Teachers' perceptions of the new virtual classroom learning environment: The readiness of primary school education with Technology-Based Teaching in Hulu Selangor, State of Selangor, Malaysia

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Abstract: Technology-Based Teaching provides a greater platform with virtual classroom learning environment, namely the role of teachers on their teaching-learning process during pandemic period. This study aims to exam teachers' perceptions of the new virtual classroom learning environment on the readiness of primary school education with Technology-Based Teaching in Hulu Selangor, State of Selangor. The results were analyzed using a total of 285 reliable respondent data. Only the curriculum level, student level, and teacher level of this study's four objective factors exhibited a significant positive relationship with primary school education readiness using Technology-Based Teaching. Study highlights the fact that teachers are indeed concerned about the curriculum, students' levels, and teachers' readiness for Technology-Based Teaching in primary school. This provides insights to education stakeholders establish strategies for preparing for the new virtual classroom learning environment in primary schools. This comprises teacher and student preparedness, as well as a technology-based teaching curriculum.

Index Terms - Curriculum-level; student-level; teacher-level; school-level; Technology-Based Teaching; virtual classroom learning.

I. INTRODUCTION

The CORONA VIRUS DISEASE (COVID-19) pandemic is changing all sectors of human life around the world. This situation gives a great insight into the readiness of all sectors to face it including the education sector. In preventing the spread of the Corona virus, a lockdown or quarantine strategy is implemented. The policies taken by many countries including Malaysia by closing all educational activities have made the institutions and schools to establish an alternative educational process for students. Schools are suddenly closed down to prevent and break the chain of transmission of COVID-19 (Azlan et al. 2020).

In fact, this pandemic has a huge impact on the education system especially schools, students and teachers (Azlan et al. 2020). Primary school is one of the levels of education that has felt the impact of the COVID-19 pandemic. The school also began to change the learning strategy which was initially face-to-face by converting it to non-face-to-face learning. This can be referred as online or distance learning (Azlan et al. 2020).

Virtual teaching environments are administered differently in each school, depending on their system and guidelines. Creating the ideal virtual classroom is not easy, especially virtual classes for students in primary school. The Government has prohibited educational institutions and schools from carrying out face-to-face (conventional) teaching and ordered to conduct teaching and learning via online. WHO has advised people to avoid events that might induce groups to congregate in order to limit the spread of Covid-19. Consequently, the adoption of face-to-face teaching and learning, which collects a large number of pupils in a classroom, is being evaluated. In online learning, internet networks are used to provide access, connectivity and flexibility while also allowing for a variety of learning interactions to take place.

The use of internet and multimedia technology are capable remodel the way of conveying knowledge and can be an alternative to learning carried out in traditional classrooms (Lau et al., 2014). Information technology in education can help students and teachers in the learning process. The use of digital technology can allow students and teachers to carry out the learning process even though they are in different places (Azlan et al. 2020). This incentivizes teachers to use digital technology to create quality education for their students. According to Shahid (2019), the implementation technology-based-teaching requires the support of devices such as smartphones, laptops, computers, tablets, and internet connectivity which can be used to access information anytime and anywhere.

The process of e-learning as a virtual classroom learning creates a new paradigm, namely the role of teachers who are more "facilitators" and students as "active participants" in the teaching-learning process (Olszewska, J.I., 2021). Teaching strategies and materials need to be developed, and students need to actively engage in the learning process. All schools in Malaysia have experienced the impact of the COVID-19 pandemic, and there has been no compression assessment related to learning using online virtual classroom methods in primary schools.

1.1 Problem statement

In reality there are still many problems faced by teachers in the application of new virtual teaching environment. One of the factors is the lack of adequate facilities and the skills or knowledge of teachers. Learning must keep abreast of technological developments in order to implement technology-based learning, and schools must support its implementation. Meanwhile, in relation to that the facilities and infrastructure among students are still not very supportive of implementing based education technology. Besides that, another obstacle faced is the ability or teacher's knowledge of the Technology-Based Teaching. In this era of globalization, there are still many teachers over the age of quinquagenarian are still lack in technology.

