, which has been conducted since October 2009, has aimed to collect qualitative and quantitative data to generate a rich, examinable body of evidence, which performs an iterative feed-forward function as well as providing outcomes and comparative longitudinal evaluation data.

Methodology

As well as the iterative annual research cycle, a longitudinal research approach was chosen to capture evidence of emerging patterns and tendencies through repeated observations of the same variables over an extended period of time. Due to repeated observation on an individual level over time, longitudinal studies, unlike cross-sectional studies in which different individuals with same characteristics are compared, make the observation of changes in attitudes, beliefs, and behaviours, more accurate (Anderson, 2005). To date, using longitudinal data eight case studies (stories of change) have been written up. The case study method was employed, and followed four stages - design, conduct, analyze the evidence, and develop conclusions, recommendations and implications (Yin, 2009). The aim has been to enable a close inspection of possible embedding of new professional knowledge, practice and beliefs, as well as an exploration of how the participants construct their knowledge and make sense of their learning. The stories of change are not exhaustive, but rather they are representative of the trends that have been observed across the VPLD programme.

The four research questions pertaining to this paper are:

- What are the observed effects on participants over the course (up to 3 years) of the VPLD programme?
- What are participants' opinions about the effects of shifts in their teaching practice on their students' achievement and engagement?
- How does working with a mentor affect participants' opinions about their own efficacy and teaching practice?
- Which external factors have an effect on access to and satisfaction with the VPLD programme?

Data Collection

Tools used to collect data include (but are not limited to) three online surveys per year (January, June, and November/December), recorded discussions and notes from virtual mentor meetings, contributions from all areas of the VPLD online CoP, Webinar sessions, and emails. The surveys, designed with mainly open-ended questions, aimed to gather richer, fuller understandings of the experiences of the VPLD participants. The quantitative data were exported into Excel, analysed and interpreted. A qualitative approach was used to interpret the open-ended survey responses. Recurring words were noted as possible emergent themes and used as codes. Comparative methods of analysis were used during coding (Charmaz, 2008).

Stories of Change

The following stories of change are representative of the trends and emerging themes that have been observed across the VPLD programme and provide differing contexts and backgrounds. Names and identifying features have been changed to preserve anonymity.

Story of Change: Keiko *Background / Description*

A qualified practitioner with a Diploma in secondary teaching and fourteen years of teaching experience, Keiko has been a dedicated teacher of Japanese since 2002. She has also been Head of Department (Languages) at X College since 2008, where she teaches National Certificate of Educational Achievement (NCEA) for senior secondary students, Levels 1 to 3 Japanese using a blended learning approach. Blended learning is defined in this paper as "learning that is facilitated by the effective combination of different modes of delivery, models of teaching and styles of learning, and grounded on transparent communications amongst all parties involved with a course" (Heinze & Proctor, 2004, p. 10).

Since joining VPLD in 2010, Keiko has challenged herself to teach all levels of Japanese online through the Virtual Learning Network (VLN). Keiko is Japanese born, grew up in Germany and emigrated to NZ. She is single, has no children, and has family in Japan.

The Focus

Interested in other methods and approaches, in September 2007 Keiko had applied for and was awarded an educator Language Immersion Award from the New Zealand Ministry of Education that enabled her to go to Germany for one year where she trialled the use of e-learning with students in her German language classes and experienced positive results. She was, therefore, keen to develop this further through the VPLD programme.

When Keiko first talked to her mentor, she explained how keen she was to "*enhance the learning experience for her students who were enrolled in her NCEA Level 1 and NCEA Level 2 Japanese classes in ways that would motivate them and encourage them to be more engaged*" (Mentor notes, 2010).

What Happened? (Process and Results)

Keiko began by working with her mentor to identify her needs and set goals for 2010. She had a keen interest on encouraging students to be more active. She also wanted them to build a learning community whose main interest was learning the Japanese language and finding out about Japanese culture, history, and education.

One consideration Keiko identified was finding effective ways to encourage students to speak, write, listen to and read Japanese outside of the class time. She sought help from her mentor in designing a programme for her Moodle site, which would enable her blended and VLN students to exploit the potential of a range of multimedia and communication tools for collaboration. Focussing on NCEA Level 1 and 2 Japanese, Keiko worked to not only upskill herself in the workings of Moodle, but also took time to reflect on her own practice and collect feedback from her students. She explored examples of effective practice and started to incorporate some of these ideas into how she facilitated and designed her sessions with students. There was, initially, “*a tendency to use the Moodle site as a repository and links out to resources*” (Mentor notes, 2010), although at this stage Keiko was also “*clarifying her understanding of the purpose, function and differences between discussion forums, blogs for reflection, and wikis for active collaboration and idea sharing*” (Mentor notes, 2010).

The face-to-face hui (meeting) in July 2010 appeared to be a catalyst for Keiko where she recognised that she was supported by the VPLD community as well as by her mentor. After the hui Keiko seemed inspired and started incorporating a lot more multimedia in her Moodle, as well as encouraging students to create and share their own. The look and feel of her courses was much more multi-dimensional, with something to cater for all learning preferences. By mid-August, the gradual shift from educator-centered to a more student-centered approach appeared to be impacting student learning experiences. Keiko enthusiastically reported that her “*students were a lot more engaged in the sessions she was facilitating, and were really keen to take part in the activities*” (Mentor notes, 2010).

