

Embracing educational disruption: a case study in making the shift to a remote learning environment

Embracing
educational
disruption

Ida Fatimawati Adi Badiozaman and Hugh John Leong

Faculty of Business, Design and Arts,

Swinburne University of Technology Sarawak Campus, Kuching, Malaysia, and

Wallace Wong

Swinburne Innovation Malaysia,

Swinburne University of Technology - Sarawak Campus, Kuching, Malaysia

1

Received 9 August 2020
Revised 2 October 2020
Accepted 24 November 2020

Abstract

Purpose – As an institution that has invested in e-learning infrastructure and technology for e-learning delivery, Swinburne University of Technology Sarawak conducted The Digital Educator Series as a means of embracing this educational disruption. In particular, this paper reports on the first three courses held under the Digital Educator Series that aims to equip teachers with practical and effective online teaching to school teachers in Sarawak. While the training is still in effect, preliminary results are shared, and implications for practice and recommendations for further research are considered.

Design/methodology/approach – Approximately 136 questionnaires containing close-and open-ended items were distributed to the teacher participants of the Digital Educator Series. Close-ended items were designed to gather general information about their perceptions of online teaching and learning. Items were constructed to gather insights on familiarity with online teaching and learning, perceived usefulness of platforms such as Microsoft Teams and Google Classrooms. The open-ended items were designed to gather information on areas of improvement for the courses and professional development needs of teachers for online teaching.

Findings – The findings revealed very mixed responses in terms of teachers' familiarity with online teaching and learning. Nonetheless, it was encouraging that the majority of teachers felt positively about the impact and usefulness of the courses in the Digital Educator Series and have expressed that would like to learn more about online teaching pedagogy. Teachers reported the greatest familiarity with Google Classroom and were very positive about the applicability the Google Classroom Course (91.2%) in their own teaching practice. Conversely, all of the participants reported they were unfamiliar with Microsoft Teams. Accordingly, the teachers did not perceive its applicability to be as high as the Google Classroom. The qualitative findings further corroborated this and expressed the need for specific professional development programmes that include pedagogical and technological support. Overall, the teachers are strongly focussed in their professional development in order to improve their online teaching.

Research limitations/implications – Like other research, this too has its limitations. The sample size in this study was restricted to those who attended the Digital Educator Series training. Hence the results of this study, whilst have been enriching, and to a certain extent are supported by the current literature, the accuracy of the description may be unique to this particular group of individuals, within this particular setting. Additionally, the study only relied on self-reports from both the questionnaire and the semi-structured interviews. This study accepts that self-reports have shortcomings. Not all experiences of the courses would have been readily accessible through the teachers' conscious reflections. This makes it difficult to construct a complete picture of the experience, challenges and identify all salient factors within a particular workshop or training.

Practical implications – Although the adoption of teaching and learning to online platforms is undoubtedly the way to maintain continuity of learning for students, it has also unveiled glaring inequities in Sarawak. Therefore, continuous and personalised professional development needs to be provided, focussing on pedagogical and technological support. There is a need to embrace these changes as a long-term response that will develop and improve over the next few years. That response should include better infrastructure, policies for quality improvement, accessibility standards and strategic plans for continuous access in the future. This includes advocating for platforms that can fit into the core technology environment and for teachers to adopt an innovative mindset.



Originality/value – In light of the complex and multifaceted challenge of transitioning to online learning in Sarawak Malaysia, it was evident that the need for innovative solutions to optimize educational endeavours has become accelerated. To ensure that students are well-supported and widening participation and access to education, it is imperative that the education disruption be embraced. This starts with addressing teachers' digital literacy through a professional development programme of online teaching.

Keywords Online teaching, Online learning, Remote teaching and online learning, e-learning readiness, Teachers and teaching

Paper type Research paper

1. Introduction

The rapid pivot to remote learning due to COVID-19 has exposed and exacerbated the inequities across all levels in the education institutions globally. In a recent UNESCO report, approximately 143 countries have had to close schools nationwide since the COVID-19 outbreak. The closure of schools has disrupted the learning and education of an estimated 1.2bn students. This sudden shift to remote learning has disrupted the education system in unprecedented ways, highlighting a range of issues from the students' readiness and access for remote learning, to the digital divide in teachers' digital literacy (UNESCO, 2020).

Malaysia is no exception. The disruption in learning has exposed deep education inequalities in the country's education system and the education system's capacity. As the burden of COVID-19 does not fall equally, there is a disproportionate effect on students who already experience barriers accessing education (Walters, 2020). In Malaysia, although much focus has turned to online learning platforms, there are many schools that are still desperately under-resourced. Consequently, learning has not been set up to use these learning platforms as schools may not have functioning Internet access to support this (Ebrahimi and Jiar, 2018). This is particularly true for students who are in remote locations, where technology has not been fully embedded in the system and where Internet availability is limited or non-existent (Raman *et al.*, 2019). Such disruption calls for technological innovation from educators, to focus on most accessible technologies and methods to suit the very diverse student demographic and education context.

When the lockdown took effect on the 18th March 2020, remote emergency teaching (Hodges *et al.*, 2020) became the new reality. The nation was compelled to rapidly adjust to and required swift transformation to emergency remote teaching and learning. As a means of containing the spread of COVID-19, the traditional face-to-face classrooms were substituted with online learning. These policies culminated in students learning from home and teachers preparing their teaching-learning from home either in a synchronous or asynchronous mode.

During the pandemic, Sarawak as the largest state in Malaysia had to swiftly move 423,962 students and 1,458 schools (pre-school: 22 959; primary:193 secondary: 238, 183) in the 12 divisions (see Figure 1) to immediate online learning (Sarawak State Education Department, 2020). Throughout the Movement Control Order (MCO) and the Conditional Movement Control Order (CMCO) issued by the Sarawak State Disaster Management Committee, teachers continued to conduct teaching and learning via various online platforms. The complex geographical distribution of students in Sarawak exacerbated the challenges of transitioning to online learning. Teachers were not only faced with learning new skills in the digital world but also creating engaging content through online programmes and making it accessible to students who may not have equitable access to technology.

