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The Post-COVID-19 Impact on Distance Learning for New Zealand Teachers

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ABSTRACT

This article reports on a survey of New Zealand teachers designed to assess their experiences of distance learning during the COVID-19 lockdowns. The survey gathered detailed quantitative and qualitative data from 31 schoolteachers who had previously experienced professional development in digital learning. The questions addressed many areas of practice, including the issues faced by teachers in the move to online distance learning; the impacts on relationships with students, families, and other staff; the impacts on workload and practice; and the experience of working intensively with digital technologies. The results suggested that this group of relatively well-prepared teachers were able to effectively move their practice online in a short period of time and, in most cases, to maintain the relationships with, and the learning of, their students. However, there were some indications in the data that learners from the Māori community faced resource challenges in successfully transitioning to online distance learning.

KEYWORDS

Blended Learning, COVID-19, Digital Divide, Learning Technologies, Māori, Online Learning, Pacific, Survey

INTRODUCTION

Globally, the COVID-19 pandemic has disrupted many aspects of society including education. Schools in most countries have been forced into physical closure to curb the spread of the virus and many teachers have been required to move to online/remote delivery. Most countries had to rapidly upgrade access to devices and infrastructure to support online learning. However, this was often inadequate and did not support the needs of teachers or learners throughout the lockdowns (Chuah & Mohamad, 2020; Kabir et al., 2020; Väljataga et al., 2020).

In Italy, surveys created by ASLERD (Association for Smart Learning Ecosystems and Regional Development) were developed to gather the perspectives of teachers, lecturers, learners and their families on the impacts of the pandemic on teaching and learning. From these surveys, it was evident

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that university students made the transition from physical campus-based learning to virtual settings in a positive way, which in turn raised the challenge for universities to adapt the way in which they teach (Giovannella, 2021). Väljataga et al. (2020), using a different survey instrument, found that the response was adequate to have the basic conditions of learning fulfilled, but many teaching staff attempted to replicate face to face learning in an online space, which did not lead to the pedagogical transformation required to teach effectively at a distance. In the secondary sector, schoolteachers believed their digital skills developed and they felt a greater sense of agency through lockdowns, despite an increase in workload and a loss of contact with 6-10% of learners (Giovannella, Passarelli & Persico, 2020). The recent literature focuses on survival rather than calculated and meaningful development of online teaching pedagogy. While the skills and confidence of teachers increased, provision of training courses to develop digital literacy was found to be vital in transforming pedagogy to be adaptive and effective at distance (Giovannella, Passarelli & Persico, 2020; Giovannella & Passarelli, 2020; Kabir et al., 2020; Väljataga et al., 2020). An important contextual factor has been limited access to technology and the internet, such that the COVID-19 pandemic has increased digital inequalities (Carrillo & Flores, 2020). It is often assumed that contemporary distance learning is the delivery of learning through ICT tools from a geographic distance. However, it can also encompass a socio-economic and cultural distance (Traxler, 2018) which can add to the complexity.

COVID-19 in New Zealand

New Zealand has been ranked one of the countries with the best response to COVID-19, according to the Lowy Institute (2021). With the early reaction of the government using stringent lockdown measures to control the spread of imported and local transmission in the country, the New Zealand school system underwent a less extended amount of time of physical closures in comparison to other OECD countries.

New Zealand has four COVID-19 alert levels, of which only the two highest are of interest to this study. Education at Alert Level 4 means "all education facilities are closed" and "all students must learn from home". At Alert Level 3 school students should learn from home unless their "parents or carers need to go to work" and "all tertiary education providers should deliver their courses online" (New Zealand Government, n.d). The first nationwide extended online learning period was from 23rd March till the 12th of May, a total of 51 consecutive days across all of New Zealand. The second, third and fourth online learning periods were confined to Auckland only (Auckland is New Zealand's largest city, where about a quarter of the population live). As a result, school students in New Zealand have been less impacted by school closures than in many other countries. A further lockdown period due to the Delta variant in late 2021 took place after this study was completed and is therefore not considered here.