At the beginning of 2011, Keiko remained enthusiastic, and her goals reflected that she was starting to look at how she could encourage students to collaborate, co-construct and support each other, and in turn potentially influence their learning outcomes. She also supported students to start developing their own ePortfolio. By mid-2011, Keiko shared that her students were more motivated now that they were beginning to see they can embed and share more of their work. When working with students Keiko also began to ‘step back’ and encourage them to become more self-directed.

Keiko commented that 2011 was a “*year of consolidation as well as frustrations*” (Blog post, 2011) that were, in part, caused by the unreliability of her school’s wireless network and unreliable IT support. The VPLD online community offered empathy, suggestions and support, and Keiko indicated that she was “*enjoying the group meetings in Adobe Connect, partly because of the sense of companionship that it gives, as well as the ideas and discussion*” (Mentor notes, 2011).

Over 2010 and 2011, Keiko invited all her students to submit feedback about the course content, facilitation, design and accessibility via an online (anonymous) survey administered in Moodle. Keiko’s growing responsiveness and commitment could be seen in some of the increasingly positive comments from students when the two evaluations were compared; there was a definite increase in student satisfaction indicated in 2011, which reflected Keiko’s shifts in practice and design. Most impressive was the high level of satisfaction with the programme overall.

Revealing a slowly increasing confidence, Keiko, by October 2011, was working across several communities within the wider education community, such as NZJLT (New Zealand Japanese language Teachers Association) sharing her own practice and experiences, as well as collaborating with, and learning from, others. Recognition of her work within her school included being asked by the Principal, from the beginning of 2012, “*to take on an*

active PLD role in the school with a group of 3 to 5 teachers to share all she has learned to date” (Mentor notes, 2011).

One of Keiko’s key foci for 2012, building on her previous experiences and reflections, was to find strategies to help students be more collaborative, in particular by encouraging students to form online communities of learning. She had previously trialled a platform, but the students had not participated, so Keiko was keen (based on what some other members of the VPLD community were finding) to see if Facebook would prove a more inviting space. She also wanted to, using the students’ ePortfolios, to encourage more parent and wh nau (family) involvement. However, Keiko faced ongoing issues, and shared that:

I had a pretty much terrible start for the year! The school network makes my life so hard! Our principal said he would fix the issue of the network...at the end of last year. But he has not done it yet. And what was even worse, the school has put more connection and cables on the top of the old system. It is a mess now (Blog post, 2012).

In spite of a challenging year, Keiko shared several examples of how students had responded. The FaceBook group and site worked well, when, after advice from the VPLD community (she posted that students were not engaging in the Facebook space) she started adding small quizzes and asking questions. Keiko explained that *“The students now ask and answer each others' questions through the Facebook site....They are asking each other and answering without me....We're learning together. The Facebook site emphasises that we are a class and we are learning together 24/7”* (Mentor notes, 2012).

	Not achieved	Achieved	Merit	Excellence
Listening				
2010	67%	0%	0%	33%
2011	42%	25%	33%	0%
2012	0%	80%	20%	0%
Reading				
2010	67%	0%	0%	33%
2011	42%	50%	8%	0%
2012	20%	60%	20%	0%

Table 1: NCEA Level 1 Japanese externals for 2010, 2011 and 2012

Benefits for students that Keiko reported included non-cognitive aspects such as increases in confidence, motivation and engagement, as well as development of Key Competencies, especially learner independence. In addition, it is interesting to compare Keiko’s 2010 to 2012 students’ NCEA (Table 1) results for reading and listening (a clear positive trend could also be observed for both speaking and writing). When reflecting on these trends, Keiko confirmed that in 2011, she had moved more toward encouraging students to co-construct artifacts, and started to change her own role. The emphasis in 2012 was around helping students develop an online community of learning, and identify and share (or create) resources that highlighted the cultural aspect of Japanese, as well as language learning strategies.

By 2013, Keiko indicated that, by trialling, and developing her identity as an educator and participating in the VPLD community, she now saw her role as offering “assistance and

help, not teaching...not saying remember this and remember that, but making suggestions, asking questions...guiding. It is way more than just teaching” (Mentor notes, 2013).

Story of Change: Veronica

Veronica’s journey encompasses her first two years of participation in the VPLD programme and includes her goals, philosophy, challenges, celebrations, innovations and aspirations that have impacted on her professional practice as a teacher, and as an emerging leader.

Background / Description

Veronica holds a Bachelor of Education and a teaching diploma. She is a New Zealand registered educator who has taught in six different primary and intermediate schools over her twenty-four years teaching experience, with specialisms in Science, Mathematics and ICT (Information and Communication Technology). During her involvement in the VPLD in 2011 - 2012, Veronica taught at a large intermediate school, teaching years 7 and 8, where she was also the lead ICT educator with responsibility for managing school hardware, software, infrastructure and the strategic development of e-learning across the school. Veronica was born in New Zealand, grew up on the South Island, is married and has two teenage children.

