

K-12 Online and Blended Learning in Aotearoa New Zealand

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Abstract

New Zealand schools use supplementary online learning approaches whereby students take classes from other schools using videoconferencing, the Internet, and other technologies. Particularly common in rural secondary schools, online blended learning and research regarding this have been conducted for over 15 years. This chapter presents an overview of this research, highlighting the impact it has had, and the implications for policies it practices. It then identifies areas where future research is needed.

Keywords: online, blended, videoconference, secondary, personalised, learning, New Zealand

Introduction

Aotearoa, or New Zealand, is a small country, located in the Tasman Sea. Its nearest neighbour is Australia, approximately 900 miles away. It comprises two main islands and a number of smaller ones. Its population of just under 4.7 million is largely based on the smaller of the main islands, the North Island, with around one-third of New Zealanders living in its largest city of Auckland. Only around one-quarter of New Zealand's population live on the South Island. Overall, then, New Zealand is a sparsely populated country with, on average, 41.0 people per square mile (compared to the United States at 85 people per square mile; <http://wikipedia.org>), and many areas with far fewer people per square mile. New Zealand's topography is also varied, with mountain ranges and lakes in both islands meaning sometimes even apparently short distances can take a long time to travel via road. It has three official languages, Māori (i.e., the language of the indigenous people of New Zealand), English, and New Zealand Sign Language. Although English is the most commonly spoken language, it is common to incorporate key words and phrases in Māori, such as in the name of the country, *Aotearoa* into everyday speech.

Children in New Zealand are required to attend school, or register as being home-schooled, from the age of six. Most start school, however, on the first day they are able to, the day they turn five. Students are generally required to attend school until the age of 16, although most continue until they are at least 17, and have gained a formal qualification. As Table 1 shows, compulsory schooling in New Zealand comprises of primary (also known as contributing primary), intermediate and secondary (also known as high school) levels.

Table 1. Comparison of school levels in New Zealand and the United States

Age	New Zealand		United States	
	Year	Level	Grade	Level
0-4			Nursery/PreK	
4-5			Pre-K	
5-6	0/1	Primary	Kindergarten	
6-7	2		1	Elementary
7-8	3		2	
8-9	4		3	
9-10	5		4	
10-11	6		5	
11-12	7	Intermediate	6	Junior High
12-13	8		7	
13-14	9	Secondary	8	
14-15	10		9	High School: Freshman
15-16	11		10	HS Sophomore
16-17	12		11	HS Junior
17-18	13		12	HS Senior

However, not all areas, particularly areas of less population, have separate intermediate schools. A number of primary schools incorporate the intermediate level students and are known as ‘full primary’ schools, meaning they comprise students from Year 0 to Year 8; that is, they incorporate the intermediate years. In other areas, the intermediate years are part of the secondary level, with these schools known as Year 7 to Year 13 schools. In addition, a final classification of schools – area schools – exists in areas with very small populations. These schools comprise students from all year levels. There are also a small number of composite schools, which comprise another combination of year levels. The Junior High model also occurs in small numbers, generally where one designated Year 7 to Year 13 secondary school has split their levels into a Year 7 to Year 10 Junior High School and a Year 9 to Year 13 Senior High School. See Table 2 below.

Table 2. Age and year level of students attending each of the types of school in New Zealand

Age	Year	Contributing Primary	Full Primary	Intermediate	High School/Secondary (7-13)	High School/Secondary (9-13)	Area School (1-13)	Composite school (any combination)
5-6	0/1	■						▨
6-7	2	■						▨
7-8	3	■						▨
8-9	4	■						▨
9-10	5	■						▨
10-11	6	■						▨
11-12	7		■	■	■			▨
12-13	8		■	■	■			▨
13-14	9				■	■		▨
14-15	10				■	■		▨
15-16	11				■	■		▨
16-17	12				■	■		▨
17-18	13				■	■		▨