Despite the swift response to the pandemic, studies regarding the impact of COVID-19 on education in New Zealand demonstrated how existing inequalities were exacerbated with regards to infrastructure, access to devices and suitable environments for learning (Hood, 2020; Hunia et al., 2020; Riwai-Couch et al., 2020). There were mounting pressures on families to support distance learning from home and many parents and caregivers were concerned about students falling behind academically as well as missing out on relationships with friends (Riwai-Couch et al., 2020). However, in some instances there were benefits to families who described an increased understanding of their child as a learner as well as a greater connection with their children (Riwai-Couch et al., 2020). Some families found a greater sense of overall adaptability and resilience (Hunia et al., 2020), but teachers preferred face to face interaction and felt that important aspects of teaching and learning were lost through distance learning (Hood, 2020). Overall, studies agreed that teacher preparedness and responsiveness were key to successful learning experiences while distance learning during the pandemic (Hood, 2020; Hunia et al., 2020). According to the OECD's country note about New Zealand, regarding teachers' readiness before COVID-19, "New Zealand teachers' preparedness for ICT-based teaching prior to the crisis is higher than the average of OECD countries" (OECD, 2020, p. 2).

The New Zealand government had previously invested in ultrafast broadband to all schools, and the ubiquity of mobile devices and computers has been a catalyst for the integration of ICT tools in education (Daoud et al., 2020). However, limitations of the technology available to learners or educators means that the more traditional form of distance learning, where printed material is physically sent to learners, is still sometimes required to try to connect with students who are unable to learn face to face. Distance learning can support open access to learning opportunities as well as flexibility in the time and location of study; however, there are also challenges with the social connections that are often missing as well as the need for a suitable environment in which to study.

Distance learning in New Zealand is widespread in tertiary institutions, but in K-12 school environments there is much less adoption, with most of the learning occurring on site and face to face. Te Aho o Te Kura Pounamu (The Correspondence School) is New Zealand's largest state secondary school and has been delivering distance learning to over 20,000 students each year. A key focus is delivering digital literacy skills as well as the need for learners to record their learning in a digital format such as an ePortfolio (Hipkins et al., 2015). Despite efforts to establish e-learning clusters in the early 2000s, particularly in rural schools, these faced many challenges in becoming mature and sustainable enterprises (Barbour, Davis & Wenmoth, 2016). Currently, FarNet (https://farnet.school.nz/) provides the main gateway to online learning (through members of the Virtual Learning Network Community) that can be integrated into the on-site school curriculum. While there are many students learning from distance in New Zealand through providers such as Te Aho o Te Kura Pounamu and FarNet, the majority are more familiar with the physical school building than learning online and do not engage with distance learning as a regular part of the school day.

In this study, distance learning is defined as the abrupt and unplanned shift from face to face learning as the main mode of delivery to the curriculum and learning delivered to learners during COVID-19 lockdown events where all K-12 schools were closed and teachers and learners had to remain at home. The shift from face-to-face to online delivery meant that all learners were expected to engage in learning either synchronously or asynchronously from home. While some recent publications have used "emergency remote teaching" (Bakhov et al., 2021; Bozkurt & Sharma, 2020; Nisiforou et al., 2021) to reflect teaching practices during the pandemic, "learning from home" was the term used in this study to describe the interactions between educators and learners. For many, this learning from home took place using digital tools, but for others it was via printed materials sent out from the schools to the students.

Purpose and Scope of the Study

Previous studies on the impacts of the move to distance learning because of COVID-19 have indicated that there may be a range of outcomes, both positive and negative. Studies also indicate that international contexts and preparedness vary, and that issues of equity can be exacerbated by reliance on learning through technology, where access to that technology is not guaranteed. With a focus on online education, and how it has worked in practice in the New Zealand context, this study set out to investigate the experiences of a group of New Zealand teachers who used online distance teaching to enable their students to learn from home during COVID-19 lockdowns. The main questions addressed in the study were:

- How did distance learning impact the teachers and their students?
- To what extent did distance learning impact their practice in a sustainable way?
- What equity issues came to the fore.

Contribution

This paper provides a unique perspective as a New Zealand case study targeted at a specific demographic; teachers who have completed a postgraduate certificate programme in digital and

collaborative learning. The premise being the authors expected this sample group to cope better than the average teacher who does not have these skills when placed in a lockdown situation due to COVID-19. Therefore, the outcomes of this paper may give some insight into the impacts on teaching practice that skilled teachers have been able to utilise. This paper also takes into account the indigenous demographic of New Zealand, posing potential recommendations for this group.