The Focus

Veronica had considerable experience with ICT infrastructure development and was an avid explorer of tools that she felt enhanced her teaching while also placing the student at the centre of the learning experience. However, she reflected that “*What I was doing wasn’t working any more. Something had to give. I’ve always asked myself, ‘what am I doing wrong? Why aren’t they students more engaged? How can I meet their needs better?’*” (Mentor notes, 2012). To this end Veronica, working with her virtual mentor, set her professional goals around the students in her classes. Her confidence was, however, low due to the struggles she was having within the school to implement what she could see as necessary 21st century changes in teaching and learning. Veronica’s virtual mentor also supported her to experiment with her own practice, to evaluate and reflect on her successes and challenges, and to share her new learning with staff in her school, at national events, and in the wider VPLD online community.

Veronica had been inspired when she attended *ULearn*, a national New Zealand educators’ conference with a focus on e-learning, and had returned to school with exciting ideas about modern learning environments (MLEs) and alternative approaches that reflected her own aspirations. She had also watched her own children, noting their preferred learning styles and the way they chose a range of learning spaces depending on their mood. She unpacked these experiences with her mentor and the VPLD online community resulting in the setting of goals and an action plan. As an initial step, Veronica challenged herself to set up her own digital class. She sought support from her Principal who gave her the approval and funding to establish her new space, which included new furniture that could provide opportunities for students to interact in an MLE. Veronica explained that “*Changing the furniture in the room was pivotal to changing my teaching and consequently student learning. They could now choose different spaces and groupings or work on their own. No more computer laboratories!... and we make decisions together*” (Mentor notes, 2012).

What Happened? (Process and Results)

As Veronica and her students had changed their physical space, she also explored online interactive planners which she adapted to focus on the New Zealand Curriculum Key Competencies, created videos for flipped classroom teaching (*“Well its not the world's greatest - but it is my FIRST effort at a flipped lesson for my students...and working through the process...has taught me heaps about what I will do differently to improve the next one - Blog post, 2013*), established programmes of learning in literacy and numeracy that incorporated digital tools and games, and conscientiously scaffolded student learning around these implementations. She readily accepted new challenges and took calculated risks which pushed the boundaries of teaching and learning. This Veronica did on her own with the support of her VPLD mentor and online community. Her colleagues at school were continuing their programmes as they usually did, while Veronica explored new ideas and approaches using the digital tools increasingly at her disposal.

After experiencing positive results the previous year, in 2013, Veronica decided that one of her key foci would be to incorporate more culturally responsive practices into her learning designs, in part through use of the [T taiako](#) (Cultural Competencies for Teachers of M ori Learners). Veronica worked to incorporate local contexts, and cultural practices that embraced M ori language, identities and beliefs into her teaching and learning inquiries (*“I bring M ori and other cultures in the room alive with their stories, such as Matariki and Dwali. Showing a real interest in them spins off and the relationships we build are much richer for that” - Mentor notes, 2013*). These competencies proved to be complementary to her pedagogical approaches and use of e-Learning - where students were encouraged to learn from each other (*“They teach each other in my classes as well and there is genuine respect for each other” - Mentor notes, 2013*) and critique each other's work. In addition, parents, wh nau (family) and school community were increasingly involved in their child's learning.

Veronica's second key goal for 2013, was to grow her e-learning leadership, in part through her research award studies into MLEs, as well as via her mentoring of individual educators at her school on the effective integration of e-Learning into the curriculum. She actively worked with the senior management team to develop a strategic plan for the school, and evaluated where the school was placed on the [e-Learning Planning Framework](#) tool to help tailor support for educators and staff.

In 2012 Veronica had become frustrated by the slow uptake of e-learning by staff at her school despite her modelling and one-to-one support. By November 2013 Veronica had, nevertheless, seen a change in the practice of staff, with approximately 85% embracing digital technologies and using e-learning to enhance students' learning experiences. Another underlying source of dissatisfaction was that she had been 'overlooked' three times when opportunities for promotion became available at the school.

Working with her virtual mentor, Veronica began to consider various strategies, in particular her potential to mentor others, and to impact teacher PLD. They also discussed the possibility of new employment where her passion for developing educator capability in e-learning might be appreciated more widely. Updating her curriculum vitae, applying for a new research award and a new job, became an exciting collaborative exercise between mentor and mentee. The results were powerful - Veronica was awarded an eFellowship for 2014 and was successful in winning a position at another school.

Through 2012 and 2013, Veronica's Year 7/8 composite class, of 30 students, piloted a Bring Your Own Device (BYOD) approach. The school supported the BYOD trial by purchasing iPads (1: 6). Veronica recognised that she needed - and had the opportunity - to individualise student learning. Veronica's e-class made great gains in their effective use of tools to support them to learn to learn by taking an increased ownership of their learning -

anytime, anyplace. Through blogs, video creation, gaming and a change from teacher-centred to more student-centred learning, students engaged and achieved at improved levels both at school and at home. It also enabled greater parental engagement in student learning as both learning and teaching moved beyond the classroom. Veronica summarised the gains in access to parents, explaining that *“We have a virtual classroom [and]...this has been well received by the students and parents as a method of learning 24/7”* (Mentor notes, 2013).