There was a substantial change to the nature of schooling in New Zealand in 1989, when 'Tomorrow's Schools' was introduced (for further detail of New Zealand's educational system, see Powell, 2011). This initiative saw the governance of schools devolved to the schools themselves. Each school elected a Board of Trustees, who was responsible for drafting school policies, directing curriculum, and allocating funding, within broad guidelines (Wylie, 1990). This move was intended to allow schools to better respond to the needs of their students. While all schools are required to teach to the New Zealand curriculum, under this learner-centred, personalised approach, schools are encouraged to identify how they can do so while meeting the needs of their students. This is possible as the curriculum document is very broad; rather than being a prescriptive document, "its principal function is to set the direction for student learning and to provide guidance for schools as they design and review their curriculum" (Ministry of Education, 2010, p. 6). As such, it comprises a vision, principles, values, and key competencies (i.e., thinking, using language, symbols, and texts, managing self, relating to others, participating and contributing). It also identifies eight learning areas (i.e., English, the arts, health and physical education, learning languages, mathematics and statistics, science, social sciences, and technology), noting, however, that

these do not need to be taught independently. Additional information is provided about each learning area, with this phrased in terms of what students will be able to do and/or understand.

The use of information and communication technology (ICT) has been encouraged within New Zealand schools for some time. Before discussing this, however, it should be noted that within the New Zealand context, the term e-learning is used to describe the use of ICT to support or enhance learning; this is different from online learning, where ICT is used as a mode of delivery (e.g., see Powell & Barbour, 2011). New Zealand's response to the availability of tools that could be used for e-Learning meant that the International Association for K-12 for Online Learning's study "determined that the country of New Zealand had implemented some of the most innovative ideas in this field" (Powell, 2011, p. 1). The first strategy for the use of ICT in schools (i.e., e-learning) appeared in 1998 (see Barbour et al., 2011; Powell, 2011); while the 2010 Curriculum document (Ministry of Education, 2010), talked specifically about the role ICT could play both in terms of e-learning but also in opening "up new and different ways of learning" (p. 36). For more details of the development of e-learning policies in New Zealand, see Powell (2011) and Powell and Barbour (2012).

Around the time e-learning was becoming an expected part of teaching and learning in New Zealand schools, schools were being challenged to rethink the nature of what they did (Hipkins, 2004). Particularly at the secondary school level, they were asked to address the needs of diverse students to prepare them for further study in a range of topics, and for work (Alton-Lee, 2003). Thus, schools were not only required to provide core subjects (e.g., English, statistics, calculus, history, geography, physics, biology, and chemistry) but also alternatives that would meet the needs of their students (e.g., tourism, electronics, languages). This was particularly difficult for small (sometimes as few as 40 Year 9 to Year 13 students), usually rural, schools. They already had non-specialist teachers teaching senior classes; now they were being asked to increase their range of options further, with the potential for the need to offer different classes each year.

Secondary schools had been augmenting their offerings with distance education provided through *Te Aho o Te Kura Pounamu* (i.e., The Correspondence School, commonly known as *Te Kura*) since 1928 (*Te Kura*, n.d.), particularly small, mostly rural, schools (Stevens, 2005). This model of distance education was seen as less than ideal by a number of schools, as even in the early 2000s, most of its lessons were delivered in a paper-based format, with information mailed back and forth between the teacher and the student (see Barbour, 2014). A number of teachers and students were concerned with this approach, reporting that students were not performing to their expected levels (Lai & Pratt, 2004). Secondary schools in one region, Canterbury, augmented this by successfully using audio conferencing to provide an alternative approach to distance education in 1994 with the creation of CantaTech (later to become CantaNet). In the far north of New Zealand, an e-learning cluster, *Kaupapa Ara Whakawhiti Matauranga* (KAWM) began using videoconferencing to enhance opportunities for Māori students, or students learning Māori (Roberts, 2009). The group with perhaps the most impact, however, was the group of rural schools in Otago (known then as OtagoNet). They decided to use synchronous videoconferencing, supported by various online technologies and text-based resources, to deliver classes from one school to several other schools in the region (for details of this model, see Lai & Pratt, 2004; Pratt & Pullar, 2013). This approach has now been extended through New Zealand, and a national brokerage service, the Virtual Learning Network (VLN) (see <http://www.vln.school.nz>), was established in 2003. Currently there are at least 13 active clusters, involving more than 200 schools, tertiary organisations, and private providers (Powell & Patrick, 2006; Pratt & Pullar, 2013). At least one-fifth of secondary schools in New Zealand had students involved in at least one course in 2011 (see <http://www.vln.school.nz/groupcms/view/29716/contacts-to-clusters-individual-schools-via-the-learning-exchange>). Over the years since this initial challenge, New Zealand schools continued to be challenged to support their students to be lifelong learners, and to provide them with personalised learning experiences (21st Century Learning Reference Group, 2014).