In light of the complex and multifaceted challenge of transitioning to online learning, it was evident that the need for innovative solutions to optimize educational endeavours has become accelerated. To ensure that students are well-supported and have widening participation and access to education, it is imperative that the education disruption be embraced.

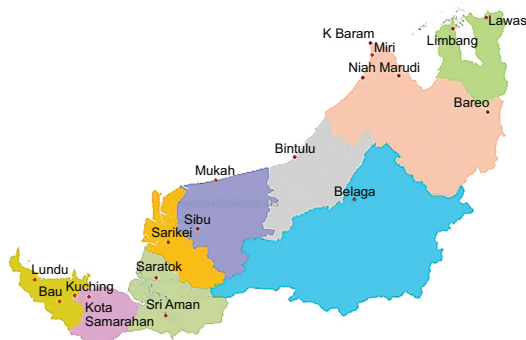


Figure 1.
Divisions in Sarawak

As an institution that has invested in e-learning infrastructure and technology for e-learning delivery, Swinburne University of Technology Sarawak conducted The Digital Educator Series as a means of embracing this educational disruption. In particular, this paper reports on the first three courses held under the Digital Educator Series that aims to equip teachers with practical and effective online teaching to school teachers in Sarawak. While the training is still in effect, preliminary results are shared, implications for practice and recommendations for further research are considered.

2. Literature review

2.1 Moving into an online environment

Online education has been studied for decades. Numerous research studies have focused on online teaching and learning theories and evaluation criteria on quality online learning and online course design (Brown, 2016; Kebritchi *et al.*, 2017; Rasheed *et al.*, 2020). Nonetheless, despite the importance and the benefits reported on online learning, very few advancements have been made in that very few teachers receive systematic support or instruction on how to design high-quality, interactive online learning experiences (Archambault *et al.*, 2016).

Literature on online education has revealed that effective online learning results from careful instructional design and planning, using a systematic model for design and development such as that shown in Figure 2. This design process of technology integration has to suit the education context as it has significant bearing on the quality of the instruction. In fact, Hodges *et al.* (2020) maintains that this careful design process that is time consuming, “will be absent in most cases in these emergency shifts”. Consequently, hastily moving teaching and learning to online platforms has shed light to the disproportionate access to technologies “necessary to be successful either as an online learner or as a teacher suddenly responsible for delivering content remotely” (Lynch, 2020, p. 189).

A survey by British Council as a global response to the change in English teaching and learning during COVID-19 disseminated from 9 April 2020 to 27 April 2020 on the “Support and Resources needed for teachers during COVID-19” revealed that online teaching has increased by 40% in the 11 countries. The teachers reported only moderate confidence in their online teaching, while teaching hours and preparation were reported to have increased. Approximately 77% spend 1–10 h, while 10% spend up to 15 h preparing online lessons (i.e. approximately 1:1 for teaching hour to preparation time). Challenges in remote teaching were attributed to various reasons including changing teaching style to suit online teaching (45%), Internet connection (46%), including all students in the lesson (53%) and unfamiliarity with teaching tools (32%). Additionally, the type of support reported by the teachers are mainly pedagogical in terms of seeking ways to increase student engagement during class hours,

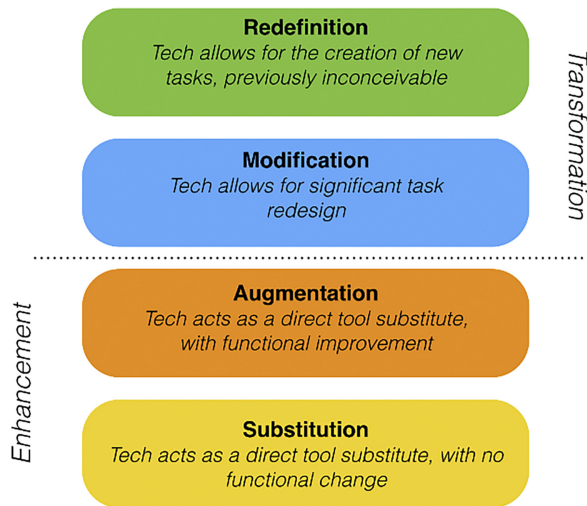


Figure 2.
Classroom technology
integration model

teaching methodology and designing materials for synchronous and asynchronous learning (British Council, 2020).

Online teaching would be a new experience for most teachers, requiring them to adjust not only their approaches but their perspectives. A study on the professional development needs of online teachers revealed the extent of support to include administrative, personnel, pedagogical and technology support (Martin *et al.*, 2019). Thus, it is expected that for many teachers, the shift from face-to-face teaching to an online teaching environment can be unsettling and requires teachers to redefine unrealistic expectations (Gloria and Uttal, 2020). This is not surprising considering many teachers in Malaysia have not participated in any kind of learning experience, let alone teach online (see Cheok *et al.*, 2017; Had and Ab Rashid, 2019). Nasri *et al.* (2020) in their study further highlight that lecturers in Malaysia have varying levels of ICT literacy thus requiring training and a support system to accommodate their needs.

2.2 Teachers and digital literacy

One of the challenges of transitioning to online teaching is low digital literacy. During the pandemic, understandably, many teachers were ill-equipped for the transition to online learning. Furthermore, due to low digital literacy, teachers may experience difficulties in operating the applications and navigating platforms used for online learning. Teacher preparation time for online or blended environment is significantly increased due to the complexity of online and remote teaching (Evagorou and Nisiforou, 2020).

