

Malaysian Teachers' Perceptions towards Emergency Remote Teaching (ERT): An Analysis based on School Level and Subjects Taught (Persepsi Guru-guru Malaysia terhadap Pendidikan atas Talian dalam Keadaan Terdesak: Analisis berdasarkan Tahap Sekolah dan Matapelajaran yang Diajar)

Daron Benjamin Loo

ABSTRACT

This study analyses teachers' perceptions towards emergency remote teaching (ERT), based on the level and subject area taught. Perception data was collected through an online anonymous survey, which contained 30 survey items on a 5-point Likert scale. There were 97 participants who completed the survey. The data was analysed using descriptive statistics. The main findings include teachers of all levels and subjects having a clear understanding of students' current learning situation, yet there were some uncertainty regarding the planning and implementation of online teaching and learning, especially among primary-level teachers and teachers of science subjects. Another major finding was the agreement among teachers regarding the documentation of teaching experiences and sharing these experiences with others. Based on these findings, it can be concluded that while there is a perception that ERT is different from regular online teaching, there remains challenges in the implementation of online classes. A potential way to mitigate these challenges may be to encourage teachers to share, so as to inspire each other to identify potential and feasible ways to teach.

Key Words: Emergency remote teaching; Teacher perceptions; Primary school; Secondary school; School subjects

ABSTRAK

Penyelidikan ini menganalisis persepsi guru-guru terhadap pendidikan atas talian dalam keadaan terdesak (Emergency Remote Teaching), berdasarkan tahap sekolah dan matapelajaran yang diajar. Data persepsi dikumpulkan melalui tinjauan tanpa nama secara atas talian, yang mengandungi 30 item tinjauan pada skala Likert 5 mata. 97 orang peserta menyelesaikan tinjauan ini. Data dianalisis menggunakan statistik deskriptif. Penemuan utama merangkumi guru dari semua tahap dan matapelajaran yang mempunyai pemahaman yang jelas mengenai situasi pembelajaran semasa pelajar; namun terdapat beberapa ketidakpastian mengenai perancangan dan pelaksanaan pengajaran dan pembelajaran atas talian, terutama di kalangan guru sekolah rendah dan guru matapelajaran sains. Penemuan utama lain adalah kesepakatan di antara guru mengenai dokumentasi pengalaman mengajar dan perkongsian pengalaman ini dengan guru-guru. Berdasarkan penemuan ini, adalah disimpulkan bahawa walaupun terdapat persepsi bahawa pendidikan atas talian dalam keadaan terdesak (Emergency Remote Teaching) adalah berbeza dengan pengajaran atas talian pada waktu biasa, masih terdapat cabaran dalam pelaksanaan kelas atas talian. Cara yang berpotensi untuk mengatasi cabaran ini adalah dengan mendorong guru-guru untuk berkongsi pengalaman, sehingga dapat saling memberi ilham untuk mengenal pasti cara-cara yang berpotensi dan sesuai untuk mengajar.

Kata Kunci: Pendidikan atas talian dalam keadaan terdesak; Persepsi guru-guru; Sekolah rendah; Sekolah menengah; Matapelajaran sekolah

INTRODUCTION

Teachers of different educational levels around the world have been forced to resort to online teaching due to the Covid-19 pandemic. This online shift, up until today, has largely remained dynamic, as educational leaders and institutions worldwide respond to the fluctuating number

of Covid-19 cases in their communities. This dynamic situation has led to unforeseen changes that disrupt teaching and learning processes. To work through these disruptions, many teachers find themselves engaging in Emergency Remote Teaching (ERT). ERT was defined by Hodges, Moore, Lockee, Trust, and Bond (2020) as a short-term change in the teaching and learning mode of a lesson or a class, in light of a crisis. Furthermore, they state that ERT

should not be compared to a typical online teaching and learning setting, as the primary objective of ERT

“is not to re-create a robust educational ecosystem but rather to provide temporary access to instruction and instructional supports in a manner that is quick to set up and is reliably available during an emergency or crisis.”

(Hodges et al. 2020).

Over the past few months, various reports have been shared regarding ERT. For instance, ERT has led teachers to consider alternative modes of learning and the potential reach that their online classrooms may have to other parts of the world (e.g., Toquero 2020). Moreover, there have been reports about teaching practices being reconfigured with the support of online tools to suit the contextual needs of a classroom (e.g., Loo 2020), and the redevelopment of materials (e.g., Tarrayo & Anudin 2021). All of these reconfigurations of teaching and learning methods have also highlighted issues that affect the educational experiences of both the teachers and students. For example, some reports highlighted the issue of convenience and privacy at home for work or studies, especially at a time when household members find themselves confined within their home (e.g., Ferri et al. 2020). There were also reports calling for students' well-being to be considered in lieu of the sudden shift to online home-based learning (Alvarez 2020). While these reports on ERT have provided insights regarding teachers' response to disruption, many of them have focused primarily on the higher education context (e.g., Juhary 2020; Schlesselman 2020; Watson Todd 2020), with minimal studies about the implementation of ERT at other educational levels. Thus, to address this research gap, this study offers an analysis of teachers' perceptions regarding ERT at the primary and secondary level, and also taking into account subjects taught. While this study may be situated in Malaysia, its findings may offer pertinent considerations for teachers and school administrators in other contexts.