Student achievement data began to clearly show positive results for most students in reading, writing and mathematics. Veronica attributes this to shifts in her own pedagogy and beliefs about learning, as well as in effective integration of e-learning, so that *“Even the ‘hard to shift’ kids...are showing accelerated learning outcomes now because they can’t help but be involved. Their enthusiasm for games, where they think they aren’t working, has boosted numeracy skills and problem-solving with my lowest achievers who have shifted up two levels through the year”* (Mentor notes, 2013). Veronica also noted renewed student motivation to complete tasks using e-learning tools, and increased ownership by students for their own learning.

An additional outcome was that, because the classroom layout and furniture were changed again to make learning spaces more flexible, comfortable and multi-purpose, Veronica shared photos of her revitalised learning space with the online community. Her story and photos promoted further discussion and sharing of photos by other online members, thereby extending her influence beyond her immediate context. She was now leading the way, and co-constructing understandings with others around effective professional practice.

Through 2013 Veronica explored e-learning and was challenged in her thinking and actions around teaching and learning in general - to reconsider the curriculum through an e-learning pedagogical approach, to weave cultural competencies and individualised learning into her programmes beyond the limitations of national assessment requirements, and to extend herself well beyond the classroom and school in order to navigate her way through new professional learning. She brought considerable knowledge to the VPLD online community, openly shared her practice and her ideas, and celebrated her own and others’ successes. In summarising her learning journey in 2013, Veronica said:

I’m amazed that others think I have something to offer. VPLD has grown us like babies, and suddenly we’re grown up and we’re off and flying.... My next goal...is to get e-learning through the whole school, 100%, through modelling and mentoring, setting up buddy systems and of course, getting the management units in recognition of the extra workload” (Mentor notes, 2013).

In 2014 Veronica plans to continue with VPLD and step into a ‘developing mentor’ role - both at her school where she will work collegially with staff to provide PLD, and within the VPLD community. She aspires to become a Principal or teacher educator/mentor and is travelling enthusiastically down that road in her professional learning journey.

Results and Discussion

Both stories of change provide insight into Keiko and Veronica's learning journeys, and the impact of participation in the VPLD. Many of the points that emerge span all three aspects of the Inclusive Framework for PLD - the political, personal and professional. The authors of this paper have chosen to discuss elements under each category to encapsulate main foci from the two stories of change.

Personal

It is impossible to truly extricate personal identity from professional identity, as both are fundamental to the process of becoming an educator, in part by reinterpreting their existing knowledge and experiences. Both stories of change illustrate possible links between how each educator's life experiences, image of self and cultural identity influenced their perception of themselves as an educator. Keiko appears to have found it a challenge to be confident in her growing expertise and experience. In contrast, Veronica has a strong, confident and engaging presence that has grown through her time in the VPLD. Veronica used her home context to re-evaluate her perceptions of student learning and classroom environments at her school and her family life clearly impacted on her professional life.

Keiko and Veronica have faced tensions between their desire to engage and apply themselves to professional learning to a high standard (both have won awards for their work, one international), and the demands of personal life and family. Both, therefore, had to work on balancing a passion to affect change in other educators in a changing and often challenging environment, with a desire to meet a range of professional aspirations, while also ensuring their own emotional and physical well-being. Mentors were responsive to these tensions during one-to-one sessions, and worked with Keiko and Veronica to support their commitment and enthusiasm, while helping them develop strategies to establish personal and professional balance.

Veronica, for example, actively engaged with research that supported her goals, which were also aligned to her in-school appraisal. Meetings with her VPLD mentor encompassed all aspects of her professional (and often her personal) life, and focused on successes, challenges, and next steps (*"I've been challenged to articulate my own new thinking - what, how but mostly why I am making shifts in my practice. My vision is clearer, and the school vision and action plan are coming from me now"* - Mentor notes 2013). This relationship was important to her wellbeing and provided her with an alternative professional learning opportunity, to openly (and confidentially) discuss frustrations and limitations experienced within the school environment, the trust relationship between mentor and mentee being critical to the sharing process.

In addition, participation in the VPLD offered opportunities to collaborate with other participants from around New Zealand and beyond. The stories of change provide evidence that relationships are built, and personal as well as professional identities explored. A sense of self-realisation, re-invention and renewal was expressed by participants, who in a safe, supportive environment enthusiastically trialled and evaluated new ways of 'being'. When things were not as successful as they might have hoped, a shared online reflective blog post often elicited responses of empathy, suggestions of how frustrating problems might be handled, and offers of help. Keiko and Veronica were thereby immersed in an experience that modelled aspects such as valuing a range of worldviews and skills. The resultant feeling was one of belonging to a socially-mediated community, where shared understandings and experiences helped to lessen a sense of isolation, to break down silos, and to strengthen resilience in the face of change. It might therefore be argued that the VPLD programme not

only increases ability to cope with change, but also helps participants develop strategies that help them celebrate and embrace change in themselves and in others.