The level of teachers' digital literacy, which significantly broadens the scope of potential sources of knowledge, can be derived from the aspect of the success of both their teaching and learning activities. Among the most important components of digital literacy are: "accessing, managing, evaluating, integrating, creating, and communicating information individually or collaboratively in a networked, computer supported, and web-based environment for learning, working, or leisure" (Barnová *et al.*, 2020, p. 12). According to Hague and Payton (2010), digital literacy is made up of eight inter-related components or dimensions: *functional skills, creativity, critical thinking and evaluation, cultural and social understanding, collaboration, the ability to find and select information, effective communication and*

e-safety. In the case of teachers, being digitally literate also means knowing when and why digital technologies are appropriate and helpful to the (educational) task at hand (Hague and Payton, 2010). This means that teachers should have the competence in determining when the application of digital technologies is purposeful, meaningful and efficient and situations, when it is not. (i.e. Asynchronous e-learning or synchronous learning) (Barnová *et al.*, 2020, p. 14). Similarly, Baran and Correia (2014) maintain that in order to be effective online teachers, faculty must develop the *know-how* of online technologies. They further argue that it is critical for teachers to be given first-hand experience with both teaching and learning in online environments. In the case of this current educational disruption, many do not have that luxury, further compounding these challenges.

A study on the teaching challenges faced by Indonesian students during the COVID-19 pandemic revealed that the teachers need practical preparation to recognize applications, organise activities, maintain students' engagement and evaluate students' learning (Atmojo and Nugroho, 2020). These challenges include but are not limited to creating content for online spaces, learning new delivery tools, understanding online pedagogy, engaging parents, addressing student mental health issues and attempting various pedagogical strategies to address both synchronous and asynchronous teaching and learning (Hartshorne *et al.*, 2020, p. 138). König *et al.* (2020) in their analysis of school teachers in Germany further emphasise that information and communication technologies (ICT) tools, and in particular digital teacher competence and teacher education opportunities are fundamentally important in adapting to online teaching during this pandemic.

2.3 Bridging the digital divide

The sudden shift to remote learning would also mean that teachers lack time for preparation and readiness for online learning. The absence of adequate facilities for high technology integration also poses another problem in bridging the digital divide when transitioning to online teaching. Challenges may include connecting appropriate pedagogies with technologies, designing interactive activities, improving formal learning and enhancing student engagement in online learning (Hartshorne *et al.*, 2020). Compton (2009) proposed the following framework and categorised three major skills domain in OLT:

The first set, *technological skills*, relate to knowledge and ability to handle hardware and software issues. Next, the *pedagogical skills* refer to knowledge and ability to conduct and facilitate teaching and learning activities. Lastly, the *evaluative skills* refer to the analytical ability to assess the tasks and overall course and make necessary modifications to ensure language learning objectives are met" (Compton, 2009, p. 81)

In their study, Van Gorp *et al.* (2019) further organized each skill domain into four levels of expertise: *limited*, *novice*, *proficient* and *expert*. See Table 1 for description:

Baran *et al.* (2011) in their metaanalysis report that the importance placed on the online teachers' roles and competencies varies as it is context-dependent (i.e. education level and academic context). Nonetheless, the consensus is in designing high quality, interactive online learning experiences requiring systematic support or instruction (Archambault *et al.*, 2016).

3. Methodology

3.1 The program: certified digital professional suit

The impact of COVID-19 has resulted in extensive periods of remote teaching and learning in education institutions in Sarawak, Malaysia. For this reason, Swinburne University of Technology Sarawak Campus introduced a new short, practical training programme called "The Digital Educator Series" to elevate teacher's digital proficiency. The program, developed along the university's transformative digital journey, aims to ease participants into mobile ways of working with applications, cloud, automation and artificial intelligence (AI) using

Table 1.
Online teaching levels
of expertise

Levels of expertise	Description
Limited	Have rudimentary knowledge or awareness of the basic principles and dynamics of online instruction. They have limited to no ability and confidence to perform basic OLT tasks. Limited teachers are characterized by a tendency to directly transfer face-to-face practices and pedagogies to the online environment
Novice	Have basic competence and can demonstrate a (marginally) acceptable performance. They are building up experience and confidence in OLT but are best suited at implementing courses designed by more experienced teachers and/or with guidance from more experienced teachers
Proficient	Teachers have effective and independent facility with all actions (competencies) required for successful OLT. They have a clear grasp of the affordances and constraints of OLT and can efficiently organize and implement OLT pedagogy
Expert	Are highly proficient and have wide and varied experience in OLT. They can flexibly adapt OLT to meet new mandates and purposes, creatively offer novel solutions and are capable of training less proficient teachers in the effective implementation of OLT

tools that are mostly free to use to mitigate the impact brought by the (COVID-19) pandemic. Continuous collection of different types of data collected from all stakeholder groups guided the course design. The Digital Educator Series aims to quickly equip educators with practical know-how in effective online teaching. A series of seven courses were developed and delivered online: (1) Online teaching and learning I, (2) mastering Google Classroom, (3) cloud-based productivity tools, (4) online teaching and learning II, (5) working effectively away from office and netiquette, (6) cybersecurity in the digital workspace and (7) learning design workshops: E-activities. For example, the Microsoft Team’s course demonstrates its ecosystems and trains the participants in using key MS Teams features to conduct classes online effectively. The learning outcomes of the course include: (1) creating MS Teams collaboration teams; (2) hosting, participating and presenting in MS teams; (3) being aware of security and privacy issues in MS teams and (4) engaging in digital collaboration tools.

3.2 Participants

A total of 136 primary and secondary teachers from all over Sarawak who participated in the online course were invited to participate in the study. The university had announced through its website and social media platforms that the digital educator program was being conducted, and we invited teachers to participate in the program. At the same time, the university directly invited a number of schools who had shown interest in or have made an enquiry of programmes such as these in the past. The breakdown of participants is as follows: (see Table 2).