LITERATURE REVIEW

TEACHERS' PERCEPTIONS TOWARDS INFORMATION COMMUNICATIONS AND TECHNOLOGY IN MALAYSIA

Before delving further into ERT, it will be valuable to form some general insights regarding the use of information communications and technology (ICT) in Malaysia. Generally, Malaysian teachers are keen to consider new methods to support teaching, such as the use of virtual learning environments (Rashid et al. 2021) or the general

integration of technology (Abdul Rauf & Swanto 2020). The optimistic outlook can also be extended to pre-service teachers. Through teachers' positive disposition, studies have been able to provide meaningful and contextual insights regarding the opportunities or challenges encountered when integrating information, computer, and technology tools in their classrooms (Lawrence & Tar 2018). Despite teachers' optimism, however, there are various factors that impede teachers' integration of ICT, such as the availability of ICT infrastructure, or even the sufficiency of time to prepare materials (Fook et al. 2011). Teachers have also reported that creating online materials for students is time-consuming and complicated, especially if there is a lack of suitable ICT skills or limited access to suitable software (Kit & Ganapathy 2019). Moreover, these challenges may be found within the learning experience itself, such as the lack of work protocol to guide students when engaging in online learning, and even within the learning platform, such as the lack of cloud storage to retain teaching materials or students' work (Kumar et al. 2020). These challenges may be exacerbated by the heavy emphasis on face-to-face teaching in the Malaysian school setting (Noh et al. 2021). It may also be that teachers have a personal preference that is adverse to online teaching, despite having the skills and infrastructure to do so (e.g., Noh et al. 2019).

PERCEPTIONS TOWARDS ERT IN MALAYSIA

The challenges regarding ICT implementation and integration may also be reflected in some recent studies regarding ERT in Malaysia, of which many are situated in the higher education context (e.g., Rahim 2020). One prominent challenge that has surfaced as a result of ERT implementation during this pandemic is the realization of the significance of equity, or lack of, that affects both lecturers and students. For ERT to be delivered equitably and optimally, there needs to be efforts to ensure that teaching methods are as inclusive as possible. This means that the use of software or programs should not be those that are restrictive, such as those that require subscription or payment. This also includes utilizing software with a user-friendly interface, so as to not complicate the online teaching and learning experience for both lecturers and students (Nasri et al. 2020). Besides the issue of access and infrastructure to support online teaching, ERT has also brought attention to the issue of copyright, which has not been discussed by other studies in the context of Malaysia. In a study by Ma et al. (2021), it was found that in one Malaysian higher education institution, many lecturers still did not understand the legal ramifications of converting and uploading commercial materials onto the Internet without

first seeking proper permission or clearance from the publishers. Furthermore, while ERT is conceptualised differently from online teaching, it was found that many lecturers still did not distinguish the different online teaching modes. Furthermore, there were those who held the perception that any form of online teaching lacks quality, in spite of their positive outlook towards the use of ICT tools (Juhary 2020).

TEACHERS' PERCEPTIONS ACCORDING TO LEVEL AND SUBJECT: ARE THEY THE SAME?

While Malaysian teachers generally have a positive disposition towards ICT, can this assumption be extended across levels taught or subjects taught? The earlier discussion presented in this paper seems to indicate that teachers teaching at different levels generally viewed ICT in a positive light. Beyond Malaysia, however, there have been studies that indicated how secondary school teachers are more open to the idea of integrating ICT into their classrooms, mainly due to the relevance and involvement prospects afforded by ICT tools. What this means is that features of ICT tools coincide better with the teaching and learning opportunities found in the secondary school learning environment, as there may be tasks or lessons that require more hands-on activities to allow a more student-centred learning environment. This represents the involvement utility value that ICT tools may have, such as that reported by Kale (2018).

In terms of subject area, there also seems to be a generally positive disposition held by teachers. For the teaching of the English language in Malaysia, Kit and Ganapathy (2019), as well as Abdul Rauf and Swanto (2020), reported that teachers held positive beliefs and attitudes towards ICT. Students, on the other hand, also rely on accessible ICT tools such as translation software to help them learn, as reported by Bahri, Mahadi, and Tengok (2016) in the learning of Bahasa Malaysia by international students. The positive disposition is also observed among studies that involved Malaysian teachers from science subjects. For instance, Belgheis and Kamalludeen (2018) reported mathematics teachers' positive disposition towards an ICT tool – GeoGebra (a virtual learning environment to support mathematical learning), especially among those who have already had the experience of using the tool.

While these studies may be useful as a starting point to discern differences between teachers of different levels or subjects, their findings are to be understood in light of ICT use in ordinary circumstances, that is, in the absence of the Covid-19 pandemic. Hence, given that teachers are currently dealing with a dynamic situation where they may need to implement ERT almost spontaneously without

planning, these findings about ICT integration in normal times may not represent issues found in the prevailing situation. Hence, this study aims to offer a more realistic account in light of the pandemic. To do so, this study will analyse Malaysian teachers' perceptions towards ERT, with an interest in the school levels and subject areas that they teach. Findings of this study may serve as case studies for other teachers and school administrators. They may also identify particular aspects of ERT which may require further attention. The main research questions are:

1. What are Malaysian teachers' perceptions towards ERT according to the level taught?
2. What are Malaysian teachers' perceptions towards ERT according to the subjects taught?