Professional

Some educators subscribe to a 20th century view of teaching, learning and knowledge, where they see their role as supporting “students to passively acquire and reproduce existing knowledge” (Bull, & Gilbert, 2012, p. 6). The paradigm shift required for educators to instead become a supporter of students who helps them “actively interact with knowledge: to ‘do things with it’ - to understand, critique, manipulate, create and transform it” (Bull, & Gilbert, 2012, p. 6), is substantial. It requires them to reconsider their identity as an educator - to re-situate (Edwards, 2005; Eraut, 2008) their beliefs, knowledge, learning and professional practice.

An analysis of the two stories of change above indicates that both Keiko and Veronica had their beliefs about teaching and their role as educators challenged. Both noted that they had found it difficult to shift from the more educator-centred approaches that they had experienced in their own education, to one where they focussed on themselves as learners and on supporting their students. Each travelled on a learning journey from a focus on content and eLearning tools, to one where they are moving toward the point of scaffolding “students’ intellectual curiosity, their problem□posing and problem□solving ability and their ability to build new knowledge—together with others” (Bull, & Gilbert, 2012, p. 6). Veronica trialled a flipped classroom model that encouraged anytime, anyplace learning, with her students exploring their learning through gamification. “Gamification, [is] defined as the use of game mechanics, dynamics, and frameworks to promote desired behaviors”, and when applied to education can be an organising framework for learning and teaching. This framework add layers of game playing and reward to learning, which can “can change the rules...[and] can also affect students’ emotional experiences, their sense of identity and their social positioning” (Lee, & Hammer, 2011).

Keiko is further along the transformational journey to facilitator or ‘learning coach’; however, she has been participating in the VPLD for a year more than Veronica.

Keiko and Veronica developed a sense of self-efficacy that motivated them to interrogate their pedagogical practices, reflect on their philosophies, and to trial alternative approaches - all within iterative cycles of trial, error, and improvement. The two participant’s sense of self-efficacy was reinforced when they shared their experiences within the intellectual construct of the VPLD community (which included their mentor), and where their endeavours and trials of different strategies were recognized, acknowledged, questioned and developed. In addition, the process of sharing resulted in gains in knowledge and skills (initially an integrative process where different types of knowledge intersected). However, with further trialling, and development of their identity as practitioners and contributing members of the VPLD community (Mayo, & Macalister, 2004), the process proved transformative resulting in new synthesised forms of knowledge (Graham, 2011).

Community and practice proved equally important in the reshaping of professional identity and knowledge, but for different reasons. The community provided the forum to ask advice, as well as for robust, healthy conversations about theory and practice (Hung, & Chen, 2001), alongside offers of resources and knowledge / practical assistance; the situated practice (which included reflection and personal inquiry) provided opportunities “*to interact with other like-minded people in the online space and at hui. I can’t get that at school*” (Mentor notes, 2013). This factor highlights underlying issues (some of which are discussed in the section below that looks at political influences). Successful PLD programmes have increasingly been identified by collegial rather than individual participation (Hargreaves, 2003), whereby, “friendly, collegial relationships, open communication and the free exchange

of ideas may be sources of emotional and psychological support for teachers' work and promote their professional development" (Hendriks, et al, 2010, p. 33). However, where the culture and leadership within in a school is not conducive to such collegiality, the PLD may at best prove ineffective, and at worst create tensions within professional relationships (Barber and Mourshed, 2007).

The resulting reshaping of roles appears to have had an impact on learner engagement as well as motivation, especially where artifacts produced were accessed and critiqued by their peers and community. Also, both have reported improvements in student wellbeing and achievement (One example was Year 9 boy who could not say "*what his name is in Japanese. [He] asked me to record the sentences he wanted to say...30 minutes later he could perfectly talk about himself in Japanese. That was SOOOOO amazing!! Now the student introduces himself in Japanese whenever, wherever he sees me!! I had not realised using ICT works so great for oral practice!*" Blog post, 2010). , as well as in the assimilation / application of key competencies, including competencies of culturally responsive practice.

An emerging tendency also observed, is that shifts in practice, along with growing confidence, resulted in both Veronica and Keiko taking on PLD provision roles - something that was termed the 'ripple effect' by the VPLD community. Keiko, for instance worked in her school with a group of colleagues, as well as across several communities. She presented the results of her inquiry and learning, nationally and internationally, and on the strength of her work and achievements, was the recipient of an award to present in Japan in 2013. Her design and facilitation of professional sessions reflected the changes she was making in her own thinking and classroom practice ("*Awesome flow for the activity!...I liked the fact that we got to zoom off and search for info and then blast it back into the wiki - I kind of felt like it was a competition with the 3 groups going at once so I really went for it!*" - Evaluation, 2010). Veronica regularly contributed to two online communities of practice, to share her experiences, as well as offering support, advice, and collegiality. In both 2012 and 2013 Veronica also presented her evolving pedagogical and eLearning practices at *ULearn*, which saw her rise to the challenge of presenting to larger, disparate audiences who are on similar journeys of self-realisation.