According to Lau et al. (2014), for teachers who are not skilled and understand the use of virtual teaching environment will have difficulties. It is driven by limited experience with Technology-Based Teaching among teachers and schools do not provide comprehensive e-learning resources to meet current and future needs (Zaharah et. al, 2020).

The implementation of virtual teaching environment in primary schools has begun to be carried out by teachers in Hulu Selangor District, State of Selangor. The implementation has not been evaluated. Therefore, in this study researcher conduct research on perceive readiness of virtual classroom learning during the COVID-19 pandemic. The purpose of this research is to get input and improvement for better learning with Technology-Based Teaching.

Most of the studies conducted are based on the use of e-learning as an option to improve the teaching and learning process and do not focus on the readiness of teachers to face it in disaster time (Mailizar et. al, 2020).

This research describes the readiness of primary school education with Technology-Based Teaching during the COVID-19 pandemic. The study was conducted in primary schools in the district of Hulu Selangor, Selangor, which was one of the districts that felt and experienced the pandemic's effects.

1.2 Research objective

This study will cover the level of teacher readiness by taking into account the level of support from the school, curriculum, and students. Therefore, the following specific research objectives have been developed for this study;

1. To exam the relationship between school-level support and readiness of primary school education with Technology-Based Teaching in Hulu Selangor, State of Selangor.
2. To exam the relationship between curriculum-level support and readiness of primary school education with Technology-Based Teaching in Hulu Selangor, State of Selangor.
3. To exam the relationship between student-level support and readiness of primary school education with Technology-Based Teaching in Hulu Selangor, State of Selangor.
4. To exam the relationship between teacher-level support and readiness of primary school education with Technology-Based Teaching in Hulu Selangor, State of Selangor.
5. To exam the dominant factor on barriers to the readiness of primary school education with Technology-Based Teaching in Hulu Selangor, State of Selangor.

II. LITERATURE REVIEW

In early 2020, the world was shocked by the outbreak of the Corona virus (COVID-19) which has infected almost every country in the world. Global pandemic has swept the world where in Malaysia the situation of staying at home is carried out in an effort to suppress the development of Covid-19. To comply with the government's Movement Control Order (MCO), the learning mode is transformed into a virtual classroom where students still have the right to acquire knowledge and stay safe at home. The current pandemic situation requires teachers to innovate, transforming face-to-face learning into a non-face-to-face learning pattern.

In fact, the development of online learning in schools has already started when the Ministry of Education (MOE) introduced Smart Schools starting with 88 schools. It was later extended to all schools through introducing the use of the Frog Virtual Learning Environment and now the Digital Learning Platform (Cheok et al. 2016 and Phoong at al. 2020). Previously, teachers used this online learning as support for conventional teaching conducted in the classroom at school. In the early stages, it is very limited and not all teachers use it. According to Cheok at el. 2016, most teachers use the online learning platform as a repository for students to obtain learning materials in the form of power point' presentations and notes in PDF format. However, the implementation of usage monitoring in every school conducted by the MOE has to some extent affected the improvement of online learning (Phoong at el. 2020).

The catastrophe that befell Malaysia has to some extent affected the use of online learning systems in schools (Tamin et al. 2020). Starting with the closure of schools due to the haze that hit several states in the Peninsula and most recently and the spread of COVID 19 that impact the world has shown a sharp increase in the use of online learning to replace face-to-face learning. It can be concluded that most teachers and students are already exposed to online learning (Sharin, A.N., 2021), but to ensure overall use, several key issues are often raised, including infrastructure facilities, adequate equipment and access to internet should be given attention (Tamin et al. 2020).