METHODOLOGY

STUDY SETTING AND PARTICIPANTS

This study recruited participants through convenience sampling at an online seminar on ERT. There were approximately 120 teachers from fourteen private schools (two secondary schools and the remaining are primary schools) from around Sabah, Malaysia, who participated in this ERT seminar. The organisers of the seminar had given their approval and requested for the study to be done. The context of this study is considered interesting, due to it initiating discussions around the nation about digital poverty and socioeconomic divide in Sabah (Yeo 2020).

DATA COLLECTION TOOL

This study utilises a quantitative approach to determine the perception of teachers. The quantitative approach is considered suitable to build an overall picture based on responses of a large cohort of participants (Parylo 2012). Perception data of the participants was collected through an anonymous online survey that was distributed to the teachers at the end of the seminar. On top of being anonymous, the teachers who attended the seminar were also informed that the survey was not compulsory. Online surveys are convenient to administer, and it is also more ethically sound in comparison to paper-based surveys (see Roberts & Allen 2015). The survey comprised two parts. The first part collected demographic details, where details about the level of education and subjects taught are collected. There were 25 subjects listed (19 social science subjects and 6 science subjects), and teachers can choose all that applied. The second part collected the teachers' perceptions.

The second part consisted of 30 survey items, which were presented on a 5-point Likert scale where teachers could indicate their level of agreement. The survey items were created by the researcher based on the four categories of the context, input, process, and products (CIPP), all of which form an evaluation model proposed by Stufflebeam and Zhang (2017). According to Stufflebeam and Zhang (2017), context evaluation refers to the assessment of dynamic conditions presented in a learning environment; input evaluations aim to assess the feasibility of implementation strategy, including scope of financial or human resources; process evaluation assesses a teaching or learning approach as it is carried out by teachers; and finally, product evaluation identifies outcomes, whether they are expected or unexpected, or long- or short-term effects of creating a particular learning environment. The CIPP model is utilised in this study as it is considered suitable to evaluate ERT in different educational settings (Hodges et al. 2020). In the survey, the context category contained 8 items; input contained 8 items; process contained 9 items; and products contained 5 items. The survey is in English, and its items were verified and approved by the organisers of the seminar. In this verification process, the language in some of the items were revised to avoid confusion or misunderstanding.

DATA ANALYSIS

The perception data gleaned from the online survey will be analysed using descriptive statistics. Specifically, the mean

and standard deviation for each item will be calculated. The mean will provide a scoping view of the participants' responses, while the standard deviation will reflect the dispersion of the data, which can serve as further points of discussion (see Trakulkasemsuk 2014). The interpretation of mean score in Table 1 was adapted from Khan, Razak, and Kenayathulla (2021), and Table 2 presents the interpretation of standard deviation.

TABLE 1. Interpretation of mean score

Mean score	Interpretation
1.00 to 2.33	Low
2.34 to 3.66	Medium
3.67 to 5.00	High

TABLE 2. Interpretation of standard deviation

Standard deviation	Interpretation
<1	Low dispersion
>1	High dispersion

FINDINGS AND DISCUSSION

Let us begin with a demographic overview of the participants. Of the 120 participants, 80.8% (N=97) completed the anonymous online survey. The demographic details of the participants are presented in Table 3. In the subsequent following, data addressing the research questions will be presented and discussed according to the four CIPP categories mentioned earlier.

TABLE 3. Demographic profile of participants

Gender	
Male	35.1% (N=34)
Female	64.9% (N=63)
Level taught	
Secondary	27.8% (N=27)
Primary	72.2% (N=70)
Subjects taught	
Mix (of social science and science subjects)	41.2% (N=40)
Social science subjects	45.4% (N=44)
Science subjects	13.4% (N=13)

RESEARCH QUESTION 1

Research question 1 sought to analyse the perceptions towards ER according to the level taught. Table 4 presents

the mean and standard deviation of the participants' responses, separated according to the level taught (secondary-level and primary-level).

TABLE 4. Teachers' perceptions according to level taught

No.	Category/Survey Item	Primary		Secondary	
		M	SD	M	SD
<i>Context</i>					
	I know what my students need to study well from home.	3.8	0.7	3.9	0.7
	I know the problems my students will face when they study from home.	4.2	0.8	4.2	0.7
	I know what to do to support my students as they study from home.	3.5	0.6	3.5	0.6
	I know how to contextualise lessons to suit studying from home.	3.5	0.7	3.6	0.7
	I know how to contextualise assignments to suit studying from home.	3.5	0.6	3.7	0.7
	I know how to contextualise assessments to suit studying from home.	3.4	0.6	3.7	0.8
	I know how my students' motivation will be affected as they study from home.	4.1	0.8	4.3	0.7
	I know how to make use of the current situation to deliver optimal teaching.	3.4	0.8	3.4	0.6
<i>Input</i>					
	I am prepared to teach online.	3.3	0.8	3.9	0.9
	I have backup plans in light of the current uncertainty.	3.3	0.7	3.7	0.6
	It is feasible to teach online.	3.2	0.6	3.3	0.8
	I am able to meet some targets even though I am teaching online.	3.2	0.7	3.5	0.8
	I have support to implement my teaching online.	3.2	0.7	3.4	0.8
	I learn from my colleagues about online teaching.	3.6	0.8	4.0	0.6
	I learn from my students about online teaching.	3.0	1.1	3.6	0.8
	I plan my online teaching according to what I am comfortable with.	4.0	0.8	4.0	0.6
<i>Process</i>					
	I am able to monitor the progress of my students.	3.1	0.8	3.4	0.9
	I am able to assess how well I teach online.	3.1	0.7	3.1	0.6
	I make changes as I go along.	3.8	0.7	4.1	0.7
	I think changes are necessary because teaching online is not the same as teaching in the classroom.	4.5	0.7	4.7	0.5
	The school administrators know that teaching online is different from classroom teaching.	4.2	0.9	4.5	0.6
	The students know that learning online is different from classroom learning.	4.2	0.7	4.2	0.9
	The students' parents know that learning online is different from classroom learning.	4.2	0.8	3.9	1.1
	I document some of my experiences teaching online for myself.	3.6	0.9	3.6	0.8
	I share some of my teaching experiences to others.	3.7	0.9	3.9	0.7
<i>Product</i>					
	I saw intended or expected outcomes from online teaching.	3.6	0.8	3.6	0.6
	I saw unintended or unexpected outcomes from online teaching	3.6	0.7	3.5	0.6
	I am able to estimate the effort I put in for online teaching.	3.5	0.7	3.7	0.7
	I am ready to teach online whenever there is a sudden and urgent need.	3.5	0.8	4.1	0.6
	I am not ready to teach online whenever there is a sudden and urgent need.	2.8	1	2.1	0.9

