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# ONLINE FROM MONDAY: LECTURERS' EXPERIENCES OF THE RAPID TRANSITION TO ONLINE LEARNING DELIVERY FOLLOWING THE FIRST NATIONAL EMERGENCY RESPONSE TO COVID-19

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## Teaching and Learning



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## ABSTRACT

Aotearoa New Zealand's health response during the first wave of the Covid-19 pandemic significantly impacted the tertiary education sector. Lecturers at tertiary institutions were required to make a rapid transition from familiar in-person teaching to teaching online as they navigated and responded to these unexpected and unplanned changes. The purpose of this paper is to present the results of a descriptive survey of tertiary-sector lecturers (n = 56) across five disciplines following Aotearoa New Zealand's first lockdown in March 2020. The study aimed to describe how the Covid-19 pandemic impacted teaching practice in one Aotearoa New Zealand polytechnic. It documented the impact of unexpected transition from in-person to online teaching from the lecturers' perspectives. An anonymous online survey was available for three weeks. It asked lecturers to identify their level of concern about online course delivery pre and post the initial lockdown event, and to comment on the challenges the lockdown presented. Participants were also asked to identify opportunities and benefits from their experience. Descriptive statistics are provided to show frequencies and to summarise information about the participants. Statistical analyses were conducted using IBM SPSS Version 25 software using Levene's Test for Equality of Variances and t-test. Qualitative analysis of the lecturers' free-text responses was undertaken using Braun and Clarke's (2006) general inductive approach. Analysis showed lecturers were initially concerned about the rapid shift to emergency remote teaching (ERT). Challenges reported included internet access and other technology-related issues, as well as curtailment of laboratory, simulated and experiential learning opportunities especially important in vocational education. This once-in-a-career opportunity provided lecturers with prolonged exposure to teaching remotely and enabled discovery and creativity which could be integrated immediately to support student learning and be used to shape future responses to adverse circumstances.

## KEYWORDS

Online learning, vocational education, Covid-19 pandemic, emergency remote teaching

## BACKGROUND

The confirmation of a novel coronavirus (SARS-CoV-2) by the World Health Organization (WHO) in January 2020 heralded the onset of the Covid-19 global pandemic and some of the most significant reactive changes ever made to the education sector (Ministry of Education, 2020). Aotearoa New Zealand was affected by the reach of the pandemic and the changes it forced. Despite the low morbidity of Covid-19 enabled by a managed border and a "Go hard, go early" preliminary response by the Prime Minister (Ardern, 2020a), there was still considerable disruption. Education responses to the health crisis impacted students and tertiary education programmes globally; The United Nations Educational, Scientific and Cultural Organisation (UNESCO) reported that the education of over 90% of the world's entire student body was affected (UNESCO, 2020). On 25 March 2020, in Aotearoa New Zealand, a national state of emergency was declared signalling the onset of a national Level 4 lockdown (Ardern, 2020b). Tertiary teaching and learning were summarily transitioned to online delivery.

## LITERATURE REVIEW

Online learning has certainly been a pedagogy embraced by tertiary education providers. Even before the 2020 global pandemic, there was increasing interest in the use of online and blended teaching methods in higher education programmes (Kong & Song, 2014; Zimlich, 2015; Bhakta & Dutta, 2016). Tracing its origins back to correspondence and distance education, Sun and Chen (2016) documented the development of online learning supported by emerging digital technologies. The use of synchronous and asynchronous learning events, the availability of email, online messaging and conferencing, collaboration via Google Docs, and the use of Facebook, Twitter, TikTok, etc., have widely supported the development of online learning environments across disciplines (Sun & Chen, 2016; McCutcheon et al., 2014; Astle et al., 2020). Furthermore, the benefits of modern online learning identified by McDonald et al. (2017) suggest that its value lies in increased cost-effectiveness, accessibility and flexibility afforded to learners. Indeed, such characteristics of online learning products can cater to a wide range of students across many disciplines (Kebritchi et al., 2017). These factors also ensure that adoption of the pedagogy supports the development of learner self-direction and self-efficacy in learning (Dhawan, 2020). In vocational education, these are desirable attributes of a work-ready graduate (Godber & Atkins, 2021). However, despite the benefits for both students and institutions in the application of online learning strategies, successful resource development is not without the need for considerable investment and planning (Petrie et al., 2020).