RESEARCH OUTLINE

This research paper is made up of four parts, all of which contribute to the understanding of the post COVID-19 impact on distance learning for New Zealand teachers.

The introduction has established the background surrounding COVID-19 on an international scale and contextualised the New Zealand setting within this as the motivation for this study and the research questions.

Next, the method section outlines the modified international ASLERD survey used in this study along with a description of the sample.

Following the method section, the findings from the survey have been divided into 7 main headings that represent the key categories of the data gathered:

1. Distance learning before and during COVID-19
2. Impacts on workload and practice
3. Impacts on teaching and learning
4. Impacts on relationships
5. Impacts on teacher attitudes to distance learning
6. Responses from Māori and Pacific educators
7. Teacher recommendations for online learning

Finally, the summary and conclusions draw out themes that make important links to the literature and provide discussion that helps to contextualise and define the issues, including limitations and future work that could be addressed.

METHOD

Given that COVID-19 has been an international phenomenon that has impacted on education systems worldwide, researchers have been assessing its impact in many different global contexts. To be able to potentially provide some international comparisons to the New Zealand context, this study utilized one survey from a set that was originally administered in Italy by ASLERD. This particular survey, which gathered both quantitative and qualitative data, was designed to be administered to teachers after COVID-19 lockdowns, for them to reflect on their experiences and identify to what extent any changes in practice might sustain after returning to face-to-face classroom teaching (Giovannella et al., 2020). Because the investigators had access to a group of teachers who had studied at postgraduate level in the area of digital and collaborative learning, we decided to focus only on this group of participants, since we felt that they could provide a unique perspective on the post COVID-19 impacts on teaching and learning. The validity of the survey was previously tested in two studies by Giovannella and Passarelli (2020) and Giovannella et al. (2020). The investigators had been facilitators on the programme that the respondents had completed in previous years. However, all communication was handled by an independent administrator.

Ethics Process

The English translation of the Italian language survey that was provided by ASLERD was edited to make it suitable for a New Zealand context. In addition, a small number of closely related questions were combined together to reduce repetition, thereby also reducing the overall number of questions. The original survey had 86 questions, while combining some of these reduced this number to 78. None of these changes were significant enough to impact on the validity of the original survey. 36 of the remaining questions were open ended, to gather qualitative data. This version of the survey was submitted to the institutional ethics panel for review. The panel raised some issues with the application. Most significantly it was felt that the direct use of an international survey of European origin was potentially reinforcing colonial bias. The panel suggested that Māori and Pacific educators may have been impacted in specific ways by COVID-19, and that this aspect should not be ignored.

Resulting Changes to the Survey

As a result of the feedback from the ethics panel, the survey was revised with additional questions to make it possible to cross reference the Māori and/or Pacific experience against the other parts of the survey to potentially identify any different impacts that they had experienced. A question asking the respondents to indicate their ethnicity was added to the demographics section of the survey. We also added two more questions, one asking the respondents to identify approximately how many of their students identified as Māori, and another asking the same question about the number of Pacific students. The final survey contained 81 questions, with a mix of quantitative (mostly Likert scale) and qualitative (open ended) question types. There were 45 quantitative and 36 qualitative questions.

Sample

The survey was explicitly sent to a group of teachers who had completed a postgraduate qualification from the researchers' institution in digital and collaborative learning prior to the pandemic. We were interested in their particular experiences as educators who should have been better prepared for online learning than many of their colleagues. The survey was sent to approximately 3,000 former students.

RESULTS AND ANALYSIS

We received 31 responses to the survey. This relatively low response rate was not enough for statistical analysis to show any significance, given that it results in a confidence level of only 80% and a margin of error of around 10%. However, the large number of open-ended questions in the survey (36) nevertheless provided a rich source of qualitative data for analysis.

Demographics

Of the 31 respondents to the survey, 25 were female and six were male, and the majority (19) were at least 45 years of age. 20 were primary school teachers, ten secondary, and one in higher education. 16 were teaching in the areas of science, technology, and mathematics, eleven in languages and humanities, ten in arts and nine in physical education. Other subject areas were only covered by individual teachers (note that many teachers have more than one subject area). About half (16) were from the most populous Greater Auckland area (and therefore experienced longer lockdown periods than the other respondents) with the others from across the rest of New Zealand.