Generally, the responses for the items in the category of context fell within the range of medium to high, with a standard deviation of <1 . In terms of level of education taught, there were similarities between the primary-level teachers with the secondary-level teachers (Items #1, #2, and #7). Participants who taught at the primary level indicated a high level of agreement about knowing what their students need in order to study well from home ($M=3.8$,

$SD=0.7$). Primary school teachers' perception about knowing students' problems when studying at home was also high ($M=4.2$, $SD=0.8$). As a result, the primary-level teachers also perceived knowing how their students' motivation will be affected when studying at home ($M=4.1$, $SD=0.8$). The same items also were perceived similarly by secondary-level teachers. They perceived knowing what their students need in order to study well from home ($M=3.9$,

SD=0.7). Secondary-level teachers also perceived knowing students' problems when they study from home ($M=4.2$, $SD=0.7$). The perception about knowing how students' motivation will be affected when studying from home was also high in agreement ($M=4.3$, $SD=0.7$). The high level of agreement observed between primary-level and secondary-level teachers may be attributed teachers' clear understanding of their students' experiences at home. This may be expected, since ERT has been regularly enacted for more than a year. Furthermore, understanding students' context is a crucial variable that affects teachers' readiness to enact ERT (Salayo et al. 2020).

In the next category, input, the perceptions of both groups were also similar (Items #14 and #16). The perception about learning from colleagues about online teaching were high for the primary-level teachers ($M=3.6$, $SD=0.8$), as well as the secondary-level teachers ($M=4.0$, $SD=0.6$). Both groups of teachers also indicated a high level of agreement about planning lessons in accordance to what they were comfortable with (primary-level teachers: $M=4.0$, $SD=0.8$; secondary-level teachers: $M=4.0$, $SD=0.6$). This reiterates the findings of Tarrayo and Anudin (2021), where teachers worked with materials that were familiar and available to them in order to conduct ERT. While the other items seemed to present a medium agreement among the participants, Item #15 had a high dispersion among the primary-level teachers ($SD=1.1$). This may be anticipated, as primary school students may require more guidance in comparison to secondary school students. As such, teachers may most likely be taking the lead when deciding on teaching and learning activities for primary school students, and would probably opt for teaching approaches that are feasible for younger students (Dotan et al. 2021).

For the category of process, there were 7 items that received a high level of agreement by both the primary-level teachers and the secondary-level teachers (Items #19 to #25). Primary-level teachers agreed that they made changes as they went along ($M=3.8$, $SD=0.7$). They also perceived changes were necessary due to the different nature of teaching online ($M=4.5$, $SD=0.7$). This may be due to the need for teachers of young children to figure out what works best, especially if minimal support is given by parents (Ewing & Cooper 2021). The perception regarding the difference of teaching online was also believed to be shared by the school administrators ($M=4.2$, $SD=0.9$), as well as the primary school students ($M=4.2$, $SD=0.7$) and their parents ($M=4.2$, $SD=0.8$). The primary-level teachers also agreed that they documented their teaching ($M=3.6$, $SD=0.9$) and shared what they did with colleagues ($M=3.7$, $SD=0.9$).

The perceptions held by the primary-level teachers were reflected in the perceptions of the secondary-level teachers. They perceived making changes as they went

along ($M=4.1$, $SD=0.7$). They also perceived that teaching online was different than classroom teaching ($M=4.7$, $SD=0.5$). Furthermore, the secondary-level teachers perceived that this difference was recognised by the school administrators ($M=4.5$, $SD=0.6$), secondary school students ($M=4.2$, $SD=0.9$); nonetheless, the perception about whether secondary school students' parents understood the difference had a high dispersion ($SD=1.1$). Again, this may be reflective of a pragmatic approach taken by students' parents, where they remain distant or unengaged with the teacher (Ewing & Cooper 2021). Similar to the primary-level counterpart, the secondary-level teachers also documented their teaching for personal use ($M=3.6$, $SD=0.8$) and for sharing ($M=3.9$, $SD=0.7$). For ERT to be planned accordingly, the realization that it is different from in-class teaching or online teaching under normal circumstances is pivotal. It is through this realization by different entities (teachers, administrators, students, and parents) that realistic expectations can be formed (Hodges et al. 2020). Another interesting point that is brought up in this category is the importance of sharing with one's community of practice. As reported by Khan, Razak, and Kenayathulla (2021), sharing not only strengthens trust among those in the community, but it will also inspire others to seek avenues to further their professional development.