Malaysia's Education Development Plan 2013-2025 aims to provide equitable access to international level education and to improve the quality of learning in Malaysia by leveraging communication and information technology (ICT) (Tamin et al. 2020 and Don et al. 2015). An acceptable strategy for online learning should be developed to ensure that all stakeholders perform their respective responsibilities in achieving the goal, and this plan should be strengthened accordingly. Students-centered lesson material, learning methodologies, and assessment methods that differ from conventional methods should also be considered while developing the curriculum (Don et al. 2015).

During the deployment of online learning in the past, infrastructure facilities have been often debated. MOE has also moved to a new digital learning platform to replace the Frog Virtual Learning Environment effectively in July 2019 (Tamin et al. 2020). The new platform allows teachers to access Google Classroom, Microsoft Teams, online training applications, and EduwebTV (Don et al. 2015). However, whatever learning platform is used, it must support other learning approaches, have easy-to-use, easily accessible features, technical support services, evaluation, and assessment, can be integrated with other applications, security, and privacy as well as mobile compatibility (Olszewska, J.I., 2021). These infrastructures and infostructure facilities need each other, one failure will make the online learning process impossible.

Online learning requires high student discipline as well as strong support and encouragement from teachers and parents. According to Seufert et al. (2022), students' concentration is affected by a variety of issues, including an unsuitable learning environment at home, unappealing learning materials, problems with internet connection, malfunctioning technology equipment, inappropriate scheduling, and a lack of parental and student support in the subject. Teachers must provide engaging and relevant learning resources, such as videos, worksheets and animations, in order to enhance students' attention and participation during online learning (Hoang et al. 2021). Teachers should also be ready to record lessons that are implemented synchronously to prevent students from dropping out. Parental involvement in supporting children's learning is not limited to providing them with internet access, computers or smartphones, and an appropriate learning environment but also needs to provide moral support (Sharin, A.N., 2021). In addition to physical facilities, parents also need to be prepared to play a role as facilitators as well as give encouragement and motivation to children, create a specific learning schedule at home as well as help children manage their learning activities, either online or in person.

Although online learning has been implemented by most teachers, especially during the MCO period due to the COVID 19 outbreak, the situation will be very different when the situation improves (Salleh et al. 2020). Teaching face-to-face is a part of the everyday routine for teachers at school, in addition to other duties (Sharin, A.N., 2021). Therefore, more careful planning needs to be done to ensure that online learning can continue. Teachers need to continue to use online teaching approaches to support classroom teaching. Continuous monitoring by schools can ensure that teachers and students are determined to use this digital learning platform. Additionally, to move forward, MOE should consider blended learning, which is the combination of in-person and online learning or online learning entirely (Bhagat et al. 2021). Students and teachers only need to interact from home, and teaching and facilitation (PdPc) still run according to the syllabus set by the MOE (Ab Kadir et al. 2021). This method also has some constraints, especially for students in the ruler areas. As a result of the study by the MOE, 36.9 percent of students nationwide do not have any electronic devices (Minister of Education, Dr Mohd Radzi Md Jidin, 2020). According to Ab Kadir et al. (2021), when MCO comes into force, internet speed becomes a major concern for pupils throughout the PdPc procedure at home. This definitely makes the learning objectives can only be achieved by certain groups. This matter needs to be considered if e-learning is to be maintained and made the main medium of student learning in Malaysia (Ab Kadir et al. 2021).

The e-learning system is actually not something new in Malaysia compared to developed countries, previously it was implemented at moderate level and popular only in current arrangement of the MCO (Jie et al. 2021). MOE must explore the best strategies for addressing the constraints in order to achieve the goals and reach the target population of students who have limited access to online learning. A teacher must also employ the most effective teaching techniques to ensure the learning process continues and is well received by the intended group of stakeholders (Jie et al. 2021).