Table 2.
Breakdown of
participants according
to courses

Courses	Date conducted	Schools invited	Teachers applied	Teachers attended
Online teaching and learning	16 April	12	61	35
Online teaching and learning	21 April	6	11	32
Mastering google classroom	23 April	8	37	34
Collaborating through microsoft teams	30 April	12	37	35
<i>Total</i>				136

3.3 Instrument

An online questionnaire was distributed upon the completion of each workshop to obtain participants' feedback. The survey was written in English, in short, simple sentences and consisted of items which were close-ended (15) and open-ended (2). Close-ended items were designed to gather general information about their perceptions of online teaching and learning. Items were thus constructed to gather insights on participants' familiarity, perceived ease of use and perceived usefulness with platforms such as Microsoft Teams, Google classrooms. The open-ended items were designed to gather information on areas of improvement for the courses and professional development needs of teachers for online teaching. The questionnaire was piloted to a group of primary and secondary school teachers ($n = 5$), and was approved by the management of the university, prior to being utilised. Participants were encouraged to respond to the questionnaire, but participation was strictly voluntary (see Table 3).

3.4 Data analysis

The SPSSv25 software was used to analysis the quantitative data from the close-ended items. Descriptive analysis was used to identify emerging and meaningful patterns (Loeb *et al.*, 2017). A thematic analysis (Gavin, 2008) was employed to analyse responses from the open-ended items, in which the following steps were followed: (1) identification of codes from keywords; (2) tabulating the frequency of codes; (3) merging codes into themes; (4) ranking codes by frequency within themes and (5) reviewing themes for overlapping codes.

4. Results

4.1 Quantitative findings

4.1.1 Online teaching and learning. It was interesting to note that there were quite mixed responses to the item seeking for teachers' familiarity with online teaching and learning. Some participants reported that online teaching and learning were not new to them as can be seen by their responses: strongly disagree (7.8%) and disagree (30.8%). On the other hand, about agree (30.8%) and strongly agree (7.7%) to the statement that online teaching and learning was new to them. Nonetheless, it was encouraging that the majority of teachers felt positively about the impact and usefulness of the online teaching and learning course. This was evidenced by the number of respondents choosing agree (30.8%) and strongly agree (46.2%) to the statements, "I will continue to engage and help my students using online tools even after the pandemic is over" and "I am keen to learn more about online teaching, learning pedagogy and tools" (Agree 30.8%; Strongly Agree 46.2%). The teachers also perceived the

Divisions in Sarawak	Online teaching and learning	Mastering google classroom	Collaborating through microsoft teams
Kuching	53	16	26
Samarahan	0	1	0
Sri Aman	0	3	1
Serian	0	0	3
Betong	0	1	0
Sarilkei	0	3	0
Mukah	0	3	1
Miri	12	5	4
Bintulu	2	2	0
Total			136

Table 3.
Breakdown of
participants according
to divisions in Sarawak

usefulness of online teaching and learning course very highly as indicated by the responses for the applicability of online teaching and learning for their practice: agree (46.2%) and strongly agree (30.38%) as shown in Figure 3.

4.1.2 Google Classroom course. There were also quite mixed responses to the item seeking for teachers' familiarity with Google Classroom. Some participants reported that Google Classroom was not new to them as can be seen by their responses: strongly disagree (4.1%) and disagree (12.5%). Nonetheless, half of the participants responded that they were unfamiliar with Google Classroom as indicated by the participants who reported agree (33.3%) and strongly agree (16.7%) to the statement "I am familiar with Google Classroom". Nevertheless, the teachers felt very positively about the applicability of the Google Classroom course. This was evidenced by the number of respondents choosing agree (58.3%) and strongly agree (29.2%) to the statements, "I will continue to engage and help my students using online tools even after the pandemic is over" and "I am keen to learn more about online teaching, learning pedagogy and tools". Note that 37.5% responded agree and 58.3% responded strongly agree to the statement. The teachers also perceived the ease of use for Google Classroom very highly as seen through the responses for the applicability of Google Classroom for their practice. Note that respondents reported agree (58.3%) and strongly agree (33.3%) to the statement (see Figure 4).

4.1.3 Microsoft Teams. The majority of the teachers were very unfamiliar with Microsoft Teams as indicated by the participants who reported agree (28.6%) and strongly agree (71.4%) to the statement. Nonetheless, echoing the responses for the two former courses, the teachers felt very positively about the applicability of the Microsoft Team course. This was evidenced by the number of respondents choosing agree (35.7%) and strongly agree (57.1%) to the statements, "I will continue to engage and help my students using online tools even