In terms of ethnicity, 21 identified as NZ European (Pākeha), twelve as Māori and four as Pacific, with another four identifying with other ethnicities (six identified with multiple ethnicities). In terms of student ethnicities, a third of the respondents reported that they had at least 60% of Māori students in their classes, whereas five reported that they had at least 60% Pacific students. It is notable that

eight of the twelve Māori teachers had at least 60% Māori students. Of these, four had more than 80%. Of the other teachers, only three had more than 60% Māori students. Therefore, we can state with some conviction that Māori teachers' experiences were predominantly linked to those of teaching Māori students. There was insufficient data from the small number of Pacific respondents to draw similar conclusions.

Distance Learning Before and During COVID-19

Readiness for Distance Learning

13 respondents reported that prior to the COVID-19 pandemic they had no experience at all delivering distance learning. Only five respondents reported that they had significant experience. In some ways their schools seemed better prepared than they were themselves. About two thirds indicated that their schools were ready to react and move learning online and made suitable technology available. However, not all schools made the move to digital online delivery:

[school leadership] stuck heads in the sand and ordered paper copies of work to be sent out. (female secondary teacher, 45-54, NZ European)

When asked how ready they thought teachers in general were to move from face to face to distance learning, over half felt that they were not ready. Many teachers were said to lack the knowledge, skills and confidence to deliver online learning, and there was a lack of professional development available to prepare them to do so. Those reporting greater levels of readiness referred to the importance of support from colleagues, existing technology skills and practices, and professional development.

Infrastructure and Security

Once the teachers began delivering learning online, the main causes of difficulty identified were poor Internet connections (limited bandwidth), a lack of or limited availability of hardware devices (including the need to share them with other family members) and unsuitable home environments. Notwithstanding these difficulties, about half the respondents took less than a week to get used to delivering distance learning, and most of the others less than two weeks.

The main problems reported by the teachers were that many students lacked suitable devices or Internet access (meaning that printed packs had to be sent out instead of learning online), teachers themselves not having sufficient access to devices, and one lockdown starting at the beginning of the school year, when systems were not yet in place. It appeared that not all teachers were willing to engage in online learning with students if not all could be reached. This was clearly an area of debate:

A small group didn't see the point as we also had made 'physical packs' and felt that we only had a small portion of student families with connectivity, what was the point? I told my syndicate, if you have one family connected in your whole class that's the point. (female primary teacher, 45-54, Māori / NZ European / Pacific)

The more positive responses referred to the fact that many schools were already using online learning tools such as Google classroom, Class Dojo and Seesaw, and many schools already had Bring Your Own Device (BYOD) policies in place. Families who did not have laptop computers and Wi-Fi were able to communicate through these applications via mobile phones.

In terms of the cyber security provided by the school, only five respondents indicated that the level was low, but reported some significant problems, for example a security event, where:

A boy hacked into my class - no security (female secondary arts teacher, 45-54, Māori/NZ European) and a security vulnerability identified, I discovered all of our children had the same password to their Google accounts. This has since been changed. (female primary teacher, 35-44, NZ European)

The downside to the security measures that were put in place was the impacts on what teachers could do, for example:

There are so many restrictions it's ridiculous (low trust approach). (female primary teacher, 45-54, Māori/NZ European)

Impacts on Workload and Practice

The impact on teacher workload was mainly felt to be negative. However, four respondents indicated their workload was lower because their students already knew how to use the relevant applications. Staff could therefore spend more time creating resources and take advantage of the instant connections between schools and families. Seven respondents stated their workload was much higher. Teachers needed more time to upskill, plan and collaborate and in some cases pastoral care became very time consuming. Teacher role was an important factor. It was notable that specific staff such as network and device managers, senior management, and staff in charge of second language learners, stated their workload was higher. Regardless of the changes in the amount of work, it was common to acknowledge that the balance of workload tasks was different than usual, for example:

not regular hours, having to fit in with students' families, less consistent contact. (female primary teacher, 35-44, Māori / NZ European)

The changes in practice that took place in response to COVID-19 were clearly of benefit in some areas. For example, when asked how well the teachers could self-organize their time and activities compared to before COVID-19, only one respondent said this ability had been reduced. About a third were highly positive about their abilities, with respondents saying they had used digital tools to save time, found shortcuts to the design of lessons, and been able to manage their time better, including saving time on travelling to and from work.