While on their own learning journey, Keiko and Veronica hit the glass ceiling in their respective schools, faced challenges with their senior management teams, and over time started to feel undervalued. They were now at a point where they wished to broaden their professional horizons.

Political

There is a complex interplay of technologies as tangible and intangible artifacts. On one hand, they can be seen as objects shaped by human craft, and on the other as intangibles that are a product of human conception or agency. The latter provides a wider focus, whereby, social networks and online communities of practice can both be considered artifacts. This perhaps helps to provide insight into the ways humans *use* technologies, rather than the focus being the technology itself.

When the notion of artifacts as both tangible and intangible comes into play, there are further considerations including the concept that "technical things have political qualities. At issue is the claim that...they can embody specific forms of power and authority" (Winner, 1986, p.121). The examples Winner uses illustrate how intended consequences, are frequently underpinned by unintended aspects related to control, as well as political and social effects.

When the stories of change are analysed, it becomes apparent that both participants faced challenges with the infrastructure and the senior management personnel at their schools. As well as issues with practical aspects of access (e.g. updating the school wireless network), there were underlying political aspects illustrated by, for instance, decisions around release

time in recognition of extra responsibilities, and around decisions about promotion (“*I was first overlooked for a management position at school in favour of a year 5 single male teacher. When I asked why, I was told I had a young family to look after*” “*I feel unsupported and know I am much better than I’m being recognised (or not) for*” - Mentor notes, 2013). In addition, both Keiko and Veronica felt that their advice relating to policy decisions around eLearning initiatives at their schools, was sometimes ignored. In part Keiko and Veronica identified the negative responses as an issue with their changes in professional identity and practice, outstripping that of their colleagues. Veronica felt that she was constantly “*struggling against senior managers who don’t understand my pedagogy and are stuck in the traditional chalk and talk, lecture mode. I’ve had to justify so much about why I want to change my teaching for the students*” (Mentor notes, 2013).

While participants' ICT skills and experience could be augmented, some of these negative external factors could not be resolved by the mentor or VPLD community. However, both participants indicated that they considered their virtual mentor as someone who would listen to them describe their experiences with no risk or adverse consequences because the mentor was external to their direct working environment. In addition, the mentor challenged thinking and actions, and offered alternative perspectives (Owen, in press). As a result, there was a sense that participants were supported by a neutral sounding-board, who was also able to help them develop resilience, along with ‘survival’ strategies.

What Are Some Of The Implications Of The VPLD For Pre-Service Educator Education?

Over decades of research, ‘expert’ educators’ practice has been considered tacit knowledge, constructed from repeated experience rather than from any preset instruction they may have undergone. In more recent times, it was also understood that novices could not simply be told what experts knew in order to demonstrate that expertise. Understanding the differences in experience between the novice and the expert therefore has required education practitioners to develop a conception of *how* expertise is acquired and how reflection on both success and failure assist the development of the teacher (Clift, 1989). Considerations stemming from this premise raise the questions of how and what educators learn at the various stages of their learning journeys, whether or not understandings change with experience, and whether ongoing mentoring supports shifts in educator practice for improved student learning opportunities, as well as for improved professional practice and outcomes.

In the 21st century, pre-service teacher education is well placed to adapt the VPLD programme model and framework discussed in this paper. Graduating student educators could be supported within online CoPs and matched with a virtual mentor (who could be outside of the physical institution) matched to their professional learning needs. Individualised programmes could be co-constructed while also providing access to a wide online professional network who can share thinking as teachers progress their learning journeys over time. Similarly, educator educators lecturing in pre-service programmes could also be mentored along with their student educators to triangulate learning and establish a rigorous professional learning model, ensuring ongoing critical reflection in and on action. Adoption of the VPLD model through initial educator education (including the first two years of teaching) could support and guide educators to self assess and evaluate their progress towards teacher competence for graduation, registration and appraisal purposes.

Conclusion

To develop a single coherent framework for educator professional development is a challenge, because there are a raft of variables to consider, many of which are arguably

outside the realm of what is traditionally offered as PLD, but which are perhaps addressed through a combined provision of access to virtual mentoring and online CoPs. This paper has synthesised some of the emerging themes from two stories of change, and have thereby highlighted a few of the underpinning (and highly influential) variables and dynamics.

Both Keiko and Veronica were able to astutely identify the gaps they had in their professional knowledge and skills, as well as non-cognitive (personal) and political factors that were influencing their professional role. They were supported by their virtual mentor and the VPLD online community to help build resilience that enabled them to continue to grow their professional practice. Positive experiences were particularly powerful in shaping their ongoing development and associated increase in confidence and competence. Conversely, political factors within their school context, created frustration, and had a negative impact on confidence. As such, tensions were created between the political dimension and the personal dimension as they grappled with dilemmas of expectation, provision of opportunity, and their own goals for development.

