

Online Teaching Readiness of Early Childhood Education Teachers

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Abstract

Implementation of online teaching and learning is an educational method that conceptualizes technology integration in teacher-teaching practices. Therefore, teachers' readiness to implement the online teaching approach is crucial to ensuring that the teaching implemented can enhance the individual's abilities. This is because, an effective and meaningful acquisition of knowledge will produce competitive individuals, ready to face the challenges of the advanced technology world and adapt to current needs. Therefore, this review study was carried out to identify teachers' readiness to implement online teaching using questionnaire instruments. A total of 229 early childhood education teachers in the Kota Bharu district, Kelantan were involved as respondents in this survey. Descriptive analysis shows that teachers' technology skills and knowledge were at a high level ($M = 3.63$, $SD = 0.71$). In addition, teachers' attitudes towards online teaching, commitment and time management show similar findings with a high mean score, 3.80 and 3.55 respectively. Meanwhile, the findings of the correlation test show a significant and positive relationship between the knowledge and technical skills of the teacher and the attitude ($r = 0.528$, $p < 0.1$). The Spearman Rho correlation test also shows that there is a significant and strong relationship between teachers' experiences in online teaching and learning and teacher attitude ($r = 0.617$, $p = 0.000$). In conclusion, the findings of this study show that teachers have a high level of online teaching readiness. It is hoped this study can serve as a guide on teachers' readiness for online teaching.

Keywords: Online Teaching, Teacher Readiness, Knowledge, Technical Skills, Attitudes

Introduction

The ever-changing, fast-paced nature of the 21st century has had a profound impact on education. Rapid advancements in technology and the increased connectivity of the world have made it essential for teachers to be adaptable and ready to change the way they teach. Technology has become deeply entrenched in every aspect of our lives, so it's no surprise that it has also revolutionized the field of education. Technology has transformed education from a teacher-centric to a student-centric learning model by providing learners with more control over their education. Online learning has become a popular and integral part of education, with a broad range of advantages for both students and teachers.

Looking at the need for online teaching in ensuring that educational efforts are in line with the speedy development of technology, the use of technology in the education system is the

best solution (Khan et al., 2021). Continuous learning in line with the development of technology is vital to ensure that pupils can develop holistically. With more and more students learning remotely, teachers must be prepared to deliver their lessons online. The increased use of computers and the internet has revolutionized the way teaching is done. Therefore, teachers are now expected to be more computer literate and able to use different software programs. The internet has also made it possible for teachers to access a wealth of teaching resources. According to Bovermann et al (2018), online learning or known as virtual learning can assist instructors in delivering teaching materials more easily without time and place limitations. However, this increased demand for computer skills and knowledge has posed a challenge to many teachers.

The application of online teaching has posed a new challenge to teachers in terms of readiness. Indeed, with technological advancement, there has been an increased demand for professionalism among teachers. This is in a bid to ensure that the quality of education is not compromised. Several factors such as skills, knowledge, attitude, commitment, and time management are vital in teacher readiness.

However, a study conducted by Zheng and Wang (2022) found that most teachers are not adequately prepared to use computers and the internet for teaching purposes. Meanwhile, teachers need to be familiar with the different types of online teaching resources so that they can be able to select the most appropriate ones for their students. This is a worrying trend since online teaching is becoming more practical nowadays.

According to Khan and Rafi (2020), it is crucial for teachers to upskill themselves and acquire the required computer skills and knowledge. There are many reasons why teachers may not feel ready to teach online. Some may not be comfortable with using technology or may not have the necessary skills and knowledge (Pressley et al., 2021). Others may not feel they have the time to prepare for online teaching or may not be sure how to incorporate it into their existing teaching practice (Churiyah et al., 2020). Whatever the reason, teachers must be aware of the challenges of online teaching and be prepared to face them. With the right support and preparation, teachers can make the transition to online teaching and ensure that their students receive a high-quality education.

Problem Statement

Teaching systems and methods for education systems around the world are undergoing major changes because of the spread of the COVID-19 pandemic. With the first positive case in January 2020, to date, Malaysia is still recording cases of the COVID-19 virus (Ministry of Health Malaysia, 2020). Therefore, after the reopening of the school after a long period of a movement control order on 8 March 2021, educational institutions in several states such as Kelantan and Sarawak were once again instructed to close school operations. School closures in some of these states are a consequence of an increase in COVID-19 cases. Such situations force teachers in the affected states to carry out online teaching. This makes the implementation of online teaching more challenging as it depends on the readiness of the teacher as a whole. According to Paliwal and Singh (2020), educational institutions located in rural areas are grappling with the challenges of implementing online teaching as many teachers and pupils do not have access to good technological infrastructure to support the implementation of learning and teaching online.