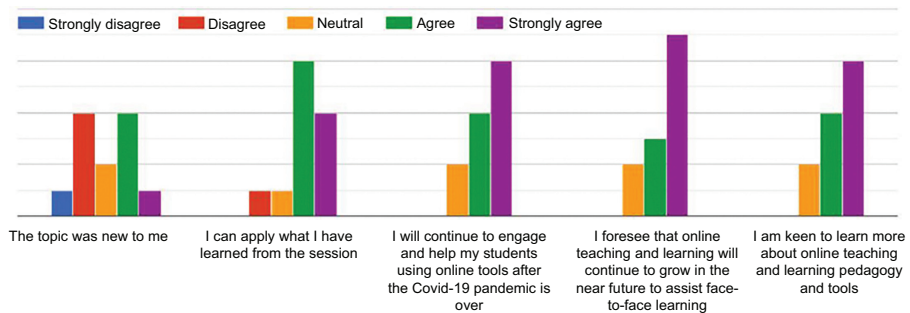


Figure 3.
Breakdown of responses for online teaching and learning course

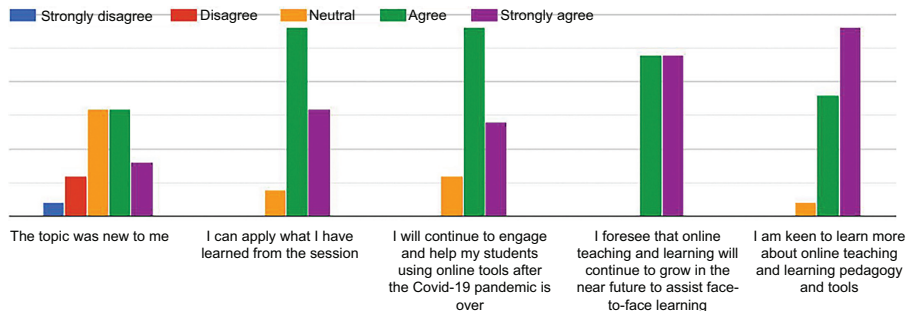


Figure 4.
Breakdown of responses for Google classroom course

after the pandemic is over” and “I am keen to learn more about online teaching, learning pedagogy and tools” (agree 21.4%; strongly agree (78.6%). The teachers also perceived the ease of use for Microsoft Teams highly as indicated by the number of respondents choosing agree (50%) and strongly agree (35.7%) as shown in Figure 5. Nonetheless, the teachers did not perceive its applicability as high as the Google Classroom.

4.2 Qualitative findings

Two main themes emerged from the qualitative data from the participants’ feedback of the first three courses attended from The Digital Educator Series as areas of improvement and professional development needs of teachers: (1) pedagogical support and (2) technology support (See Table 4).

Overall, the consensus reported the benefits of the courses they attended in the Digital Educator Series. This is evident in the responses where participants reported gaining new knowledge: *“I have a clearer mindset on setting Microsoft team for collaborative teaching and learning with the students”*, and applicability for their own pedagogical practice *“I can discuss projects with students and monitor their progress instead of just discussing one sided way through FB live”*. Additionally, the teachers also reported positive impact on their motivation: *“The class was very informative and useful for teachers who have yet to use Google Classroom...very motivating to use the so many useful features especially during this Movement Control Order (MCO) to enhance home-based learning and teaching”*. Participants also reported increased self-efficacy, *“As a teacher, being able to participate in this course gave us more confidence that online teaching will be of tremendous help in reaching out to our pupils with whom we have been tutoring face to face before Movement Control Order (MCO)”*.

The participants reported that they require pedagogical support and training. Acknowledging they have very limited experience to none with either Google Classroom or Microsoft Teams, (i.e. *“Most of us have never used Microsoft teams”*), the teachers reported the need to have guidance for online courses, such as how to write objectives, how to facilitate online courses in line with learning outcome/objectives and setting up group work. Another area of pedagogical support was guidance on creating instructional resources, project-based and problem-based learning, as well as active learning techniques such as discussions. The teachers reported the need for a robust training programme and teaching strategies that are discipline-specific to teach online. One teacher wrote: *“Could you please create more programmes such as this in another topic that could also benefit us as educators...introduce applicable tools for Mathematics”*.

Since teaching online is still emergent in Sarawak, the teachers have expressed the need for more training and supplemental resources (i.e. *“prepare short notes for future reference after the session”* and *“I would like to know more about the differences between MS team and*

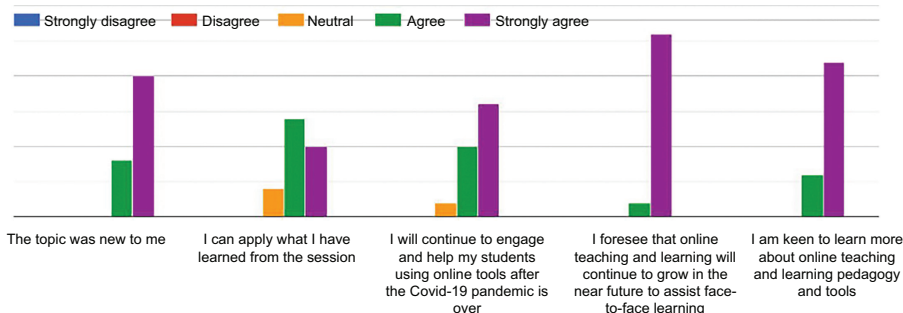


Figure 5. Breakdown of responses for Microsoft Teams course

	Themes	Sub codes	Example quotes
Suggested areas of improvement	Pedagogical support	Teaching strategies	(1) It is very useful for new users. If possible, to expose us to maths application via Google classroom especially need to show long working
		Training program to teach online	(1) My challenge is the readiness is not quite there yet. I will need several trials and attempts before deciding whether it'd be the time for me to make the jump to using Google Classroom
		Instructional resources	(1) More links between using Google Classroom to support my teaching would be great
		Development support	(1) Need to have more hands on activities and time explore more features of Google Classroom (2) Need more hands-on activity on how to use Google Classroom, if possible
	Technology support	Technological support	(1) Someone to assist with online learning for Goggle Classroom after the training is conducted
		Software	(1) Perhaps more online apps for teaching and learning could be introduced
			(2) It'd be best to show a sample of each tool mentioned. Perhaps to get us to explore some of the Free tools, or maybe show a review of it
		Hardware	(1) More time needed to adjust to LMS interface (i.e. Microsoft Teams, Google Classroom)

Table 4.
Emerging themes from the participants' feedback on the digital educator series

other platforms such as WEBex and Zoom”). Additionally, the findings revealed the need for more course examples and additional instructions and/or guidance. This was expressed through wanting more hands-on experience during the course. A teacher wrote: “Although I am aware of the limitations of an online course, I was expecting a bit more hands-on session. More guides or step by step”.