New Zealand primary schools are also implementing online learning, but to a lesser degree. It is largely delivered through the VLN Primary, a collaborative community of around 90 schools (Williamson-Leadley & Pratt, 2017). They work together to provide enhanced opportunities through the use of online learning (see <http://www.vln.school.nz/groupcms/view/32433/our-schools>). To date, little systematic research has been conducted with these schools, although the research that has been done has highlighted the positive experiences for students.

As noted previously, though, the vast majority of research has been conducted on the online learning experiences of students who are also taking in-person classes. What is also apparent from a survey of the research available is that although online learning has been established in New Zealand for over a decade, there is a paucity of research, particularly in terms of published articles. Much of what has been published has been in the form of reports and/or conference proceedings, although there are a growing number of articles. It is also clear that the majority of research has been done by a small group of researchers, and has involved either a small number of participants or a single or small number of clusters. In particular, much of the research focuses on the original cluster, OtagoNet (for a summary of research conducted with this cluster, see Pratt & Pullar, 2013), and its current iteration, NetNZ (which is a result of a merger between OtagoNet and CantaNet). This focus is perhaps not surprising, as it is the origin of the model most commonly adopted; it has also worked with researchers since before its inception. As the original OtagoNet report (Lai & Pratt, 2004) explained, researchers with expertise in the area of distance learning at the university level were asked to work with the teachers to develop what would become the OtagoNet model. Other research focuses on work done with other specific clusters, including FarNet (e.g., Alexander-Bennett, 2016; Bennett & Barbour, 2012; Rivers & Rivers, 2004) and KAWM (Waiti, 2005). There is also a small amount of research focusing on blended learning involving students in traditional classes who are expected to incorporate some form of online learning as part of their classroom experience (Dewstow & Wright, 2005; Zaka, 2013). The limited amount of research on this may be due to the overlap between this and e-learning, which – as explained previously – is an expected part of the New Zealand schooling experience.

Having presented readers with information regarding the context within which online and blended learning occurs in New Zealand, the remainder of this chapter will focus on presenting a synthesis of research in the area. I will then explore the implications of these before identifying areas in which future research is needed.

Research Synthesis

In this section key findings from the research conducted with regards online and blended learning in secondary schools will be explored. Three key themes were identified: the experience, comprising the structure of the cluster and the teaching and learning models used; practical issues, and the effectiveness of the approach.

The Experience

In New Zealand, online learning is largely delivered via a supplementary model. Students remained based in their traditional brick-and-mortar schools, but choose to take some classes via other means, and from other providers. As well as taking online classes delivered by teachers at other schools, students may be taking online classes from higher or vocational education providers, or be involved in workplace learning (Barbour & Wenmoth, 2013; Pratt, Pullar, & Trewern, 2011; Pratt & Trewern, 2011). Schools around New Zealand are grouped into clusters, usually based on geographical location, although others, such as KAWM are based on other foci. Each cluster functions as a learning community, with professional development and other forms of support coming from within the cluster (e.g., Lai & Pratt, 2005). The preference is also for students to remain within their cluster, although they do take classes from outside them on an as needed basis. The funding for each student is given to the home school, with clusters then determining how delivering schools will be funded. Initially an informal reciprocal model was used, but this is increasingly becoming more formalised (see <http://netnz.org>) (Lai & Pratt, 2004). Both models have some issues, particularly if subjects are being delivered from outside the cluster (Brook & Gasson, 2007).

As the numbers of clusters grew, the *Learning Communities Online (LCO) Handbook* was developed with a focus of developing these online communities (Wenmoth, Reisch, Walsh-Pasco, Roberts, Smith, & Bennett, 2011). It provides guidance to those involved in online learning, and comprises a matrix where each cell includes information about the principles behind the content, actions that need taken, and resources. Unfortunately, however, it has been noted that “while the leadership of the cluster may use the *LCO Handbook*, many of the leaders in the member schools were not even aware of its existence” (Barbour, 2011, p. 5). This has resulted in this document having a limited effect.