Impacts on Teaching and Learning

When asked to characterise the nature of the learning activities they had been delivering online, the respondents indicated that on average there were more open tasks than closed tasks, and that the work tended to be more student-centred than teacher-centred. However, the balance between synchronous and asynchronous learning was more evenly spread, as was the balance between individual and collaborative work. There was also a broad spread of responses when the teachers were asked how much the learning activities that they were organizing online reproduced classroom dynamics. However, it was notable that none of the respondents claimed to be fully reproducing classroom dynamics online. Half of the respondents indicated that they were reproducing less than 50% of their usual classroom dynamics. They indicated in some cases that this was simply because using digital devices changed the experience.

it's not necessarily positive or negative - it's just different. (male secondary teacher, 45-54, NZ European)

However, some other teachers highlighted issues with replicating positive aspects of face-to-face classroom dynamics such as collaboration and direct engagement with students. Some teachers also

raised issues around trying to integrate online learning with the home lives of students, and also being aware of negative impacts of COVID-19 such as:

scared families, who were not sure of their future. (male primary teacher, 35-44. Māori / NZ European / Pacific)

So a focus on wellbeing became a priority for some.

The most common use of technologies in educational activities reported by the teachers were content sharing (27), interactive online teaching (26), non-interactive content delivery (e.g., videos) (25), content production (24), and assigning asynchronous tasks/exercises (23). In other words, all the usual core activities of teaching and learning. More innovative approaches such as synchronous and asynchronous communication with external experts and local stakeholders (6), customisation / personalisation (10), and self-assessment (12) were less often used. Fewer than half (12) utilised technologies for assessments or communication with parents synchronously or asynchronously.

Teachers did use a variety of assessment activities, e.g., online interviews (5), online tests (9), group homework (8), and group homework to be presented and discussed online (6). However, Individual homework was still the most common option (15), often to be presented and discussed online (12). A couple of teachers noted that they were not focused on assessment.

assessment wasn't a priority. The wellbeing of students and whānau [families] was. (female primary teacher, behavioural specialist, 45-54, NZ European)

Issues faced by teachers attempting to do online assessment included students not completing tasks or not joining online sessions, and students lacking parental assistance or suitable tools / internet access. However, some teachers reported business as usual with assessment due to the online systems already in place prior to the lockdown.

When asked what teaching practices they considered most suitable for online/digital learning, the most common responses were flipped learning, synchronous video sessions and asynchronous screencasting (i.e., videos made by the teachers). However, it was also noted that giving students agency and personalisation in completing and reporting their work, for example through project-based learning, was valuable, particularly if students did not have good network connectivity, since they could work independently on their own projects.

Impacts on Relationships

An overwhelming majority of respondents stated that they missed teaching in the classroom during lockdown.

I live for being with my children in a physical environment. My classroom is a fun, happy and safe place and I felt alone when I was teaching online. (female primary teacher, 35-54, NZ European)

One who particularly missed face to face teaching volunteered to teach in school for the children of essential workers. However, when asked about how their relationships with their students had changed, the majority who responded (9) suggested that they had improved, that the online environments had made those relationships closer, perhaps strengthened by the shared experience of the COVID-19 lockdowns. Two teachers felt that they had remained the same, and three felt that they had become worse, typically due to lack of communication with students who did not have the necessary digital tools, but also due to the lack of physical cues in online learning.

nothing beats face to face interaction [and in some cases where] there was lots of stress in the homes it made relationship building more difficult. (female primary teacher, 35-44, NZ European)

Some teachers also indicated that they struggled with the lack of face-to-face interaction, as well as consistent expectations with engaging students.