Understandably, the teachers reported the need to have technical support for the different learning management systems (LMS) typically used for online courses and the different communications and collaboration platforms. One participant reported: “I was not familiar with Microsoft Teams, so a lot of time was wasted in trying to get where I am supposed to be. Maybe the teacher can provide instructions on how to go to breakout groups or for group discussions”. Some teachers wanted to learn how to integrate online apps for teaching and learning: “I would have liked training on more online apps for teaching and learning could be introduced or shared for online learning using Google Classroom”. Overall, our data highlighted two major needs for enhancing the teachers’ digital literacy; technological support and pedagogical support. To that effect, we need to be realistic about setting expectations for this surge of teaching online for both teachers and students who have never experienced this before. Lessons on digital skills and literacy is only the first step.

5. Discussion and implications

Due to the pandemic, the speed of moving to online instruction is unprecedented and staggering. More importantly, the current pandemic has highlighted the digital divide not

just in terms of supporting technology but also teachers' preparedness. The study has revealed that the majority of teachers are new to remote/online teaching and thus are only moderately confident in their ability to do their job remotely. Like other studies, this is likely due to a significant gap in teacher preparation and training for emergency remote teaching, which ensures learning continuity (Whalen, 2020; Whittle *et al.*, 2020). Nonetheless, the findings revealed that the teachers are strongly focussed on their professional development in order to improve teaching and learning during the pandemic. In fact, the teachers reported they need significant training to support the move to online teaching, moving forward. The following section will discuss implications for practice in light of the findings from the study.

5.1 Pedagogical and technological support

It has been argued that well-planned online learning experiences are meaningfully different from courses offered online in response to a crisis or disaster (Hodges *et al.*, 2020). The findings of the study, however, have revealed that the teachers had limited knowledge about the pedagogy for online teaching and learning and collaboration platforms such as Microsoft Teams and Google Classroom. This low digital literacy may lead to teachers who are not confident in using digital technologies and feel anxious about using them in the classroom as they feel that their own functional skills are not as developed as their students' (see Horvitz *et al.*, 2015; Rhode *et al.*, 2017; Vang *et al.*, 2020). Note that Archambault *et al.* (2014) suggests that "online teachers need to have not only an excellent grasp of their given content area but also an appreciation of how technology and the online environment affect the content and the pedagogy of what they are attempting to teach" (p. 87).

Nonetheless, in the case that a teacher is less experienced and knows less than a student about how to operate a particular piece of technology, it does not necessarily mean that he/she is digitally illiterate. Hague and Payton (2010) maintain that teachers are still more equipped with the higher order critical thinking skills and the subject knowledge to apply to digital technologies. Therefore, scaffolding teachers' pedagogical needs (i.e. instructional design needs and technology skills) was necessary to pave a path for all to navigate online learning. The reality of the pandemic has shown how important digital technologies in education are and that online education represents an efficient alternative when present forms of education are not available (Barnová *et al.*, 2020, p. 15). While maintaining quality learning for students, it is important to embrace an iterative process of design and instruction. That teachers reported many pedagogical needs, and support in the feedback indicates the importance placed by these teachers in designing and delivering effective courses. These are critical elements of online course design. For this reason, future training programs and relevant resources should be created to prepare the teachers for online teaching.

5.2 Teacher preparation and professional development

As indicated in the study, the teachers are strongly focused on professional development in order to improve their teaching. Various platforms and applications ranging from communication tools and learning management systems are utilised for online learning. Teachers must be trained with sufficient knowledge and skills for effective online teaching practices, particularly in a low technology context often faced by Sarawak teachers. The current context of education demands educators to have advanced literacy on information technology. In an increasingly pressurised environment, online professional development for in-service teachers is paramount. This is to ensure that their online teaching skills are further developed as they find their own online teaching voices (Avgerinou and Moros, 2020).

There is a need to invest in the teachers' professional development as well as to upskill their digital skill. Although the Digital Educator Series was relevant and the programs could

continue in the remote learning environment, continuous and personalised professional development needs to be provided. This was evidenced particularly in the qualitative data where participants reported for technological and pedagogical training and/or support. As argued by Hartshorne in his study, “it is important to prepare teachers in decision-factors for determining whether to use synchronous or asynchronous approaches in remote teaching and learning” (Hartshorne *et al.*, 2020, p. 143). It is also apparent that there is a need for teachers to be reflective, innovative and adaptive to changes. Because new learning modalities have become a reality during these unprecedented times, it has become important to advocate for platforms that can fit into the core technology environment in Sarawak. This can only be achieved through novel educational strategies and for teachers to adopt an innovative mindset.

Thus, in the case with the COVID-19 pandemic, what becomes apparent as we examine examples of educational planning in crises is that these situations require creative problem-solving. This transcends acquiring technological knowledge. Teachers have to generate various innovative solutions that meet the needs of learners. This encompasses thinking about delivery modes, methods and media that are most suited for the rapidly changing needs and limited resources, such as faculty support and training (Hodges *et al.*, 2020).

There is a need to understand teachers’ needs for professional development in online learning, so that programs can be better curated for effective online teaching. As argued by Rhode *et al.* (2017) a one-size fits-all approach to faculty development for online teaching often does not meet the needs of faculty that have different levels of experience, skills and self-efficacy. The focus of professional development for online teachers should be on their effectiveness as teachers. This can be supported by taking a more holistic approach to professional development instead of focussing narrowly only on technology skills or instructional design (Martin *et al.*, 2019; Rhode *et al.*, 2017).

5.3 Opportunity in crisis

Although the adoption of teaching and learning to online platforms is undoubtedly the best way to maintain continuity of learning for students, it has also unveiled glaring inequities. The abrupt transition to remote teaching and learning caused by the COVID-19 pandemic has amplified concerns about the digital divide, particularly for students with inequities of accessing the technology. Thus, it is critical for educators to inform solutions to resolve equity, accessibility issues.