McDonald et al. (2017) articulate the length of time and complexity of the planning process for transitioning from an in-person to an online course in health-professional education. In their study, through an inclusive and consultative process led by a steering group, the curriculum was mapped and sequenced, assessments were reviewed and consistency in the production of online course artefacts and content was also established. In nursing, Astle et al. (2020) also report the lengthy implementation timeline involved in online curriculum development. Other commentators provide the view that content cannot simply be copied from an in-person to an online setting without sufficient consideration (Koehler et al., 2004), and Li and Irby (2008) document the challenges involved in generating new materials in translation from in-person classes to an online setting. Furthermore, Yue et al. (2013) caution that teachers should understand what the use of technology adds to the learning activity, since poorly selected and adopted multimedia can be detrimental to learning.

In their systematic review of the literature on online learning, Kebritchi et al. (2017) add to the work of Yue et al. (2013) when they outline several more content- and teacher-related concerns. Online learning needs to account for the integration of the content between learners and instructors (Kebritchi et al., 2017, Bhakta & Dutta, 2016). This means that online programme delivery needs to account for content, pedagogy *and* technology. Here, online learning is often favoured where content is declarative (facts and principles) rather than teaching 'soft' interpersonal or practical skills (Callister & Love, 2016; Astle et al., 2020; McCutcheon et al., 2014). For the vocational education sector, course content is markedly skewed to 'soft,' practically based skills with institutions contributing significantly to developing a 'work-ready' graduate profile for apprenticeships and 'hands-on' employment (Cox & Prestridge, 2020). Effectively replicating in-person, practical teaching as an online experience is challenging, and may go some way to explain the perception that it has a limited place in vocational education (Johnson et al., 2020). However, other teacher factors are also indicated as being important to the adoption of online delivery.

Lowenthal et al. (2019) report that a teacher's self-perception of their ability to use online learning likely indicates the extent to which it would be used. Here, it is noted in the literature that professional development can assist the development of positive teacher self-perception, confidence and familiarity in using online-delivery teaching strategies. However, Kebritchi et al. (2017) found there was a lack of professional development available, concluding that this continued to contribute to the limited use or exploration of online delivery. Yet, in the pandemic situation, there was little opportunity for planning, professional development or preparation as the emergency, not the pedagogy, was paramount. As a matter of pedagogical concern, therefore, more accuracy in the definition of the transition to online learning is essential.

Bates (2020) and Scherman (2020) respectively define e-learning as an intentional form of distance education, with deliberate and purposeful advanced planning of the teaching and learning encounter. Obviously, the transition to

online modalities in the pandemic was not part of any planned process (Murgatrottd, 2020). Therefore, the rapid and unplanned transition from in-person to online delivery does not adequately express or represent the pedagogical integrity specific to e-learning; the use of Zoom online video conferencing software, or 'Zooming,' is equally not e-learning (Bates, 2020). Instead, the phrase 'emergency remote teaching' has been coined as a way of expressing the educational response to crisis or unexpected disruption such as the Covid-19 pandemic. For this research the definition provided by Hodges et al. (2020) is used to define emergency remote teaching (ERT):

A temporary shift of instructional delivery to an alternate delivery model due to crisis circumstances [which] involves the use of fully remote teaching solutions for instruction or education that would otherwise be delivered face-to-face or as blended or hybrid courses and that will return to that format once the crisis or emergency has abated. (Para. 13)

From the perspective of the Aotearoa New Zealand institution featured in this study, ERT, rather than e-learning or online learning, best describes the teaching and learning practices implemented following lockdown restrictions in response to the global pandemic. In pivoting to ERT, short lead times before beginning online classes were common (Howe et al., 2021; Webb, 2021; Jelinska & Paradowski, 2021). While some lecturers had the benefit of previous experience of other online teaching pre-pandemic, it was also important to consider that even experienced lecturers become novices during ERT situations since the expectations of the role of the online lecturer are different (Howe et al., 2020; Redmond, 2011).