To achieve e-learning a success, it is necessary to address the issue of internet access and the ownership of electronic equipment such as computers by each student (Hasin et al. 2021). Moreover, e-learning also presents new challenges to teachers and students. According to Hasin et al. (2021), the challenge for teachers is to provide e-learning space to successfully transform the learning experience from real environment to virtual learning environment. The challenge for students, on the other hand, is that they should be more disciplined and ready to learn independently and should be more responsible for their own learning experience (Heng et al. 2021). Overall, students need to attend the study consistently, focus while learning and be fully committed. If the students themselves are not committed, then e-learning will fail to improve the quality of student learning itself.

III. RESEARCH METHODOLOGY

To meet the study's aims, a quantitative technique is applied. The quantitative method is highly useful for examining social behavior using statistical approaches (Mavragani at al. 2018). To ensure that the data results are reliable and valid, descriptive research was carried out to develop the study. Malhotra (2004) supported this technique in the preparation of descriptive research by having a clear direction of problem statements and generated the hypothesis for the research.

Convenience sampling is used to collect data from targeted teachers' readiness of primary school education in Hulu Selangor with Technology-Based Teaching during the COVID-19. The Krejcie and Morgan (1970) table was used in this study to establish and identify the needed sample size from the selected population. A sample size of 322 is required in this study from a total population of 1901.

Using Google's online survey Form, the survey was designed and used an online survey approach. Respondents in Hulu Selangor, State of Selangor teachers submitted the primary data for the study. The questionnaire was sent out through WhatsApp Groups, and email to particular participants.

The questionnaire used in this study was modified from other literature studies in order to assess the readiness of primary school education with Technology-Based Teaching in Hulu Selangor, Selangor State. The questionnaire has a total of 26 questions with 6 sections. The first section includes 7 questions about the demographic information of respondents. The remaining sections are related to variable questions, and each section has 5 to 6 questions. A five-point Likert Scale with levels from 1 = "Strongly Disagree," 2 = "Disagree," 3 = "Neutral," 4 = "Agree," and 5 = "Strongly Agree" is used.

The questionnaire was completed by a total of 298 respondents and was used to sort the errors of incomplete and targeted respondents' demographic location. In descriptive analysis from this survey, a total of 285 reliable respondents were used.

For analysis, the obtained survey data are transmitted to SPSS statistical tool. Cronbach's Alpha, which is extensively used by researchers, utilized to analyze the reliability elements in this study. Cronbach's Alpha of 0.679 is considered acceptable interval consistency (Bonett, et al. 2015).

Correlation analysis is used to determine the relative strength of two or more variables (Bonett, et al. 2015). Regression analysis, on the other hand, applied to describe the relationship between two variables (Hadi, A.S. and Chatterjee, S., 2015). These are substantially influencing interactions that may be explained or represented by a mathematical model using linear line equations to anticipate the relationship of these two variables.

3.1 Data analysis

The demographics of the respondents in this research are shown in Table 1. They were also given questions on primary school education preparedness using Technology-Based Teaching.

Table 1 Respondents' Profile

Characteristics	Frequency	Percentage (%)
Gender		
Male	48	16.8
Female	237	83.2
Level of Education		
Undergraduate	101	35.4
Postgraduate	155	54.4
Certificate/Diploma	29	10.2
Teaching Experience		
0-5 years	19	6.7
6-10 years	20	7.0
11-15 years	50	17.5
16-20 years	43	15.1
More than 20 years	153	53.7
School Type		
SK	195	68.4
SJK(T)	80	28.1
SJK(C)	10	3.5
Devices used for virtual classroom learning		
Mobile/Handheld Device	70	24.56
Computer/Laptop	215	75.44
Internet connection used for virtual classroom learning		
Mobile data	113	39.6
Landline connection	42	14.7
Wireless modem	130	45.6

Composite reliability (CR) and average variance extracted (AVE) were used to determine convergent validity. Table 2 shows the Cronbach's alpha, Cronbach's CR, and Cronbach's AVE with all of the variables have values that are higher above the recommended indication levels. The Cronbach's alpha for the components that measure primary school education readiness with Technology-Based Teaching (school-level support, curriculum-level support, student-level support, teacher-level support, and barriers to readiness) indicated that the variables in Table 2 are compatible. The CR values over the 0.7 threshold, which evaluate internal reliability, are regarded valid indicators of this study (Hadi, A.S. and Chatterjee, S., 2015). In this study, the indicators of AVE for all of the items were more than the 0.5 threshold level, indicating that the items were convergent validity (Hadi, A.S. and Chatterjee, S., 2015).