In the fourth category, product, there was at least one item (#26) that received a high perception of agreement by both groups of teachers. Both primary-level and secondary-level teachers perceived that they saw the intended outcomes from teaching online ($M=3.6$, $SD=0.8$; $M=3.6$, $SD=0.6$, respectively). Both groups also disagreed that they were not ready to teach online when there was a sudden or urgent need (Item #30); nonetheless, the response of the primary-level teachers were dispersed ($SD=1.0$). Several items in this category, however, saw a high agreement perception by one or the other group of teachers. For instance, the primary-level teachers had a high level of agreement about encountering unexpected outcomes from online teaching (Item #27, $M=3.6$, $SD=0.7$). The secondary-level teachers, on the other hand, seemed to have a better gauge about the effort needed for teaching online (Item #28, $M=3.7$, $SD=0.7$). They were also ready to teach when a sudden or urgent need arises (Item #29, $M=4.1$, $SD=0.6$). Perhaps what is observed here is the advantage of teaching secondary school students, who are more mature when compared to primary-level students. As such, they may be more capable to carry out tasks independently (Kale 2018).

RESEARCH QUESTION 2

Next, we present data to address the research question 2, which aimed to analyse the teachers' perceptions according

to the subjects taught. As mentioned earlier, the teachers involved in this study were grouped either as teaching a mix of social science and science subjects, social science subjects, or science subjects. Table 5 presents data of the participants' perceptions.

TABLE 5. Teachers' perceptions according to subjects taught

No.	Category/Survey Item	Mix		Social Science		Science	
		M	SD	M	SD	M	SD
<i>Context</i>							
	I know what my students need to study well from home.	3.8	0.8	3.8	0.5	3.8	1.0
	I know the problems my students will face when they study from home.	4.2	0.8	4.3	0.7	3.5	0.9
	I know what to do to support my students as they study from home.	3.5	0.6	3.5	0.6	3.6	0.5
	I know how to contextualise lessons to suit studying from home.	3.6	0.7	3.5	0.7	3.4	0.5
	I know how to contextualise assignments to suit studying from home.	3.5	0.7	3.6	0.6	3.5	0.7
	I know how to contextualise assessments to suit studying from home.	3.4	0.7	3.5	0.7	3.5	0.8
	I know how my students' motivation will be affected as they study from home.	4.4	0.7	4.0	0.8	4.1	0.8
	I know how to make use of the current situation to deliver optimal teaching.	3.2	0.9	3.6	0.6	3.3	0.5
<i>Input</i>							
	I am prepared to teach online.	3.5	0.8	3.5	0.8	3.3	1.1
	I have backup plans in light of the current uncertainty.	3.4	0.7	3.5	0.7	3.3	0.6
	It is feasible to teach online.	3.2	0.8	3.3	0.7	3.2	0.6
	I am able to meet some targets even though I am teaching online.	3.3	0.8	3.3	0.7	3.1	0.6
	I have support to implement my teaching online.	3.1	0.8	3.4	0.6	3.4	0.7
	I learn from my colleagues about online teaching.	3.7	0.8	3.8	0.8	3.8	0.8
	I learn from my students about online teaching.	3.1	1.2	3.1	1.0	3.2	0.9
	I plan my online teaching according to what I am comfortable with.	4.1	0.7	3.8	0.7	4.2	0.8
<i>Process</i>							
	I am able to monitor the progress of my students.	3.2	0.9	3.2	0.8	3.5	1.0
	I am able to assess how well I teach online.	3.1	0.8	3.1	0.6	3.2	0.4
	I make changes as I go along.	3.8	0.7	4.0	0.7	3.5	0.7
	I think changes are necessary because teaching online is not the same as teaching in the classroom.	4.6	0.5	4.6	0.6	4.1	1.1
	The school administrators know that teaching online is different from classroom teaching.	4.4	0.8	4.4	0.7	3.8	1.2
	The students know that learning online is different from classroom learning.	4.2	0.8	4.2	0.8	4.2	0.7
	The students' parents know that learning online is different from classroom learning.	4.1	0.9	4.1	1.0	4.0	0.7
	I document some of my experiences teaching online for myself.	3.6	0.8	3.7	0.9	3.2	1.0
	I share some of my teaching experiences to others.	3.7	0.7	3.9	0.9	3.5	0.9
<i>Product</i>							
	I saw intended or expected outcomes from online teaching.	3.6	0.7	3.7	0.8	3.5	0.7
	I saw unintended or unexpected outcomes from online teaching	3.6	0.7	3.7	0.7	3.2	0.4
	I am able to estimate the effort I put in for online teaching.	3.7	0.7	3.6	0.7	3.4	0.5
	I am ready to teach online whenever there is a sudden and urgent need.	3.6	0.7	3.8	0.8	3.6	0.7
	I am not ready to teach online whenever there is a sudden and urgent need.	2.6	1.0	2.7	1.0	2.5	1.0