Using Hodges et al.'s (2020) definition of ERT, the perspectives of lecturers at one tertiary education institution in Aotearoa New Zealand who made the rapid transition from in-person to ERT were surveyed for this study. The institution has a focus on vocational and practical learning experiences. There were five disciplines represented in this study, including Healthcare and Social Practice, Community Studies, Building and Construction, Computing and Bridgepoint Education. Participants were familiar with Moodle, the learning management system (LMS) utilised by the institution to support curation and storage of supportive digital resources for students for each of their courses. However, using the LMS as an adjunct to in-person delivery reflects a different intention to online learning and should not be taken to imply participants were experienced users of online pedagogies.

## RESEARCH DESIGN

Sensitive to the need to balance any potential intrusiveness of the research amidst the many competing personal and professional demands during the initial 2020 Covid-19 emergency response, the study design was carefully considered. To this end, the team used a descriptive survey with open and closed responses via online delivery. This approach supported lecturers to respond if they wished, and allowed the team to canvas a range of perspectives in a short time-frame. Furthermore, 'in-the-moment' research is supported internationally by Vindrola-Padros et al. (2020), who argue that the collection of data in real time maintains the immediacy of the participants' perspectives, which may be different from their retrospective recall of events. The use of open and closed questions within the survey enables researchers to obtain qualitative and quantitative data within one study. Here, the work of Coyle and Williams (2000) affirms the use of multiple methods in research, summarising that the use of qualitative and quantitative approaches to data collection is the only way to be certain of findings. Qualitative data pertains to non-numerical data and can be used to understand how an individual subjectively perceives and gives meaning to their experiences. In this type of study, a particular phenomenon can be described (Florczak, 2017). In contrast, quantitative data refers to numerical data used to describe, predict or control variables of interest. As the current study sought to describe how the Covid-19 pandemic impacted the teaching practice of tertiary teaching staff in an Aotearoa New Zealand polytechnic, a multiple methods approach was selected.

The objectives of the study were as follows:

- To document the impact of Covid-19 across a range of programmes offered at the home institution.
- To determine levels of lecturer concern before and after the switch to ERT.
- To document the challenges faced and opportunities that arose as a result of the switch.

- To identify strategies used in the moment to overcome challenges presented.
- To determine whether a phase two follow-up study would be viable.

Ethical approval was granted by the institution's Research Ethics Committee (UREC application number 2020-1024). Participants were a convenience sample of lecturers employed at one Aotearoa New Zealand tertiary institute during the first lockdown after the State of Emergency was declared (n = 56). In the five participating schools, 220 academic staff were employed and were eligible to respond.

Following informal pre-testing of the survey with non-participating lecturing staff, the survey link was emailed to all staff in contributing Schools via their School Research Lead. The email contained an introduction to the research, a survey link (Survey Monkey) and a Participant Information Sheet. Respondents were asked to provide personal details only if they would like to be contacted for any follow-up interviews if a phase two study was likely to be viable. There were 32 participants who indicated that they would like to be contacted for an interview. Confidentiality was assured, as only the principal investigator had access to the survey response data and these names were removed and stored separately before data analysis began. The survey was open for three weeks and email reminders were sent to lecturers one week before the survey closed. Consent was implied by the submission of the survey. To ensure reliability, 'online learning' was defined as ERT in the survey.

As the survey was descriptive, the statistical component was focused on reporting the participants' characteristics and responses. Demographic data was limited to years of teaching experience and school of employment. The level of concern of participants was captured using a five-point Likert Scale Levene's Test for Equality of Variances for small samples, and t-test was used to detect differences between the groups. No missing data were detected in the participants' responses; therefore, all responses were considered valid and were accepted for further analysis.