Online students are supported by their online teacher (i.e., the eTeacher) and at least one teacher at their home school (see Davis, Eickelmann, & Zaka [2013] for further discussion of the roles). Each home school must have a designated person

who is responsible for the students from their school who are taking online classes, and liaises with the various eTeachers to ensure everything is proceeding as it should. Students may also be supported by other teachers at their home school; often a teacher is available during their timetabled non videoconference class hours for general academic support, while a teacher who has knowledge of the subject they are studying may also be available for additional support. Each cluster also has a managing body, usually comprising an ePrincipal supported by one or more others.

Online learning classes typical comprise a synchronous web-based videoconference session of one hour, supported by timetabled class hours to make up the same number of ‘in class’ hours as their in person classes (see Lai & Pratt, 2009; Pratt & Pullar, 2013). While New Zealand online teachers are using a wide variety of teaching and learning approaches within this broad structure, in many cases technology is being used to allow teachers and students to replicate in person practices. As Lin and Bolstad (2010) explained, “while [online] students were more likely to use ICT for their virtual rather than their conventional classes, the technology was mainly used to deliver or retrieve information” (p. 5). Similarly, in a discussion of teaching and learning in the FarNet cluster, teachers commented that they “underused many methods of communication (particularly Web 2.0 tools)” (Barbour & Bennett, 2013, p. 19). As such, the current use is often in the form of Substitution or Augmentation, rather than to transform it, through Modification or Redefinition (i.e., the SAMR model) (see Cavanaugh, Hargis, Kamali, & Soto, 2013; Puentedura, 2009).

There appear to be a number of reasons for the lack of transformation in teaching and learning occurring in the online environment. Most of the online learning occurs in the senior secondary school, when students complete external exams at the end of each academic year. As one teacher commented “we’re teaching kids to pass exams... therefore often it’s a very intense time... there’s not a lot of time to mess around” (Lin & Bolstad, 2010, p. 5). This comment, however, hints at a deeper issue; that using ICT is seen as ‘messaging around’ rather than being a worthwhile investment of time to enhance learning outcomes (see also 21st Century Learning Reference Group, 2014). This issue is not restricted to the teachers, with some who had tried to use more collaborative and innovated approaches finding that students often responded with “tepid enthusiasm or digital silences” (Lin & Bolstad, 2010, p. 5). As is the case with e-learning more generally, it seems there is some way to go before teachers and students recognise that different approaches to teaching and learning, utilising ICT, can be not only as but rather more effective.

Pockets of innovation are, however, reported in the literature. The majority of the online teachers in the NetNZ cluster recognised that teaching online was different to teaching in person (Lai, 2017; Lai & Pratt, 2004), and agreed that they had a focus on developing self-regulated learners, while around half that they wanted to develop knowledge creators (Lai, 2017). As such, they most commonly used an enquiry approach to learning, utilising knowledge-building models. Despite this, around half the online teachers are still unsure over the ability of online learning to provide for more flexible learning environments. There has certainly been development in this area over time, however. Initially, teachers reported reverting to a transmission model of teaching and learning, which they no longer used in their in-person classes. They felt that they had to use the one-hour of contact time to deliver the information, and struggled with having to stay in one place (Lai & Pratt, 2004). As they became more comfortable using the technology, however, they became more comfortable using the out-of-class times to deliver content, and the in-class times to check students’ understanding and discuss issues, in line with what is now known as the ‘flipped classroom’ approach.

A small number of New Zealand studies have explicitly focused on blended learning in line with the international definition; that is, where students are expected to participate in online learning as part of their in-person classes. These described two different models; one in which an outside ‘expert’ provided additional comment and responses via an asynchronous discussion board (Dewstow & Wright, 2005); and one in which a school had students participating in online learning both as a supplement to their in-person classes and as part of them.

Practicalities

The nature of schooling in New Zealand created two immediate practical issues for the supplemental model of online learning being used. As each school functions independently, they determine their own start and finish times for both school and classes and run their own timetables, which do not always correspond to the days of the week (e.g., they may have a six-day timetable). This makes it difficult when students are taking classes from other schools. Generally, the

agreement is that videoconference classes start on the hour, and these are to take priority over in person classes. As such, students are expected to excuse themselves from whatever class they were in and attend their videoconference class. For this to work, students need to remember to go to their videoconference class, and their home school teachers need to be happy to release them. In practice, this is not always the case. Students have reported that some of their home school teachers have been unhappy to release them, unwilling to provide access to work for them to catch up, and have scheduled tests for the day on which their videoconference was scheduled (Lai & Pratt, 2005; 2009).