In terms of context, the teachers were generally in agreement about knowing what their students needed, in order to study well from home (Item #1) (mix, $M=3.8$, $SD=0.8$; social science subjects, $M=3.8$, $SD=0.5$); nonetheless, while the agreement was high for teachers who taught science ($M=3.8$), the dispersion was also high ($SD=1.0$). The teachers of science subjects also appeared different because they had a medium level of agreement about knowing potential problems that may affect their students (Item #2, $M=3.5$, $SD=0.9$), while teachers from the other two groups demonstrated a high level of agreement. In the next item (#3), once again teachers of science subjects were distinct in terms of having a high level of agreement about knowing the type of support students need ($M=3.6$, $SD=0.5$). For item #4, only teachers who taught a mix of subjects perceived knowing how to contextualise lessons ($M=3.6$, $SD=0.7$), but those teaching social science subjects showed a high level of agreement with regards to contextualizing assignments ($M=3.6$, $SD=0.6$). Furthermore, only teachers of social science subjects perceived their ability to optimise teaching in a positive manner ($M=3.6$, $SD=0.6$). All of the teachers, however, showed a high level of agreement about knowing how students' motivation may be affected as they studied from home (Item #7).

The findings from the first category, when comparing teachers according to their subjects taught, is interesting. It seems to be the case that despite knowing the kind of support and motivation for their students, the science subject teachers were seemingly uncertain about how teaching and learning can be done, including how to contextualise their lessons. This may be due to the complexity of materials of the different science subjects, but also the tendency of science teachers to be didactic in their teaching approach. This, unfortunately, inhibits lessons that are appropriate to an online platform, such as that reported by Kaur, Gopinathan, and Raman (2020) and Saleh, Muhammad, and Syed Abdullah (2020). Another reason could be the lack of appropriate ICT infrastructure to support the teaching of science subjects in an online platform (Kit & Ganapathy 2019; Kumar et al. 2020).

In the category of input, there were several items with a high dispersion. For instance, the teachers of science subjects showed a high dispersion for Item # 9 ($SD=1.1$), regarding their perception about being prepared to teach online. This echoes what was reported in the previous category, about how teachers of science subjects seem to be uncertain about teaching online. Furthermore, a high dispersion was also observed in Item #15, about learning from students regarding online teaching, for teachers teaching a mix of subjects ($SD=1.2$) and social science subjects ($SD=1.0$). This finding is crucial because it shows how teachers may not be taking into account learners'

knowledge or experiences about online learning. This may lead to teachers imposing methods that students may find challenging, thus demotivating them from engaging with online lessons. Other studies, such as that Chung, Subramaniam, and Dass (2020) have shown that knowing students' preferences can be pivotal in ensuring an extent of learning takes place (see also Kumar et al. 2020). Nonetheless, all groups of teachers perceived that they could learn from their colleagues about online teaching (Item #14). The three groups also perceived their online teaching was done in accordance to their comfort level (Item #16). This illustrates teachers having an understanding of their own capabilities, and perhaps also the kind of support available to them. The results in this category also reiterate what had been mentioned earlier, which is, the significance of creating communities where teachers can share challenges and even best practices to inspire other colleagues. This form of sharing in a trusted circle of teachers going through similar difficulties can also act as a support system in uncertain times (McLaughlan 2021).

Next, in the category of process, it is interesting to note that there is high dispersion in the responses of teachers of science subjects ($SD \geq 1.0$) for Items #17, #20, #21, and #24. This is indicative of differences in perception, in spite of some items showing a high level of agreement (Items #20 and #21). The teachers of science subjects also stood out because only their counterparts who taught a mix of subjects, and who taught social science subjects agreed that changes were made as they went along. Nonetheless, all of the groups of teachers perceived that changes were necessary as teaching online was different than classroom teaching (Item #20), and all of them also agreed that this difference was known to school administrators (Item #21). Perhaps what may be affecting the teachers of science subjects is the uncertainty regarding teaching methods that were available and suitable. As mentioned earlier on, studies have reported how teachers of science subjects have been found to rely on didactic instruction. Yet, if other teaching approaches are considered, students taking the science subjects may not necessarily be able to cope (e.g., Saleh et al. 2020) This issue might be exacerbated when done remotely and in an online setting, as learning processes commonly found in science subjects might require complex (and even expensive) software, such as virtual learning environment used by Rashid, Shukor, Tasir, and Na (2021), or GeoGebra, as discussed by Belgheis and Kamalludeen (2018).

In the same category, all the teachers also held the same perception that students and their parents know that learning online was different from classroom learning (Items #22 and #23), with an indication of high dispersion for Item #23 by teachers of social science subjects ($SD=1.0$). The results also showed that teachers teaching a mix of subjects and

social science subjects documented their experience teaching online ($M=3.6$, $SD=0.8$; $M=3.7$, $SD=0.9$, respectively) and shared their experiences with colleagues ($M=3.7$, $SD=0.7$; $M=3.9$, $SD=0.9$, respectively). This form of record-keeping encourages teachers to reflect upon their work, which may prompt further improvement (Jantori, 2020). While it is commendable that teachers who teach a combination of subjects and social science subjects value personal experiences and shared these experiences, it raises concerns for the teachers of science subjects, who may be struggling with a lack of alternate teaching methods for different aspects of scientific learning (Rahman et al. 2020).