The qualitative data were analysed using Thomas' (2006) general inductive approach. The qualitative data-evaluation criteria adopted were credibility and internal validity. Together, these criteria aimed to ensure a degree of trustworthiness (Guba & Lincoln, 1994, cited in Bryman, 2008). In particular, a process of investigator triangulation was used. Triangulation is defined by Cresswell (2012) as "the process of corroborating evidence from different individuals ... types of data ... or methods of data collection" (p. 259). The authors independently reviewed the qualitative data and identified potential themes. They then reviewed the themes as a group, each defending their own conclusions and settling on the final themes by a process of discussion and consensus.

## FINDINGS

There was a response rate of 25.45% (n = 56). The researchers acknowledge that a higher participation rate is preferred, but given the challenges lecturers faced at the time of the research, the response rate is adequate for this exploratory work. The following results are presented and discussed in three parts: (1) Participant characteristics; (2) challenges faced by teachers; and (3) the perceived outcomes of teaching and learning online.

### Participant characteristics

Participants were mainly lecturers with 10 or more years' experience (n = 37, 66.1%) from five schools with a wide range of graduate profiles (n = 56, see Table 1). The majority of participants were either not at all familiar or slightly familiar with online teaching at the beginning of the Covid-19 emergency response (n = 33, 58.9%, see Table 2).

TABLE 1. SURVEY PARTICIPANTS AND TEACHING EXPERIENCE.

School		Teaching experience			
		10+ yrs	6–10yrs	2–5 yrs	<2yrs
Bridgepoint	7.1% (n = 4)	3		1	
Building Construction	17.9% (n = 10)	6	1	2	1
Community Studies	14.3% (n = 8)	4	3		1
Computing, Electrical and Applied Technology	39.3% (n = 22)	16	1	3	2
Healthcare and Social Practice	21.4% (n = 12)	8		1	3
<b>Total</b>	<b>56</b>	<b>37</b>	<b>5</b>	<b>7</b>	<b>7</b>

TABLE 2: SURVEY PARTICIPANTS AND FAMILIARITY WITH ONLINE TEACHING.

School		Familiarity with online teaching				
		Not	Slightly	Somewhat	Moderate	Extremely
Bridgepoint	7.1% (n = 4)	1	2	1		
Building Construction	17.9% (n = 10)	6	2	1	1	
Community Studies	14.3% (n = 8)	1	1	3	3	
Computing, Electrical & Applied Technology	39.3% (n = 22)	7	6	3	4	2
Healthcare and Social Practice	21.4% (n = 12)	4	3	2	3	
<b>Total</b>		<b>19</b>	<b>14</b>	<b>10</b>	<b>11</b>	<b>2</b>

Levene’s Test for Equality of Variances and t-test were used to detect any group differences in the responses, based on lecturers’ years of experience and familiarity with online delivery and their level of concern about moving teaching to online delivery. The statistical analysis was conducted using IBM SPSS Version 25 software. Levene’s Test for Equality of Variances and t-test results indicate that there was no significant effect for the length of teaching experience and concern about using an online delivery mode ( $t = -.416, p = .679$ , see the full results in Tables 3a and 3b). Furthermore, the results also indicate no significant effect for familiarity with online teaching and level of concern about using an online delivery in this cohort ( $t = 1.854, p = .069$ , see the full results in Tables 4a and 4b).

TABLE 3A. LEVEL OF CONCERN BEFORE ERT DELIVERY AND TEACHING EXPERIENCE.

Level of concern before ERT delivery and teaching experience					
	Q: How many years of teaching experience do you have altogether?	n	Mean	Std. Deviation	Std. Error Mean
Q: Think about how you felt when you were first told you would need to deliver your course online because of the Covid-19 emergency response. What was your level of concern?	Less than 2 years	7	2.86	1.464	.553
	10 or more years	37	3.08	1.278	.210

TABLE 3B. INDEPENDENT SAMPLES TEST: LEVEL OF CONCERN BEFORE ERT DELIVERY AND TEACHING EXPERIENCE.