A key issue that initially impacted on the delivery of online classes was the technology being used. At the time of OtagoNet's inception, the infrastructure to deliver classes using videoconferencing was not in place; the remote locations and surrounding topography meant getting broadband to the schools was both expensive and difficult (Lai & Pratt, 2004). When classes were first delivered, a number of schools were using a frame relay system, which proved to not have sufficient capacity to cope. In addition, the technology was new to all those using it, and there was limited technical support available for students and teachers. Although both the technology and infrastructure have developed considerably, technical issues are still a problem; teachers and students want to do increasingly complex activities. As schools have to fund all resources for this out of their existing operational grants, schools need to consider cost when choosing what they will use. The *Google* suite of tools is commonly used, but problems are still reported with issues with connectivity and other questions regarding functionality.

Less of a problem now than when videoconferencing was used is the room in which this occurs. Originally, schools were recommended to have a room set up with the specialised equipment, and appropriate sound and light control (Lai & Pratt, 2004). The advent of desktop videoconferencing means this is not as critical, although it is still important that students and teachers have an appropriate space from which to participate in their videoconferencing.

Effectiveness

As seems to be the case with any educational intervention, initial research focused on whether it was as effective as what was previously used. In this case, though, the first comparison was between online learning and the *Te Kura* model of distance learning currently being implemented, with subsequent comparisons being made with in person models. The initial feedback suggested that the experience was generally positive. It was seen as achieving its aim of providing students with increased subjects options delivered in a manner that was more satisfactory than that used by *Te Kura* at the time (Lai & Pratt, 2004). However, it was not perceived to be as good as in person classes, with the amount of interaction being a key area identified for improvement (Lai & Pratt, 2009).

Over time, perceptions seem to have changed, with students more content to take an online course. The format of the class very rarely affected students' choices of subjects to take (Pratt et al., 2011). Indeed, when asked about the format of their classes, most students were unable to differentiate between based on mode, focusing instead on whether they were lecture style, involved group work etc. Although most students reported still preferring to always having a teacher, they did not think the format would impact on achievement. Any impact, they generally suggested, would be due to their lack of commitment and motivation, rather than on the format per se.

A common theme in the international literature regarding online learning has been the need for students to be self-motivated, able to manage their time, and learn independently (e.g., Rice, 2006; Roblyer & Marshall, 2003). Within New Zealand, however, this perception is changing; with many teachers believing that all students could succeed under the right conditions. While having their skills was seen as a benefit, it was not seen that they were necessary for students to engage in online learning. Indeed, some teachers expressed concern regarding the level of 'gatekeeping' that occurred at some schools, where students were not given the opportunity to undertake online learning during to the perception that they would be able to cope. In addition, although students and teachers both believed that participating in blended learning would and did enhance their learning and study skills, particularly in areas such as independent learning, motivation, and time management, this did not always seem to be the case (Pratt et al., 2011).

What seems, in the New Zealand online learning environment and approach at least, to make a difference to students' levels of success was the support they received, both from their eTeacher and within their home school. In general, it seems that

online students require more support than in person students (Lai, 2017). In addition, students at different schools appeared to have very different experiences, with the level of support varying hugely (Pratt et al., 2011). Those who received quality support had a much more positive attitude towards learning independently. While schools with online students have agreed to support them, the degree to which this occurs varies. Some teachers with support roles are given insufficient workload for them to do so effectively, while the resources available in some schools is less than ideal.

As well as requiring support in the areas of teaching and learning, these online students needed support in logistical and practical areas, as well as social and psychological support, referred to as 'deep support' (Pratt, 2014). Adding to the complexity of this issue is that students are not always aware of what support is available, despite the best issues of teachers, and do not always ask for help when it is needed. Why this is the case is not clear, although it may be due to students' view of themselves as dependent learners (Bolstad & Lin, 2009).

Although there is much talk of twenty-first century learners as preferring student-centred environments, where they can learn much more independently, New Zealand students do not always seem ready for them. In the first year of implementing online learning, a number of teachers were stunned – and somewhat horrified – to discover that their students had been dutifully attending the videoconference lessons but doing no work in between. There was a learning journey for students as well as teachers, as they became used to this new environment. This is no longer the issue it was originally, although it might be, at least in part, to students being more commonly and more closely supervised during these scheduled non-contact times. The importance of these non-contact times cannot be overstated; when the student is seeing a teacher for one hour per week, having scheduled non-contact class times for three or four hours, and otherwise working in their own time, it is essential that this time is productive. In some schools, there is a dedicated space for students during these non-contact times, staffed by teachers who are tasked with ensuring students are working, and helping as needed (Barbour, Davis, & Wenmoth, 2013; Barbour, Davis, & Wenmoth, 2016; Pratt & Pullar, 2013).