School closures worldwide could be an opportunity to set up infrastructure for the future. Echoing UNESCO:

Yes we need to act immediately, but we also need to be involved in the setting up the infrastructure, the training and the response for at least another school year. . . This is our opportunity to build and help all students in the future who are ill, who do not have the technology resources, who find themselves unable to come to class for whatever reason (Covid-19 Impact on Education, UNESCO, March 2020).

There is a need to embrace these changes as a long-term response that will develop and improve over the next few years. That response should include better infrastructure, policies for quality improvement, accessibility standards and strategic plans for continuous access in the future. Hartshorne *et al.* (2020) maintains that “as we move beyond the survival phase of remote teaching and learning, it is critical now to transition to a thriving phase of remote teaching, learning and teacher education” (p. 138). This is because pedagogical integration of open educational resources allows for a digitally inclusive educational environment and “diminishes the negative effects of digital divide” (Tudor, 2020, p. 374). Overall, our research findings are in alignment with the literature on the challenges faced in transitioning to online

teaching and professional development needs for teachers who have to pivot to remote teaching. Support for teachers in remote teaching and remote training pedagogy should be provided.

Like other research, this too has its limitations. The sample size in this study was restricted to those who attended the Digital Educator Series training. Hence the results of this study, whilst have been enriching, and to a certain extent are supported by the current literature, the accuracy of the description may be unique to this particular group of individuals within this particular setting. Additionally, the study only relied on self-reports from both the questionnaire and the semi-structured interviews. This study accepts that self-reports have shortcomings. Not all experiences of the courses would have been readily accessible through the teachers' conscious reflections. This makes it difficult to construct a complete picture of the experience, challenges and identify all salient factors within a particular workshop or training.

6. Conclusion

The pandemic has exposed the inequities in education. There are marked variations in technological access, academic expectations, teachers' digital literacy and self-efficacy when it comes to remote teaching. Therefore, it is imperative that the initiatives which attempt to address the digital skills and pedagogical knowledge should be further continued. As evidenced in this study, the teachers have revealed not only resilience but also genuine interest from educators to adapt / withstand future crises. There is a need to invest for the upskilling of Sarawak teachers for remote learning to ensure continuity of learning during unstable times. This includes advocating for platforms that can fit into the core technology environment and for teachers to adopt an innovative mindset.

References

- Archambault, L., DeBruler, K. and Freidhoff, J. (2014), "K-12 online and blended teacher licensure: striking a balance between policy and preparedness", *Journal of Technology and Teacher Education*, Vol. 22 No. 1, pp. 83-106.
- Archambault, L., Kennedy, K., Shelton, C., Dalal, M., McAllister, L. and Huyett, S. (2016), "Incremental progress: Re-examining field experiences in K-12 online learning contexts in the United States", *Journal of Online Learning Research*, Vol. 2 No. 3, pp. 303-326.
- Atmojo, A.E.P. and Nugroho, A. (2020), "EFL classes must go online! Teaching activities and challenges during COVID-19 pandemic in Indonesia", *Register Journal*, Vol. 13 No. 1, pp. 49-76.
- Avgerinou, M. and Moros, S. (2020), "The 5-phase process as a balancing act during times of disruption: transitioning to virtual teaching at an international JK-5 school", in Ferdig, R.E., Baumgartner, E., Hartshorne, R., Kaplan-Rakowski, R. and Mouza, C. (Eds), *Teaching, Technology and Teacher Education during the Covid-19 Pandemic: Stories from the Field*, AACE-Associated for the Advancement of Computing in Education, pp. 583-594.
- Baran, E. and Correia, A.P. (2014), "A professional development framework for online teaching", *TechTrends*, Vol. 58 No. 5, pp. 95-101.
- Baran, E., Correia, A.P. and Thompson, A. (2011), "Transforming online teaching practice: critical analysis of the literature on the roles and competencies of online teachers", *Distance Education*, Vol. 32 No. 3, pp. 421-439, doi: [10.1080/01587919.2011.610293](https://doi.org/10.1080/01587919.2011.610293).
- Barnová, S., Krásna, S. and Čepelová, S. (2020), "Digital technologies as a means of teachers' professional development", *R&E-SOURCE*, Vol. 18, No. Special Issue, pp. 11-17.
- British Council (2020), "English Language Teaching and Covid-19: a survey of teacher and teacher educator needs during the Covid-19 pandemic", available at: <https://www.teachingenglish.org.uk/sites/teacheng/files/covid19-teacher-teacher-educator-survey.pdf>