Independent Samples Test									
	Levene's Test for Equality of Variances		t-test for Equality of Means						
	F	Sig.	t	df	Sig. (2-tailed)	Mean Difference	Std. Error Difference	95% Confidence Interval of the Difference	
								Lower	Upper
Equal variances assumed	.694	.410	-.416	42	.679	-.224	.538	-1.310	.862
Equal variances not assumed			-.378	7.827	.715	-.224	.592	-1.594	1.146

TABLE 4A. FAMILIARITY WITH ONLINE DELIVERY MODES AND LEVEL OF CONCERN.

Level of concern before ERT delivery and teaching experience					
	Q: How familiar were you with online teaching at the beginning of Covid-19 emergency response?	n	Mean	Std. Deviation	Std. Error Mean
Q: Think about how you felt when you were first told you would need to deliver your course online because of the Covid-19 emergency response. What was your level of concern?	Not familiar	33	3.24	1.300	.226
	Familiar	23	2.61	1.196	.249

TABLE 4B. INDEPENDENT SAMPLES TEST: FAMILIARITY WITH ONLINE DELIVERY MODES AND LEVEL OF CONCERN.

Independent Samples Test									
	Levene's Test for Equality of Variances		t-test for Equality of Means						
	F	Sig.	t	df	Sig. (2-tailed)	Mean Difference	Std. Error Difference	95% Confidence Interval of the Difference	
								Lower	Upper
Equal variances assumed	.220	.641	1.854	54	.069	.634	.342	-.052	1.319
Equal variances not assumed			1.882	49.883	.066	.634	.337	-.043	1.310

The survey results suggest that the overall level of concern about ERT declined over the initial health response. The percentage of lecturers who were moderately or extremely concerned before online course delivery started, decreased from 12.5% (n = 7) and 26.8% (n = 15) to 10.7% (n = 6) and 7.1% (n = 4) respectively after online delivery started. At the same time, the percentage of participants who were not at all concerned or were slightly concerned increased from 16.1% (n = 9) and 21.4% (n = 12) before online course delivery started, to 21.4% (n = 12) and 41.1% (n = 23, see Figure 1) respectively after online delivery started.