The teachers' perceptions according to subjects taught, for the category of product, saw a further distinction of teachers of science subjects. For Item #26, teachers who taught a mix of subjects, and social science subjects seemed to be able to discern intended outcomes ($M=3.6$, $SD=0.7$; $M=3.7$, $SD=0.8$, respectively). This same perception trend was observed in Item #27, where both groups of teachers (mix and social science) reported a high level of agreement for unintended or unexpected outcomes. Similarly, there was a high level of agreement in terms of effort estimation for teaching online by teachers teaching a mix of subjects ($M=3.7$, $SD=0.7$) and social science subjects ($M=3.6$, $SD=0.7$). These results further distinguish teachers of science subjects. This brings about several observations regarding science-based classes, which are, that assessment of students' understanding and progress is difficult to do remotely as it is typically done in-person. This may be the case especially if classes are taught in a didactic manner. Another observation may be that the ICT tools available to the teachers of science subjects do not lend themselves to being effective to assess students' problem-solving skills, which are crucial in STEM subjects in Malaysia. All three groups of teachers (mix, social science, and science) reported a high level of agreement regarding their perceived readiness to teach if there was a sudden need (Item #29); nonetheless, there was a high dispersion in the final item (#30) for all three groups ($SD=1.0$). What this indicates is perhaps the varied extent of readiness among the participants of this study.

CONCLUSION

The objective of this study was to analyse the perceptions towards ERT by Malaysian teachers according to the school level taught and the subject area taught. This analysis was carried out to provide more insights regarding ERT at the primary and secondary school, which is a major contribution, as many of the recent reports about ERT in Malaysia have come from the higher education setting. Some of the main findings from the analysis include the agreement that ERT

is different, which is crucial as this will identify and shape teaching or learning methods that are suitable and acceptable. Another finding is the understanding that teaching online during the pandemic is different, which is an important distinction to make, as ERT is not comparable to teaching online at normal times. Nonetheless, this understanding does not necessarily translate into knowing what can be done. This was observed especially among the teachers who taught science subjects. All of the teachers were also unsure of how students may be helpful in sharpening online lessons. One more valuable finding from this study is teachers' positive perception towards sharing with their colleagues. Interacting with colleagues is a crucial form of support system as well as a social network where teachers may exchange ideas or best practices, especially in the prevailing public health crisis. Sharing may also inspire the community of teachers to identify feasible online teaching methods that would suit the resources that both students and teachers have. Nonetheless, in spite of these insightful findings, this study was limited by the reliance of only descriptive data. Moreover, the data is teachers' self-report, which may not necessarily be entirely truthful. To verify and triangulate quantitative data, future research should consider including qualitative data, possibly derived from semi-structured interviews or even case studies, where a more in-depth picture of how teachers manage ERT can be drawn.

REFERENCES

- Abdul Rauf, A., & Swanto, S. 2020. Attitudes and technology integration among ESL secondary school teachers in Sabah. *Malaysian Journal of Social Sciences and Humanities*, 5(12), 280-287.
- Alvarez, A. V., Jr. 2020. The phenomenon of learning at a distance through emergency remote teaching amidst the pandemic crisis. *Asian Journal of Distance Education*, 15(1), 144-153.
- Bahri, H., & Mahadi, T. S. T. 2016. Google translate as a supplementary tool for learning Malay: A case study at Universiti Sains Malaysia. *Advances in Language and Literary Studies*, 7(3), 161-167.
- Belgheis, S., & Kamalludeen, R. (2018). The intention to use GeoGebra in the teaching of mathematics among Malaysian teachers. *Malaysian Online Journal of Educational Technology*, 6(1), 109-115.
- Chung, E., Subramaniam, G., & Dass, L. C. 2020. Online learning readiness among university students in Malaysia amidst Covid-19. *Asian Journal of University Education*, 16(2), 46-58.
- Dotan, S., Katzir, T., Lipka, O., & Shaul, S. 2021. Elementary school literacy teachers' perceptions and challenges during COVID-19. *Academia Letters*, 898.
- Ewing, L. A., & Cooper, H. B. 2021. Technology-enabled