Not having the same relationship with students, students not wanting to put on video or audio, students not turning up to video calls. (female secondary teacher, 35-44, NZ European)

The teachers' relationships with the students' families were often reported as being strong already, so these did not change during the lockdowns. Others reported that these relationships had improved because the online tools:

allowed us a glimpse into our student's home environment. (female primary teacher, 45-54, NZ European)

However, there was also stress from families concerned about their children's learning, and some families who for whatever reason chose not to (or were unable to) engage online became:

lost from education (female primary teacher, 45-54, Māori / NZ European / Pacific)

In terms of their relationship with their colleagues, responses were mostly very positive. They worked together and learned from and about each other.

The staff are now more collaborative and willing to try new things. (female primary teacher, 35-44, NZ European)

However, there were still a few concerns that not all staff engaged with others, in some cases because they were new staff.

We had about 20 new staff due to roll growth, so it was harder to establish and build relationships. (female primary teacher, 35-44, NZ European)

One teacher noted that being online meant:

less spontaneous contact - I found this really hard!. (female primary teacher, 35-44, Māori / NZ European)

Impacts on Teacher Attitudes to Distance Learning

A majority of the teachers (26) responded that distance learning is useful. Teachers can see that the key benefit of distance learning is its flexibility. They commented that students can access learning at the comfort of their home which is:

a safe, comfortable and supportive environment. (female primary teacher, 35-44, NZ European)

However, not as many teachers consider distance learning sustainably viable (19). One rated the usefulness of distance learning highly (9 on a 10-point scale) but did not think it works for young learners (2 on the 10-point scale).

it is easier for secondary students but not sustainable for early primary. (female primary teacher, 45-54, NZ European)

However, the key themes around the shortfall of distance learning were issues of access to devices and internet, student self-regulation and teacher readiness to teach online, rather than the concept of distance learning itself.

One observation from the survey showed the majority of the teachers had increased their interest and competencies in educational technologies, mostly thanks to positive experiences with these technologies. One shared that she could work alongside her students and:

those that have access to devices at home were also teaching me which was really great as they could see that I was a learner too. (female primary teacher, 55-64 Māori)

Generally, teachers found that educational technologies could improve learners' autonomy, self-regulation (22) and the development of digital identity (20). Teachers also considered that digital technologies helped students manage their learning and make learning more efficient (19).

From their responses, having had to move to distance teaching during COVID-19 lockdown appears to have increased teachers' competencies in navigating virtual classrooms environments (22) and communicating digitally (20). Only one teacher said that they didn't develop at all.

After experiencing teaching at a distance, most teachers (19) would prefer to continue teaching in a blended environment. However, ten indicated that they would prefer to only continue with face-to-face instruction. Blended learning was described in a range of ways by the participants, indicating that there is varied understanding of the concept. Some regarded blended learning as:

encouraging students to take their learning outside the four walls of the classroom; make use of the communication tools we have at our fingertips and be able to explore the world. (female primary teacher, 35-40, Māori)

While others indicated a more standard "flipped learning" approach.

50/50 face to face and online. Enabling students to take home devices every day and using it as a tool to complete tasks we have done at school previously. (female primary teacher, 55-64, Māori)

Participants were asked their preference regarding the delivery of a range of activities. There were more responses from teachers who believed that 'lessons' were delivered more effectively in a face-to-face environment (23) rather than online (7), this was also reflected in opinions focussed on 'oral assessments' where face to face (21) was also preferred over online (9). More teachers believed that 'revision' was better online (27) than face to face (3). For 'written assessments' and 'exercises/ practice' the teachers did not indicate any significant preference for online or face to face. The open responses to this question indicated that the activities were interpreted in several different ways. The general theme was that it wasn't an 'either/or' and was dependent on the teacher, student and the subject.

It really does depend on the student - I have students who hate talking online but love face to face. Most of my DLD [developmental language disorder] students (8 out of 24) prefer to do written tasks on a device so they can use assistive technologies. (female primary teacher, 35-44, Māori)

After the experience during lockdown. most teachers (23) were willing to consider teaching activities at distance (online). Eight indicated that they were less likely to. After the experience, some teachers still doubted their competence to teach from a distance. A teacher who rated themselves less likely to teach from distance indicated that:

I don't have full confidence in myself to deliver a well-rounded online program yet. (female primary teacher, 45-54, Māori)

However, all teachers believed that digital pedagogy and the knowledge of/practice with educational technologies should be part of the toolbox of future teachers, with 15 selecting the top rating (10).