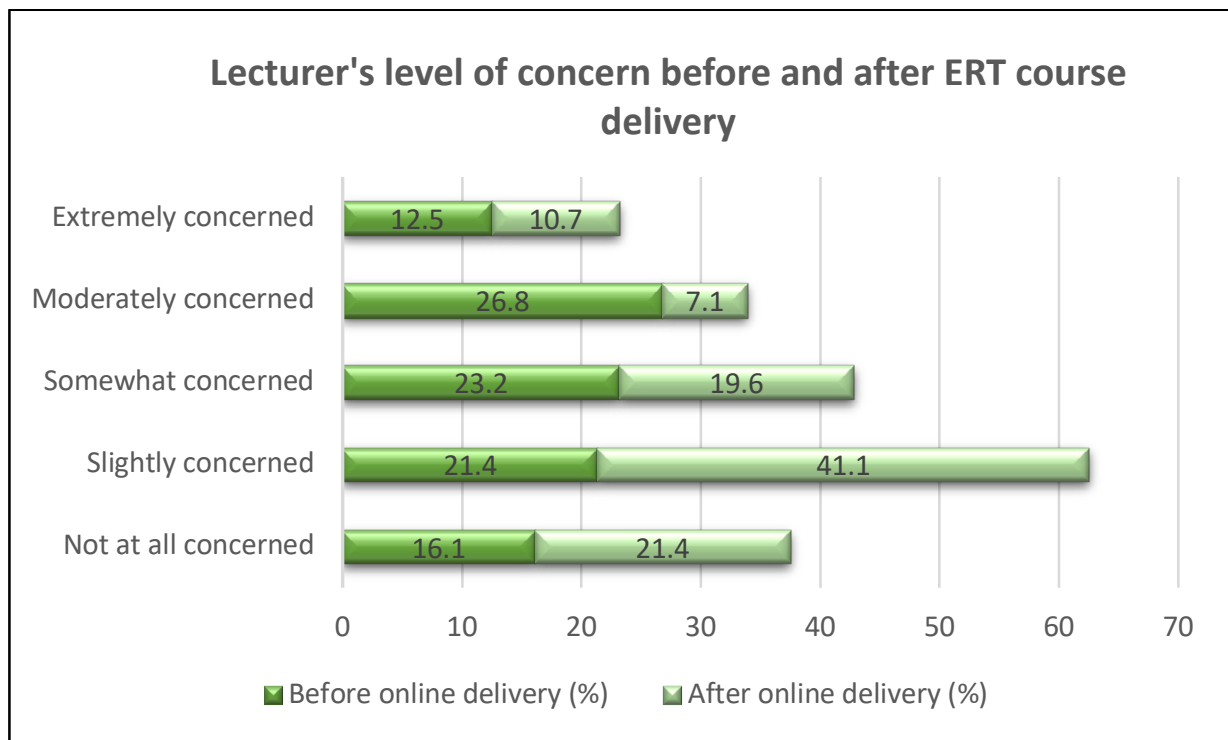


Figure 1. Graph to show lecturers' levels of concern before and after ERT course delivery.

## Challenges faced by lecturers

Lecturers faced challenges in the transition to ERT. When asked about the source of these challenges, participants most frequently indicated student-focused challenges were their main concern (78.6%, n = 44), followed by technical issues (69.6%, n = 39), their own capability (41.1%, n = 23) and other stated issues (30.4%, n = 17). Additionally, participants were asked to provide an example of the challenge(s) they identified.

The student-focused challenges indicated by the participants demonstrated a broad area of concern. The most pressing issue reported related to students being challenged by the need to share a device with other family members and being able to find a suitable space within the household to study. Participant 42 (Computing) wrote:

*Several students said that it was much harder to learn at home because there were so many other things happening compared when they come to [polytechnic], they come to study.*

Participant 24 (Building Construction) elaborated on what was occurring for some:

*Trying to home school kids while studying, one laptop shared in a family, having to do extra shifts to support the family leaving no time for study, poor internet access due to location.*

Participant 30 (Community Studies) summarised:

*It was difficult for some students to move to online because of either lack of device, poor internet or distractions in their living areas.*

One participant reported their students' attempts to learn using a smartphone. Supporting students' use of the software needed for ERT like Zoom, for example, and the specialist requirements of the students' chosen programme was mentioned by 23% (n = 13). Problems that arose were described by Participant 33 (Community Studies):

*Student[s] could not hear properly on Zoom.*

Participant 4 (Building Construction) outlined:

*I was more worried whether the students had access to adequate IT equipment and internet to allow them to participate through Zoom, and also machines that could run the specialist software.*

Other participants noted that student attendance rates declined, with absences explained by the need to manage the complexities of the home situation, where space, home schooling and parenting young children made attending difficult. Technical challenges for participants were related to internet availability, stability and use of the software provided for teaching and meeting. For another, computer glitches that were not easily fixed added frustration.

Reflecting on their own capability, participants centred on two concerns: self-perception and the effectiveness of their teaching. Participant 48 (Bridgepoint) described a lack of personal ability to use the technology effectively:

*[Knowing] what would be [a] good teaching style to suit an online environment.*

Others (Bridgepoint, Healthcare and Social Practice) described how a lack of familiarity with the software impacted their ability to be creative and to develop interactive, student-focused learning. The online classroom felt different from an on-campus experience. Here, comparing online to the usual practices of effective teaching, staff missed the nuances of the classroom environment that would indicate a student was struggling to understand. Participant 13 (Healthcare and Social Practice) elaborated on this issue:

*All I would be able to see was a wall of names. It was difficult to interact and to gauge whether students understood or were even interested.*

The ability to guide and direct the class was also different online. A new lecturer (Participant 1, Healthcare and Social Practice) wrote:

*... being new, could I present my ideas and content effectively in a foreign medium?*

Above all was the challenge of adaptation; the need to transform teaching in such a significant way within such a short timeframe.