Table 2: Measurement of reliability and validity

Variables	Cronbach's alpha	CR	AVE
School-Level Support	0.706	0.8668	0.5231
Curriculum-Level Support	0.785	0.7802	0.5457
Student-Level Support	0.764	0.8323	0.5564
Teacher-Level Support	0.763	0.8084	0.5168
Barriers to Readiness	0.706	0.8173	0.5374

The R value of 0.679 (Table 3) indicates that the variables have a relatively significant correlation. While the R^2 shows that the variables contributed 46.2 percent constructively, the remaining (53.8 percent) was provided by additional factors not included in this study.

Table 3: Model Summary

Model	R	R Square	Adjusted R Square	Std. Error of the Estimate
1	.679[a]	0.462	0.454	0.41522

a. Predictors: (Constant), School_Level, Curriculum_Level, Student_Level, Teacher_Level

IV. RESULTS AND DISCUSSION

In this study, four hypotheses were developed to examine the relationship of the variables. As a result, summarized at Table 4 explains the significant positive relationships between curriculum-level (H2), student-level (H3), teacher-level (H4) and readiness of primary school education with Technology-Based Teaching. This can be confirmed the hypothesis is supported ($p < 0.05$). The findings also indicated that no significant positive relationship between school-level and readiness of primary school education with Technology-Based Teaching.

This study will provide educators with meaningful results on the readiness of primary school education with Technology-Based Teaching. This provides an understanding of teachers' perceptions of the new virtual classroom learning environment. In this study, several key factors such as curriculum, students and teachers, and school were included in the research and became a measure to determine the level of support and readiness of primary school education with Technology Based Teaching.

The main concerns of teachers for the readiness of primary school education with Technology-Based Teaching were indicated to be three factors: curriculum, student, and teacher level. For the school level, the finding shows a significant negative correlation.

Table 4: Summary of Hypothesis and Findings

Hypothesis	Description	t-value	p-value	Findings
H1	There is a significant positive relationship between school-level support and readiness of primary school education with Technology-Based Teaching	1.100	0.272	Not supported
H2	There is a significant relationship between curriculum-level and readiness of primary school education with Technology-Based Teaching	2.061	0.040	Supported
H3	There is a significant relationship between student-level and readiness of primary school education with Technology-Based Teaching	7.282	0.000	Supported
H4	There is a significant relationship between teacher-level and readiness of primary school education with Technology-Based Teaching	6.432	0.000	Supported

V. CONCLUSION AND FUTURE SCOPE

This study aims to identify the major concerns of teachers in Hulu Selangor, State of Selangor, about the new virtual classroom learning environment in primary school education. Their concerns are mainly related to learning resources such as the teaching content of the subjects to be taught and the integration of the existing curriculum with virtual classroom learning. In addition, student's knowledge and skills, device availability, self-interest, internet connection and even sharing the same device with their siblings became their areas of concern. Whereas, teachers themselves expressed concerns regarding the requirement for adequate knowledge, skills, confidence, and experience in readiness to use and conduct virtual classroom learning. This provides insights to stakeholders in the education sector to develop preparedness strategies on new virtual classroom learning environments in primary schools. This includes the readiness of teachers, students and the technology-based teaching curriculum.

This study focused mainly on primary schools in Hulu Selangor and could not represent teachers' perceptions of the new virtual classroom learning environment in all primary schools in Malaysia. Therefore, data collection should cover different areas in populated regions in Malaysia. In addition, future studies are proposed to examine the critical factors of impact on the readiness of primary school education with Technology -Based Teaching to meet the concerns of the teachers of this study.

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