Although much of the work in supporting the student is the responsibility of the home school, the delivering school shares in this. The eTeacher needs to ensure that they communicate regularly with those facilitating online learning in the home school, to ensure they know what is expected of the student, what resources they need, and whether or not the student is learning as expected. They also need to ensure that they use a pedagogy appropriate to this form of learning, recognising the needs of online learners and making best use of the available technology (Brook & Gasson, 2007; Lai & Pratt, 2009; Pratt & Pullar, 2013). A key aspect to ensuring students succeed is building a good relationship with them. This is more difficult in an online environment, but remains an essential part of teaching and learning (Lai & Pratt, 2004). Within New Zealand teachers have used a variety of methods to build relationships. The most effective has been to have an in-person meeting, but this is not always possible, in which case ensuring that time at the start of each year is spent developing relationships between students and teacher, and within the class itself (Brook & Gasson, 2007; Lai & Pratt, 2004; Pratt & Pullar, 2013). In addition to these challenges, online teachers need to be prepared and organised well in advance of their online lessons to ensure material is available for the distance learners.

Impact and Implications for Policy and Practice

In many ways, the overarching issue that the current research shows has impacted on all aspects of the online learning experience is the commitment of those involved. The model currently being implemented in New Zealand involves two schools, with differing rules, structures, assessment policies, and timetables, and multiple people (see Table 3 for an overview of who is involved and their roles).

Table 1. People and tasks involved in online learning.

	Home school	Delivering school
People directly involved	<p>mTeacher (mancer Teacher, to be available for general academic support during non-videoconference sessions)</p> <p>and/or</p> <p>eDean (to support student, and to liaise with eTeacher)</p> <p>Student</p>	<p>eTeacher (needs to understand needs/context of student, and how to effectively deliver content, and liaise with mTeacher/eDean, to ensure the student is supported appropriately)</p>
People indirectly involved	<p>Principal (who determines space, resources, workload for people directly involved)</p> <p>Students' other teachers (as student may need released from their class to attend videoconference)</p> <p>Finance</p> <p>Parents</p> <p>Cluster principal and other leaders (who work to ensure everything is as it should be, and that all those involved have the support and/or professional development required)</p>	<p>Principal (who determines space, resources, workload for people directly involved)</p>
Issues to be considered	<p>Suitable space for synchronous videoconference</p> <p>Suitable space for non-contact timetable study times</p> <p>Suitable equipment for videoconference</p> <p>Suitable equipment (including any necessary textbooks) for subject</p> <p>Efficient procedures for sharing material (e.g., distribution and collection of texts)</p>	<p>Ensuring home school has appropriate equipment, and that student has access to it</p> <p>Efficient procedures for sharing material (e.g., distribution and collection of texts)</p>

As shown from the research discussed previously, in order for students to have a problem-free and effective experience, each of these needs to be considered and addressed. In addition to the ways the wider group influences the experiences of those involved in online learning, so is online learning influencing those involved in in person classes. A number of the teachers involved in online learning have commented that their experiences in the online classroom have impacted on the pedagogy they used in their traditional classrooms (e.g., Barbour, 2011). In addition, some of the schools that changed spaces to provide for the needs of online students are now reflecting on and adjusting the physical space provided for their in-person students (Barbour et al., 2013; 2016).

The large number of students involved in online classes alongside their in-person classes, and the impact that support has on their success, highlights the need for schools to understand how to support these students effectively. This is complicated as each cluster is organised differently, and each school has its own processes. If, however, this form of blended learning is to achieve its goal of providing personalised learning opportunities for all students, the support for students needs taken seriously, and funding for time for staff and resources for students need to be made available.