There was positive sentiment to the opinion that schools should use online educational activities, with 27 teachers selecting six or above on the scale. Four teachers selected five or below. However, there was more detail found in the open-ended answers with the theme demonstrating that this sentiment was based on the context. One concern is the balance between online and face to face learning.

I do believe that schools should have an online component; but we also need to encourage face to face and get up and moving tasks. (female primary teacher, 35-44, Māori)

Another concern is deciding where digital tools can best fit into the overall balance of learning.

I am conflicted because there are some useful tools that could be used, but then using these tools at home or outside of the classroom may be better to allow the teacher... to support students who need their support during school. (female primary teacher, 35-44. NZ European)

Within the balance of online and digital learning, the development of digital skills was recognised as an important component.

I'm sitting on the fence a bit as I think a balance of approaches is important depending on the needs/ interests of the learners however I think a degree of digital competence is super important in our world. (female primary teacher, 45-54, Māori)

Responses From Māori and Pacific Educators

Given the small sample size, any generalizations we make from this data set are speculative. However, since about half of our respondents identified as Māori or Pacific (12 Māori, 4 Pacific), it may be helpful to explore some areas where their responses indicated some differences in experience that may be triangulated with qualitative data and other sources. According to the New Zealand Education Review Office, although there was no significant difference in how Māori students reported their wellbeing and learning compared to other student groups, they were more likely to face challenges because they are often enrolled in schools from areas of socio-economic deprivation. The same was true of Pacific students (ERO, 2021). In accordance with our own findings, principals reported that, in some cases, Māori students had less access to devices and connectivity.

Of the twelve teachers who identified as Māori, seven explicitly reported that problems with access to devices or Wi-Fi prevented their students from engaging with online activities and impacted on learner outcomes. Comments from participants in the survey highlighted that:

Students suffered due to either a lack of appropriate device or lack of wifi. (female primary teacher, 35-44, Māori)

and that engagement was low because:

A lot of students were internet connection [poor] and had no computer or credit [for mobile connections]. (female, secondary teacher, 45-54, Māori)

The 'digital maturity' (defined in the survey as infrastructure, equipment, skills, management, and vision) of the schools where predominantly Māori students were taught was perceived as low, suffering from a:

lack of resources (female primary teacher, 35-44, Māori/NZ European)

and:

a very poor infrastructure and lack in the management of digital. (female primary teacher, 45-54, Māori)

The deepening of existing inequalities was highlighted by some.

No access to devices. We only gave out 10 devices per senior class therefore inequities existed. (female primary teacher, 55-64, Māori)

In contrast, none of the teachers who did not identify as Māori or Pacific indicated problems in this area. For example:

out of 25 children, I only had one learner that was not online. (female primary teacher, 35-44, NZ European)

Teacher Recommendations for Online Learning

At the end of the survey, we asked the question "What advice would you like to give to your colleagues regarding distance learning?" A range of ideas were shared that could be of value to other educators, including the following:

1. Take the opportunity to develop your professional skills:
    a. Be a learner - this will pave the way for your children when they see you learning with them (female primary teacher, 35-44, NZ European)
    b. Don't be afraid to try something new. If you're honest with the students, they'll let you know what needs to be changed and what works well for them (female primary teacher, 45-54, NZ European)
2. Be prepared to change your practice:
    a. Be flexible for learning new approaches/ practices, and plan realistic programs using new pedagogies while upskilling with professional development. (male primary teacher, 35-44, Māori / NZ European / Pacific)
    b. Quality is better than quantity. Allow opportunities for kids to be inspired by each other. Focus on developing a supportive community and sense of belonging before you stress about perceived academic progress (female primary teacher, 35-44, NZ European)
3. Work collaboratively:
    a. Collaboration is the key (female primary teacher, 55-64, Māori)

   b. Share ideas and have a bank of them with easy access to shared content (female secondary teacher, 45-54, Māori / NZ European)
4. Work with your students to make distance learning effective:
   a. Send reminders to get good participation to conferences. Give students "office hours" when they can expect replies to their emails / posts. Ensure students are set up for distance learning (female secondary teacher, 35-44, NZ European).