- Brown, M.G. (2016), "Blended instructional practice: a review of the empirical literature on instructors' adoption and use of online tools in face-to-face teaching", *The Internet and Higher Education*, Vol. 31, pp. 1-10.
- Cheok, M.L., Wong, S.L., Ayub, A.F. and Mahmud, R. (2017), "Teachers' perceptions of e-learning in Malaysian secondary schools", *Malaysian Online Journal of Educational Technology*, Vol. 5 No. 2, pp. 20-33.
- Compton, L. (2009), "Preparing language teachers to teach language online: a look at skills, roles, and responsibilities", *Computer Assisted Language Learning*, Vol. 22 No. 1, pp. 73-99.
- Ebrahimi, S.S. and Jiar, Y.K. (2018), "The use of technology at Malaysian public high schools", *Merit Research Journal of Education and Review*, Vol. 6 No. 3, pp. 54-60.
- Evagorou, M. and Nisiforou, E. (2020), "Engaging pre-service teachers in an online STEM fair during COVID-19", *Journal of Technology and Teacher Education*, Vol. 28 No. 2, pp. 179-186.
- Gavin, H. (2008), *Understanding Research Methods and Statistics in Psychology*, Sage, Thousand Oaks, CA.
- Gloria, A.M. and Uttal, L. (2020), "Conceptual considerations in moving from face-to-face to online teaching", *International Journal on E-Learning*, Vol. 19 No. 2, pp. 139-159.
- Had, M.Z.C. and Ab Rashid, R. (2019), "A review of digital skills of Malaysian English language teachers", *International Journal of Emerging Technologies in Learning (IJET)*, Vol. 14 No. 2, pp. 139-145.
- Hague, C. and Payton, S. (2010), "Digital literacy across the curriculum. FutureLab", available at: <https://www.nfer.ac.uk/publications/futl06/futl06.pdf>
- Hartshorne, R., Baumgartner, E., Kaplan-Rakowski, R., Mouza, C. and Ferdig, R.E. (2020), "Special issue editorial: preservice and inservice professional development during the COVID-19 pandemic", *Journal of Technology and Teacher Education*, Vol. 28 No. 2, pp. 137-147.
- Hodges, C., Moore, S., Lockee, B., Trust, T. and Bond, A. (2020), "The difference between emergency remote teaching and online learning", *Educause Review*, Vol. 27, available at: <https://er.educause.edu/articles/2020/3/the-difference-between-emergency-remote-teaching-and-online-learning>
- Horvitz, B.S., Beach, A.L., Anderson, M.L. and Xia, J. (2015), "Examination of faculty self-efficacy related to online teaching", *Innovative Higher Education*, Vol. 40 No. 4, pp. 305-316.
- Kebritchi, M., Lipschuetz, A. and Santiago, L. (2017), "Issues and challenges for teaching successful online courses in higher education: a literature review", *Journal of Educational Technology Systems*, Vol. 46 No. 1, pp. 4-29.
- König, J., Jäger-Biela, D.J. and Glutsch, N. (2020), "Adapting to online teaching during COVID-19 school closure: teacher education and teacher competence effects among early career teachers in Germany", *European Journal of Teacher Education*, Vol. 43 No. 4, pp. 608-622.
- Loeb, S., Dynarski, S.M., McFarland, D., Morris, P., Reardon, S. and Reber, S. (2017), *Descriptive Analysis in Education: A Guide for Researchers*, Institute of Education Studies, London, available at: <https://ies.ed.gov/ncee/pubs/20174023/pdf/20174023.pdf>
- Lynch, M. (2020), "E-Learning during a global pandemic", *Asian Journal of Distance Education*, Vol. 15 No. 1, pp. 189-195.
- Martin, F., Wang, C., Budhrani, K., Moore, R.L. and Jokiah, A. (2019), "Professional development support for the online instructor: perspectives of US and German instructors", *Online Journal of Distance Learning Administration*, Vol. 22 No. 3, pp. 1-17.
- Nasri, M.N., Husnin, H., Mahmud, S.N.D. and Halim, L. (2020), "Mitigating the COVID-19 pandemic: a snapshot from Malaysia into the coping strategies for pre-service teachers' education", *Journal of Education for Teaching*. doi: [10.1080/02607476.2020.1802582](https://doi.org/10.1080/02607476.2020.1802582).
- Raman, K., Othman, N. and Affandi, H. (2019), "Information communication and technology (ICT) usage gaps between urban and rural schools", *Malaysian Journal of Education*, Vol. 44 No. 1SI, pp. 109-119.

-
- Rasheed, R.A., Kamsin, A. and Abdullah, N.A. (2020), "Challenges in the online component of blended learning: a systematic review", *Computers and Education*, Vol. 144, p. 103701.
- Rhode, J., Richter, S. and Miller, T. (2017), "Designing personalized online teaching professional development through self-assessment", *TechTrends*, Vol. 61 No. 5, pp. 444-451.
- Sarawak State Education Department (2020), "Statistik", available at: <https://jpnsarawak.moe.gov.my/en/>
- Tudor, S.L. (2020), "E-inclusion versus digital divide—a challenge for Romanian educational system within the context of CORONAVIRUS pandemic growth", *Educația Plus*, Vol. 26 No. 1, pp. 374-381.
- UNESCO (2020), "Covid-19 impact on education", available at: <https://en.unesco.org/covid19/educationresponse>
- Van Gorp, K., Giupponi, L., Uebel, E.H., Dursun, A. and Swinehart, N. (2019), "Defining teachers' readiness for online language teaching: toward a unified framework", in Meunier, F., Van de Vyver, J., Bradley, L. and Thoušný, S. (Eds), *CALL and Complexity: Short Papers from EUROCALL 2019*, Research-Publishing.net, Villans.
- Vang, K., Martin, F. and Wang, C. (2020), "Examining community college faculty perceptions of their preparedness to teach online", *Journal of Applied Research in the Community College*, Vol. 27 No. 1, pp. 45-63.
- Walters, A. (2020), "Inequities in access to education: lessons from the COVID-19 pandemic", *The Brown University Child and Adolescent Behavior Letter*, Vol. 36 No. 8, p. 8.
- Whalen, J. (2020), "Should teachers be trained in emergency remote teaching? Lessons learned from the COVID-19 pandemic", *Journal of Technology and Teacher Education*, Vol. 28 No. 2, pp. 189-199.
- Whittle, C., Tiwari, S., Yan, S. and Williams, J. (2020), "Emergency remote teaching environment: a conceptual framework for responsive online teaching in crises", *Information and Learning Sciences*, Vol. 121 Nos 5/6, pp. 311-319, doi: [10.1108/ILS-04-2020-0099](https://doi.org/10.1108/ILS-04-2020-0099).

Corresponding author

Ida Fatimawati Adi Badiozaman can be contacted at: ifaBadiozaman@swinburne.edu.my

For instructions on how to order reprints of this article, please visit our website:

www.emeraldgrouppublishing.com/licensing/reprints.htm

Or contact us for further details: permissions@emeraldinsight.com