Sitting alongside the need for effective support is the need for teachers to know how to teach effectively in this particular online model, and for students to know, or be supported to learn, how to learn effectively in this environment. Currently clusters are generally providing their own professional development; while this is usually seen as helpful, it would seem that more is needed. In addition, there is currently very little awareness of online learning in New Zealand's initial teacher education programme, with pre-service teachers given little if any experience in or knowledge of what is happening in this area (Williamson-Leadley & Pratt, 2017). If online and all forms of blended learning are to grow, more emphasis is needed in our initial teacher education programmes.

Currently, online learning has developed from the bottom up. While this form of development has benefits, it also has drawbacks. Each cluster works largely in isolation. While this isolation has enhanced opportunities for innovation, it also means they run the risk of repeating mistakes that others have already made and learned from (Barbour, 2011; Barbour et al., 2013; 2016). The differing structures of clusters also mean that students taking online classes from multiple providers face different systems and expectations. The grassroots nature of this development has also meant there is little national policy or funding for it, as seen in issues around funding students. This may change with a recent amendment and proposed amendment to the *Education Act*. The *Education Amendment Act* (2013) allowed partnership schools, or *Kura hourua* to join the education landscape in New Zealand (see <http://www.education.govt.nz/ministry-of-education/legislation/education-amendment-act-2013/>). While these schools have to teach to the New Zealand curriculum, like other schools, they can adapt it to the needs of their students. As these schools are generally run by organisations or companies, they can have very different interpretations of the curriculum. These schools also have different requirements in terms of employing registered teachers (Berg, Gunn, Hill, & Haigh 2017). In 2017, it was proposed that this be extended to include online schools, known as Communities of Online Learning (CoOLs). Whether or not this will happen is now uncertain, as a change of government in 2017 has led to an uncertain future for Partnership Schools. What this amendment did highlight, however, was the level of lack of understanding of online learning in the wider community, and what was already being done. To a lesser degree lack of understanding was highlighted in research conducted with existing initial teacher educators, some of whom expressed similar concerns regarding the possibility of online learning.

Implications for Research

As noted at the beginning of the chapter, putting together this synthesis has highlighted the lack of research in this area, and the limited insight we have into what is happening in the field of online and blended learning in New Zealand. More research is needed both within these areas as they are defined within New Zealand, and in the area of blended learning as it is defined elsewhere. As most of the research has focused on one or two clusters, we need a better understanding of what is happening in the all clusters (Barbour & Bennett, 2013) and how clusters can work effectively together (Barbour & Wenmoth, 2013). As part of this, we need to ensure that we understand the perceptions of all those involved, including those at the periphery such as peers and parents, and gain an understanding of not only what is working but also what is not. In addition to gaining information about perceptions, conducting observations of lessons and artefact analysis will add depth and rigour to our current understanding. As part of this extension of our understanding, more research

needs to happen within the primary context, to understand what is happening there, and what is and is not working. The importance of providing support to students has been identified; however, further work is needed to untangle the complexities and identify what is needed in which situations for individual students to succeed. In addition, research that explores the needs of priority students (i.e., those who have not traditionally experienced success) is required (Tiakiwai & Tiakiwai, 2010). In particular, research is needed to understand how online learning can effectively be used to support our Māori students, and te reo (Māori language) in particular (Jeurissen, 2015).

Research into online and blended learning in primary and secondary schools is less established than that of higher education (Louwrens & Hartnett, 2015). To date research in New Zealand has been largely descriptive, and little work around theories has been included. Zaka (2013) took an ecological view of the online learning communities in New Zealand (see also Davis, Eickelmann, & Zaka, 2013), while Barbour and colleagues (2013) explored it from a network perspective, but much more is needed. In contrast with primary and secondary schools, there are a number of models, conceptual framework and theories in higher education. Rather than simply discarding these as not being applicable, I would suggest research be conducted to see the degree to which work done in the higher education section is transferable to the primary and secondary sectors.

Conclusion

While online and blended learning is relatively well established in New Zealand research and policy is less well developed. While the teachers who are implementing online learning are doing a good job, they need support to help them identify best practices within the New Zealand context. They also need support from policy makers to ensure they are able to implement these best practices. It is clear that currently research has not kept up with the developing field of online learning, and a more systematic research programme needs to be instigated. Sitting alongside this is the need to ensure that all those with a connection to teaching and learning in primary and secondary schools, including parents and initial teacher education providers, understand the advantages online learning can offer to students, teachers, and schools. They also need to be equipped with sufficient knowledge to make good decisions about which, if any, online and blended learning opportunities they take up.

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