Framed within the Inclusive Framework for PLD it has been shown that VPLD participants build resilience and develop their own capability (knowledge and practice) to lead change. Both Keiko and Veronica have taken on developing mentoring roles, whereby they mentor colleagues where the inclination and requisite exists. This has resulted in what the VPLD team has termed ‘the ripple effect’, with participants working with colleagues, either in a formal or informal PLD capacity.

It has been stated that future-oriented educational practitioners need support to “develop a more complex skill set in order to become strategic systems think[ers], change facilitators, and learning leaders who can support and sustain a culture of continuous professional learning” (New Zealand Curriculum, 2012, Para. 9); and if this shift in focus is to be achieved educators “need [access to] new kinds of professional learning” (Bull, & Gilbert, 2012, p. 6). While the VPLD programme appears to offer the kind of PLD that will help with the development of these complex skills, it is the first step on a very long journey where the PLD providers themselves will need to look long and hard at their own beliefs and practice.

References

- Ayling, D, Owen, H, & Flagg, E. (2013). From basic participation to transformation: Immersive virtual professional development. In S. Leone (Ed.), *Synergic Integration of Formal and Informal E-Learning Environments for Adult Lifelong Learners*. Hershey, Pennsylvania: Information Science Reference (IGI Global). (pp. 47-74).
- Barber, M., & Mourshed, M. (2007) McKinsey Report: How the World's Best Performing School Systems Come Out on Top. London: McKinsey and Company.
- Bolstad, R., & Gilbert, J., with McDowall, S., Bull, A., Boyd, S., & Hipkins, R. (2012). *Supporting Future-oriented Learning and Teaching: A New Zealand Perspective*. Wellington: Ministry of Education. Retrieved January 19, 2013 from <http://www.educationcounts.govt.nz/publications/schooling/109306>.
- Brown, J. S., & Duguid, P. (1991). Organizational learning and communities of practice: Toward a unified view of working, learning and innovation. *Organization Science*, 2(1), 40-57. <http://dx.doi.org/10.1287/orsc.2.1.40>
- Bull, A., & Gilbert, J. (2012). *Swimming out of Our Depth? Leading Learning in 21st Century Schools*. Wellington: NZCER. Retrieved October 14, 2013 from <http://www.nzcer.org.nz/system/files/Swimming%20out%20of%20our%20depth%20final.pdf>.

- Carter, K., & Doyle, W. (1987). Teachers' knowledge structures and comprehension processes, in: A. Woolfolk (Ed.) *Research Perspectives on the Graduate Preparation of Teachers* pp. 51-68, Englewood Cliffs, NJ. Prentice Hall. PMID:10282375
- Charmaz, K. (2008). Grounded theory as an emergent method. In S. Hesse-Biber & P. Leavy (Eds.), *Handbook of Emergent Methods* (pp. 155-170). New York: The Guilford Press.
- Cranefield, J., Yoong, P., & Huff, S. (2011). Driving change through online brokering practices in an online community ecosystem. *Proceedings of PACIS 2011* (pp. 1-13). Brisbane: Queensland University of Technology.
- Dunmill, M. (1999). Secondary music teachers' content knowledge and skill bases: Implications for teacher education. (Masters thesis. University of Canterbury, Christchurch, New Zealand).
- Dunmill, M (2002). Teaching in 3D. *Sound Ideas*, 5(2), 6-15.
- Edwards, R. (2005). Contexts, boundary objects and hybrid spaces: Theorising learning in lifelong learning. Paper presented at the 35th annual SCUTREA conference, University of Sussex, UK.
- Eraut, M. (2008). Learning from other people in the workplace. In: K. Hall, P. Murphy, & J. Soler (Eds.), *Pedagogy and practice - culture and identities*. London: Sage.
- Handal, B. (2004). Teachers' Instructional Beliefs about Integrating Educational Technology. *E-Journal of Instructional Science and Technology*, 17(1), 1-10.
- Hargreaves, A. (2003). *Teaching in the Knowledge Society*. Buckingham: Open University Press.
- Hay, J. (1995). *Transformational Mentoring: Creating Developmental Alliances*. New York, NY: McGraw-Hill Publishing Co.
- Harvey, S., Conway, C., Richards, H., & Annelies, R. (2009). Evaluation of Teacher Professional Development Languages (TPDL) in Years 7-10 and the Impact on Language Learning Opportunities and Outcomes for Students. Wellington: Ministry of Education. Retrieved October 9, 2013 from <http://www.educationcounts.govt.nz/publications/schooling/evaluation-of-teacher-professional-development-languages-tpdl-for-teachers-of-languages-in-years-7-10-and-the-impact-on-language-learning-opportunities-and-outcomes-for-students/chapter-one>.
- Heinze, A., & Proctor, C. (2004). Reflections on the use of blended learning. Paper presented at the Education in a Changing Environment, University of Salford, UK. Retrieved June 10 2005, from the Salford University Web site: http://www.edu.salford.ac.uk/her/proceedings/papers/ah_04.rtf.
- Hendriks, M., Luyten, H., Scheerens, J., Slegers, P., & Steen, R (Eds). (2010). Teachers' professional development: Europe in international comparison: an analysis of teachers' professional development based on the OECD's Teaching and Learning International Survey (TALIS). Office for Official Publications of the European Union, Luxembourg. Retrieved December 11 2013, from http://ec.europa.eu/education/school-education/doc/talis/report_en.pdf.
- Hildreth, P. M., & Kimble, C. (2004). *Knowledge networks: Innovation through communities of practice*. Idea Group Publishing.
- Lee, J. J., & Hammer, J. (2011). Gamification in Education: What, How, Why Bother? *Academic Exchange Quarterly*, 15(2). Retrieved December 9, 2013 from http://www.academia.edu/570970/Gamification_in_Education_What_How_Why_Bother
- Littlejohn, A. (2011). Collective learning and charting. Retrieved November 6, 2012 from <http://littlebylittlejohn.com/collective-learning-and-charting/>.
- Loughran, J.J. (2006). *Developing a Pedagogy of Teacher Education: Understanding Teaching and Learning about Teaching*. Abingdon UK: Routledge.
- Meirink, J. (2007). Individual teacher learning in a context of collaboration in teams. (Doctoral thesis, Universiteit van Leiden, Netherlands). Retrieved December 11, 2013 from <https://openaccess.leidenuniv.nl/handle/1887/12435>.