The strategies participants used to overcome these challenges varied. One third of the participants indicated that they sought help from colleagues (37.5%, n = 21); others sought help from the institute's academic services (30.4%, n = 17), such as the teacher-support service and information technology (IT) services (25.0%, n = 14). Participants stated they used other strategies such as personal research about techniques for online delivery (7.1%, n = 4).

## **The realities of emergency remote teaching**

Participants were asked about the effects of ERT on courses, and any perceived opportunities or benefits from the move. Participants reflected that the major impact of ERT had been on content delivery. They explained about the difficulties found in teaching practical aspects of their courses. The inability to have laboratory or simulated experiences to support theoretical concepts was described by Participant 2 (Building Construction), who stated:

*While theoretical drafting examples were given, it's not the lightbulb moment of combining the fieldwork and then creating a [model] representation.*

Where courses had a significant experiential component such as the development of interpersonal skills, participants saw how the convenience of in-person teaching and learning was impacted to the detriment of students' progress because it was difficult to replicate online. Participant 54 (Bridgepoint) shared:

*I rewrote all my practical investigative group assessments, as students didn't necessarily have the resources to carry out these assessments, to become pretend contexts for individual engagement.*

The absence of practical learning changed the way participants adapted their chosen content; supporting and scaffolding students' own investigations and knowledge building was substituted for a more directive approach that could be accessed asynchronously. Other disciplines fared better, such as Healthcare and Social Practice, where staff using tutorially based approaches managed to navigate lockdown without any major adjustments to content or delivery, but missed the opportunity to do so in person.

Participants provided positive commentary on student engagement with their courses. The ability to be able to attend asynchronously worked well for students who were essential workers, and for those who were home schooling their children at the same time as studying themselves. Participants referred to their attendance and lack of assessment extension data to demonstrate there was improved engagement by some students. Rethinking delivery also brought new insights. Using flipped learning appeared to strengthen students' positive sense of achievement and promoted greater engagement. There were other observations brought about by ERT, including the explanation that for some students being on campus was the preferred way of learning (Participant 49, Computing). One area that provided many comments was the observed change in the lecturer–student relationship, reflected in the words of Participant 26 (Building Construction):

*We all connected in a different way. We saw each other's homes and met family members, and recognised we were all in it together.*

## **Outcomes of emergency remote teaching**

ERT gave participants permission to experiment and be creative. Throughout the initial lockdown, the participants had developed a wide range of teaching and learning strategies for use in the online environment. The impact of this experience on content delivery showed in the narratives about opportunities and benefits. They illustrated how much progress had been made towards increasing the learner-centredness of courses using asynchronous activities; the opportunities for students to ask questions using the 'chat' function, and to develop independent learning skills; and being able to cater to different learning needs. Participant 36 (Community Studies) stated:

*I've now got a small bank of Moodle activities which can stretch those students who want more. And I've learned a lot more about better delivery techniques online.*

The use of technology brought the opportunity for students to demonstrate their learning in different ways, such as vlog assessments, and participants were open to considering various alternatives, including making assessment completely online. Benefits were seen in the potential to deliver courses using hybrid and blended delivery models. The flipped classroom approach using ECHO 360 also featured in commentary from both Computing and Building Construction. Participants considered that these forms of remote teaching and learning might also reduce the financial burden of travel for some students, as well as encouraging self-sufficiency in learning. For other participants, the ability to use lesson recordings as a review strategy provided the opportunity to 'play and pause' recorded technical explanations; this was highlighted by Participant 23 (Building and Construction) and Participant 35 (Community Studies), who also recognised the value of students being able to access material several times if needed to support learning key principles.

A stated objective of this study was to revisit willing participants once it was safe to return to campus. Indeed, more than half of the respondents answered the call to take part. However, when the study was launched we could not have envisaged the amount of time Tāmaki Makaurau Auckland would remain in lockdown and the necessity that would arise to continue to use online teaching and learning. Two years after the initial lockdown, we are only now starting to reach pre-pandemic levels of face-to-face on-campus classroom delivery. The potential to revisit the study two years on and the value of doing so remains under consideration.