- remote learning during COVID-19: perspectives of Australian teachers, students and parents. *Technology, Pedagogy and Education*, 30(1), 41-57.
- Ferri, F., Grifoni, P., & Guzzo, T. 2020. Online learning and emergency remote teaching: Opportunities and challenges in emergency situations. *Societies*, 10(4), 86. <https://doi.org/10.3390/soc10040086>
- Fook, C. Y., Sidhu, G. K., Kamar, N., & Abdul, N. 2011. Pre-service teachers' training in information communication and technology for the ESL classrooms in Malaysia. *Turkish Online Journal of Distance Education*, 12(3), 97-108.
- Hodges, C., Moore, S., Lockee, B., Trust, T., & Bond, A. 2020. The difference between emergency remote teaching and online learning. *EDUCAUSE Review*, 27, 1-12.
- Jantori, P. 2020. Examining Digital Practices of Thai Pre-Service EFL Teachers through Reflective Journals. *Human Behavior, Development and Society*, 21(4), 47-56.
- Juhary, J. 2020. Emergency remote teaching during Covid-19 pandemic: Roles of educators in Malaysia. In M. M. C. Shohel (Ed.), *E-learning and Digital Education in the Twenty-first Century: Challenges and Prospects*. Intechopen.
- Kale, U. 2018. Technology valued? Observation and review activities to enhance future teachers' utility value towards technology integration. *Computers & Education*, 117, 160-174.
- Kaur, A. H., Gopinathan, S., & Raman, M. 2020. Work-in-progress – role of innovative teaching strategies in enhancing STEM education in Malaysia. *2020 6th International Conference of the Immersive Learning Research Network (iLRN)*, 359-362. 10.23919/iLRN47897.2020.9155174
- Kit, L. W., & Ganapathy, M. 2019. The reality of Malaysian ESL teachers' ICT pedagogical practices: Challenges and suggestions. *English Linguistics Research*, 8(3), 39-48.
- Kumar, J. A., Bervell, B., & Osman, S. 2020. Google classroom: Insights from Malaysian higher education students' and instructors' experiences. *Education and Information Technologies*, 25, 4175-4195.
- Lawrence, J. E., & Tar, U. A. 2018. Factors that influence teachers' adoption and integration of ICT in teaching/learning process. *Educational Media International*, 5(1), 79-105.
- Loo, D. B. 2020. Integrating critical thinking in online language tasks: Considerations for an academic writing class. *International Journal of TESOL Studies (Special Issue "ELT in the time of the Coronavirus 2020", Part 1)*, 2(2), 52-61.
- Ma, G., Black, K., Blenkinsopp, J., Charlton, H., Hookham, C., Pok, W. F., Sia, B. C., & Alkarabsheh, O. H. M. 2021. Higher education under threat: China, Malaysia, and the UK respond to the COVID-19 pandemic. *Compare: A Journal of Comparative and International Education*, 1-17. <https://doi.org/10.1080/03057925.2021.1879479>
- McLaughlan, T. 2021. Facilitating factors in cultivating diverse online communities of practice: a case of international teaching assistants during the COVID-19 crisis. *The International Journal of Information and Learning Technology*, 38(2), 177-195.
- Nasri, N. M., Husnin, H., Mahmud, S. N. D., & 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*, 1-8. <https://doi.org/10.1080/02607476.2020.1802582>
- Noh, N. M., Abdullah, N., Teck, W. K., & Hamzah, M. 2019. Cultivating blended learning in teaching and learning: Teachers' intrinsic and extrinsic readiness in Malaysia. *International Journal of Academic Research in Business and Social Sciences*, 8(2), 257-265.
- Noh, N. M., Teck, W. K., Abdullah, N., & Hamzah, M. 2021. Teacher trainees' computer self-efficacy: Its relationships towards implementation of blended learning. *Turkish Journal of Computer and Mathematics Education*, 12(3), 398-405.
- Parylo, O. 2012. Qualitative, quantitative, or mixed methods: An analysis of research design in articles on principal professional development (1998–2008). *International Journal of Multiple Research Approaches*, 6(3), 297-313.
- Rahim, A. F. A. 2020. Guidelines for online assessment in emergency remote teaching during the Covid-19 pandemic. *Education in Medical Journal*, 12(2), 59-68.
- Rahman, M. A., Zakaria, M. S., & Din, R. 2020. Design STEM subject module: A conceptual framework. *2020 IEEE Conference on e-Learning, e-Management and e-Services (IC3e)*, 23-28. 10.1109/IC3e50159.2020.9288391
- Rashid, A. H. A., Shukor, N. A., Tasir, Z., & Na, K. S. 2021. Teachers' perceptions and readiness toward the implementation of virtual learning environment. *International Journal of Evaluation and Research in Education*, 19(1), 209-214.
- Roberts, L. D., & Allen, P. J. 2015. Exploring ethical issues associated with using online surveys in educational research. *Educational Research and Evaluation*, 21(2), 95-108.

- Salayo, J., Fesalbon, J. E. R., Valerio, L. C., & Litao, R. A. 2020. Senior high school teachers' and students' engagements during the emergency remote teaching (ERT): Perceptions on readiness, attitude, and competence. *Studies in Humanities and Education*, 1(1), 74-95.
- Saleh, S., Muhammad, A., & Syed Abdullah, S. M. 2020. STEM project-based approach in enhancing conceptual understanding and inventive thinking skills among secondary school students. *Journal of Nusantara Studies*, 5(1), 234-254.
- Schlesselman, L. S. 2020. Perspective from a teaching and learning center during emergency remote teaching. *American Journal of Pharmaceutical Education*, 84(8). 10.5688/ajpe8142
- Stufflebeam, D. L., & Zhang, G. 2017. *The CIPP evaluation model: How to evaluate for improvement and accountability*. Guilford Publications.
- Tarrayo, V. N., & Anudin, A. G. 2021. Materials development in flexible learning amid the pandemic: perspectives from English language teachers in a Philippine state university. *Innovation in Language Learning and Teaching*, 1-12. <https://doi.org/10.1080/17501229.2021.1939703>
- Toquero, C. M. D. 2020. Emergency remote teaching amid Covid-19: The turning point. *Asian Journal of Distance Education*, 15(1), 185-188.
- Trakulkasemsuk, W. 2014. Understanding Central Tendency. *Proceedings of the International Conference: DRAL 2 / ILA 2014*, 75-83.
- Watson Todd, R. 2020. Teachers' perceptions of the shift from the classroom to online teaching. *International Journal of TESOL Studies*, 2(2), 4-17.
- Yeo, A. 2020, November 30. *Resolving digital poverty in Sabah is the way forward*. Focus Malaysia. <https://focusmalaysia.my/resolving-digital-poverty-in-sabah-is-the-way-forward/>

Daron Benjamin Loo
 Pusat Penataran Ilmu dan Bahasa
 Universiti Malaysia Sabah
 daronloo@ums.edu.my