- Ministry of Education. (2007). *The New Zealand Curriculum*. Wellington: Learning Media.
- New Zealand Curriculum. (2012). *Future-oriented views of knowledge and learning*. Retrieved October 9, 2013 from <http://nzcurriculum.tki.org.nz/Curriculum-resources/NZC-Updates/Issue-26-October-2012/Future-oriented-views-of-knowledge-and-learning>.
- Nias, J. (1987). *Seeing Anew: Teachers' Theories of Action*, Geelong, Victoria, Deakin University.
- Owen, H. (In press). *Making the most of mobility: Virtual mentoring and education practitioner professional development*. *The Canadian Journal of Learning and Technology*.
- Owen, H. (2012). *Re-inventing PLD: Ensuring relevance and building resilience*. *Journal of Open, Flexible and Distance Learning*, 16(1), 42-55.
- Owen, H. (2011). *Personalised, Contextualised, Professional Learning Development: Putting it into practice*. *Journal of Open, Flexible, and Distance Learning*, 15(1), 61-74.
- Palmer, J. (2007). *The Courage to Teach*. USA: Jossey Bass.
- Peled, Z., Peled, E., & Alexander, G. (1994). *An ecological approach for information technology intervention, evaluation, and software adoption policies*. In E.L. Baker, & H.F. O'Neil, Jr. (Eds.), *Technology Assessment in Education and Training*. Hillsdale, NJ: Erlbaum.
- Richardson, V., & Placier, P. (2001). *Teacher Change*. In V. Richardson (Ed.), *Handbook of Research on Teaching* (4th ed., pp. 905-947). Washington, DC: American Educational Research Association. PMID:11580735
- Sherry, L. (1998). *An Integrated Technology Adoption and Diffusion Model*. Retrieved 10 April, 2010, from <http://home.comcast.net/~lorraine.sherry/publications/aect98.html>.
- Sherry, L., & Gibson, D. (2002). *The path to teacher leadership in educational technology*. *Contemporary Issues in Technology and Teacher Education*, 2(2), 178-203.
- Stoll, L. (2004). *Developing professional learning communities: Messages for learning networks*. Retrieved from <http://plc.washington.org/cms/lib3/WA07001774/Centricity/Domain/42/developing-PLCs.pdf>.
- Tilley, C., Bruce, C., Hallam, G., & Hills, A. (2006). *A model for a successful virtual community for people with long-term, severe, physical disabilities*. *International Research: An international electronic journal*, 11(4), NP.
- Wenger, E. (1998). *Communities of practice: Learning, meaning, and identity*. Cambridge: Cambridge University Press. <http://dx.doi.org/10.1017/CBO9780511803932>
- Winner, L. (1986). *Do artifacts have politics*. In L. Winter (Ed.), *The whale and the reactor: a search for limits in an age of high technology* (pp. 19-39). Chicago: University of Chicago Press.
- Wenger, E., White, N., & Smith, J. D. (2009). *Digital Habitats: Stewarding technology for communities*. Oregon: CPSquare.
- Yin, R. (2009). *Case study research: Design and methods* (4th edition). Thousand Oaks, CA: Sage Publishing.

Acknowledgements

The Virtual PLD (VPLD) initiative was instigated in October 2009 by the eLearning Division at the New Zealand Ministry of Education, who also funded the project. The initial concept was conceived and developed by Eddie Reisch (Senior Analyst MoE) in consultation with ePrincipals Carolyn Bennett (FarNet), Trevor Storr (AorakiNet), Ken Pullar (OtagoNet), as well as Robin Ohia (eLeader, Te Kahui Kura ki Aotea), Helen Cooper (Senior Analyst

MoE), Merryn Dunmill (Arts Online/Itinerant Music). Te Toi Tupu - Leading Learning Network consortium (comprising Cognition Education; CORE Education; The New Zealand Council for Educational Research; The University of Waikato; and Waikato-Tainui College for Research and Development), took over the overall management of the project, in 2011.