## DISCUSSION

The findings of this research project align with international research with respect to the challenges experienced by educators when required to urgently and unexpectedly transition from teaching in person to ERT (Houlden & Veletsianos, 2020). One significant challenge was the lack of pedagogical knowledge needed for teaching online, which was reflected in this present study and mirrored by international findings (Rapanta et al., 2020). The pedagogical advice within the literature to be cautious and deliberate about the introduction of online learning delivery (Johnson et al., 2020; Bates, 2020), was simply not possible when responding to a global pandemic. This study showed that lecturers developed confidence with the new delivery model over time, and that they became more confident and creative in their approach. Furthermore, some of the new ways of working they discovered were intended to be retained even once onsite learning had resumed.

Delivering the practical components of courses was indeed difficult. The absence of laboratory and simulated experience greatly impacted delivery of some courses in Building Construction, Bridgepoint, and Healthcare and Social Practice in particular. For Healthcare and Social Practice, it was the loss of 'soft' skills like interpersonal communication and for Building Construction the opportunity for depth of discussion. While there was evidence of great ingenuity in attempting to minimise the impact of these losses, there is reason to consider the potential for future disruption and the ways that these components can be covered, perhaps through flexibility in programming or extending timeframes. Solutions may come from the use of more blended or hybrid learning options. These types of design also offer greater opportunities for students with busy or complex lives to have greater engagement with vocational education. They may also add greater resilience to curricula, minimising the impact of the rapid educational change and alternative forms of temporary, instructional delivery as defined by Hodges et al. (2020).

The magnitude of the change that occurred across the sector with the implementation of the national State of Emergency in March 2020 cannot be underestimated. The once-in-a-career opportunity to explore a whole new mode of delivery for students has changed thinking and confidence, and has created an appetite to continue to look at new ways of ensuring that our programmes remain learner centred for the 21st century. Professional development will be essential to support the continued development of skills in the coming years. Preparedness for the personal and professional adversity described by Seaton et al. (2012) is no longer optional.

The practical nature and heavy reliance on 'soft skills' development in vocational education could indicate that online teaching and learning might be a threat to student success, especially over a prolonged period like that experienced in Tāmaki Makaurau Auckland. However, it is also possible that the disruption and consequences of being off campus might yet reveal how workforce preparation can be transformed. The creativity displayed by the participants in this Aotearoa New Zealand study has shown that there are many opportunities to rethink and redevelop teaching, learning and assessment strategies across disciplines. Learning remotely perhaps reflects more-contemporary workforce preparation.

Our new generation of students will be even more confident in their use of digital technologies on entry to vocational education, and will expect to use these not only to support their learning but as an adjunct to their career pathway. Since online learning expands the range and flexibility of available in-person teaching and learning strategies, there is the potential for vocational education to appeal to a broader range of learners. Furthermore, a more flexible approach could make enrolment into all programmes increasingly attractive to people from a wider range of socioeconomic backgrounds.

## CONCLUSION

Within the tertiary sector, vocational education has a heavy reliance on in-person approaches to teaching and learning and, by design, practical, work-ready skills development. The primary repercussion of lockdown for the disciplines represented in this study has been the significant loss of that practical experience. However, hybrid delivery models could provide a solution and these deserve to be explored and developed further. Lecturers have shown that they are adaptive and creative, mastering and navigating the technology to suit learner needs.

Having demonstrated that online learning can work for some aspects of vocational education, there is a need to further develop lecturers' skill sets in preparing and managing online learning. Professional development will be a key feature of any move to do so but, armed with the level of creativity found in ERT content-delivery and assessment, solutions originating from lockdown can be further refined. It will certainly be possible to add value to future teaching and learning experiences in a student-focused way. The advantages and possibilities for students who are juggling personal responsibilities and want to engage with education are enormous with such models.

Living as we do across two major tectonic plates in this country, the vocational education sector would do well to heed warnings that the global pandemic is unlikely to be the last pandemic or natural disaster. For this reason, the sector must take the time to learn from these recent lockdown experiences, and to prepare for future emergencies that will inevitably impact on the delivery of teaching and learning, for the of benefit future learners.

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