SUMMARY AND CONCLUSION

This article reports on a survey-based study of New Zealand teachers, reflecting on their experience of delivering distance learning during COVID-19 lockdowns. The survey was adapted from one originally developed by ASLERD and contained a mix of qualitative and quantitative data. There were 81 questions in the survey, and we received 31 valid responses. The analysis of this data reveals several important factors in the success, or otherwise, of distance learning. One is the importance of existing digital technology use in schools prior to lockdowns. Teachers reported that, in many cases, digital tools were already in place for communicating between schools and families, and that these continued to be of value during lockdowns. For example, many schools already had Bring Your Own Device (BYOD) policies in place, meaning that students were used to learning with digital devices while at home. This resonates with other studies where educational institutions that had invested in online learning before the pandemic weathered it well (Moore et al., 2021).

The main issue that arose for teachers was difficulties in reaching students, particularly those who had limited access to devices and/or the internet. This was particularly significant for teachers who identified as Māori, who in most cases had a large number of Māori students who often attended schools in lower socioeconomic areas. As other studies have indicated, lockdowns can increase the impacts of the already existing digital divides in society (Carrillo & Flores, 2020).

Despite having undertaken postgraduate study in digital teaching and learning, a number of our respondents struggled with the move to online teaching and learning, suggesting that teaching fully online requires a different skill set than integrating digital technologies in a more blended way with face-to-face teaching, and that teachers should be offered professional development specifically in how to teach effectively online. Online teaching can, in some situations, be more effective than face to face teaching but requires extensive preparation and commitment from educators (McMurtrie, 2021).

Lockdowns changed relationships between teachers, students and families. In many cases these were strengthened but were qualitatively different due to the lack of in-person contact. The danger was that in some cases contact was altogether lost, suggesting longer term negative impacts on student learning. This is reinforced by other studies, where negative impacts on student engagement post lockdown were particularly significant for students from schools in lower socio-economic areas, and their teachers were less confident that they could catch up with their learning, deepening educational, as well as social, divides (ERO, 2021).

Despite the relatively short period of lockdowns experienced by these teachers and their students, the impacts have been significant. Teachers have had to adapt their practice and there have been significant changes in the ways that teachers, students and parents have had to communicate. It is clear from our respondents that every teacher has had a different experience. Some have found the transition to online learning easy. These tended to be teachers from schools where digital teaching and learning was already well established and digital tools for communication between home and school were already well used. Other teachers, particularly those teaching in predominantly Māori communities, experienced significant challenges in connecting with, and continuing to teach, their students, primarily due to resource constraints both from the perspective of what is provided by the schools and what is available in the students' homes. It should be noted that all our respondents had experienced postgraduate professional development in digital teaching and learning, so difficulties

in teaching during lockdown could not be primarily aligned to teacher preparedness, but were due to other factors, primarily socio-economic.

On a more positive note, there were clear signs that changes made by teachers to their teaching practice were likely to be sustained in the longer term. Although they had reservations about distance learning, valuing the face-to-face interactions with students, they were unanimous in their support for digital pedagogy and educational technology should be part of the toolbox of future teachers. This study shows the value that digital technologies and related teacher skills had in sustaining learning during COViD-19 related lockdowns. The challenge is to be ready for future disruptions to education by extending teacher professional development in this area and providing access to devices and connectivity for all students.

Limitations and Future Work

The main limitation of this study was the small number of responses to the survey. This was in some ways unsurprising given the length of the survey (81 questions, 36 of which were open ended), which in effect traded quantity (number of responses) for quality (in-depth qualitative data). In addition, the sample was limited to a particular set of teachers who had received postgraduate education in digital and collaborative learning. While this was a deliberate choice, to see how this educational experience might have impacted on their ability to teach online at a distance, it provided only a narrow view of New Zealand teachers' experiences of teaching during COVID-19 lockdowns. In addition, the survey was administered after the first set of lockdowns, though further lockdowns followed that would not have been considered in these data. As in other contexts, the overall story is still unfolding (Moore et al., 2021). Future work might seek to address a larger and more representative group of teachers at the end of the cycle of lockdowns and consequential distance learning. It should also be noted that the ASLERD survey that we adapted was one of a series which also addressed the experiences of students and their families. At this stage we have not surveyed these other stakeholders, but again that would be valuable future work.

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