Furthermore, the effectiveness of online teaching not only depends on the device and internet connection alone but also depends on the attitude and perspective of the teacher towards the integration of technology in learning and teaching. This coincides with a study by Zheng and Wang (2022), which found that most early childhood education teachers think that online teaching has many limitations that make it difficult to implement such as time limitations. This is because, to equip themselves with knowledge related to the use of the latest technology, teachers need to constantly attend training or workshops related to the skills of using technology in teaching (Pressley et al., 2021).

According to Xie (2020), although online teaching has been applied indirectly over a decade ago, teacher competence has greatly played a role in influencing the effectiveness of online teaching so that it does not affect the quality of education either during or after the COVID-19 pandemic. Teachers who lack technology-related skills and knowledge will face the challenge of planning, choosing and implementing online teaching. In Indonesia for example, many teachers have a negative impression of the implementation of online teaching because they have difficulty understanding and choosing a platform that suits the age targets of pupils and their teaching objectives (Churiyah et al., 2020). In addition, the researchers found that there are only a few studies examined the context to assess the readiness of private kindergarten teachers in Kelantan toward online teaching. Therefore, this study also focuses on the knowledge and technological skills of teachers by looking at factors that can influence the attitude and readiness of teachers in conducting online teaching.

Research Purposes

Based on observations made by looking at the phenomenon of student engagement in online learning and teaching throughout the COVID-19 pandemic, it can be concluded that teachers' readiness in implementing online teaching is at a low level. Most teachers have difficulty getting a high percentage of pupil involvement in online learning and teaching despite numerous studies proving the use of technology and learning and teaching brings many benefits and benefits to the education system. Therefore, this study will focus on private kindergarten teachers' online teaching readiness based on technological knowledge and skills, online teaching experience, attitude toward teaching itself as well as teachers' commitment and time management.

Research Objectives

There were four objectives targeted in this study. This study was conducted to:

1. Measure the level of knowledge and technological skills of teachers in conducting online teaching.
2. Identify the level of readiness of teachers in terms of attitude, commitment and time management of teachers.
3. Identify the relationship between teacher experience in online learning and teaching with teacher attitude.
4. Identify the relationship between knowledge and technological skills with teacher attitudes.

Methodology**Research Design**

By using an individual action study structure, this qualitative research was conducted to evaluate teaching practices based on the COVID-19 pandemic situation, aimed at improving the online teaching practices that have been used. For this purpose, the researchers provided a set of questionnaires to collect the necessary data. By using convenience sampling, the sample in this study was selected. This sampling method was chosen because it is more practical, convenient, inexpensive and time-saving since the questionnaire instruments are distributed and physically filled.

Population, Location and Sample

This study involved 228 early childhood education teachers from the 488 total population of private kindergarten teachers throughout the district of Kota Bharu, Kelantan. The selection and determination of the location of the studies were considered in aspects of the ability of the researchers to record and collect data effectively and at a low cost in a short period.

Research Instruments

Data on the readiness of private kindergarten teachers in the Kota Bharu district was collected using questionnaires that were adapted and modified from (Ventayen, 2018). The modified questionnaire has been validated by two early childhood education experts to ensure that the items are appropriate according to the purpose of the research.

The questionnaire is composed of two sections: Section A contains respondent demographic information, while in Section B, four constructs with 30 items are built, focused on: 1: Technical Knowledge and Skills (11 items); 2: Online Teaching and Learning Experience (5 items), 3: Attitudes to Online Teaching and Learning (9 items) and 4: Commitment and Time Management (5 items). For the measurement of all four constructs in this section, a five-point Likert scale with five options was used, 1: Strongly Disagree; 2: Disagree; 3: Neutral; 4: Agree and 5: Strongly Agree.

Pilot Study

A pilot study was conducted on 30 private kindergarten teachers who were not involved as actual participants in the study. Setting the number of pilot study samples of 30 people was made because the ratio between 30 to 50 people is reasonable, ideal and sufficient (Ibrahim, 2017). The data obtained through this pilot study is used for the researcher to detect things that should be paid attention to during the interview. Therefore, to determine that the adapted instrument can be used in a real study, the researcher has tested the consistency of the instrument by looking at the value of Cronbach's alpha coefficient.

The results of a pilot study conducted on 30 private kindergarten teachers who were not involved as actual participants in the study showed a very good level of reliability for all the items in the questionnaire used with a Cronbach's alpha coefficient value of 0.962. Cronbach's alpha item coefficient values for all four questionnaire constructs approaching the value of 1 also prove that the level of item reliability is very good (Table 1).

Construct	<i>Cronbach's Alpha</i>	N of Items
Technical Knowledge and Skills	.925	11
Online Teaching and Learning Experience	.898	5
Attitudes to Online Teaching and Learning	.938	9
Commitment and Time Management	.792	5
Total	.962	30

Data Analysis

Questionnaires have been collected and analyzed using Statistical Package for Social Science (SPSS) software version 23.0. Data analysis involves two statistical analyses, namely descriptive analysis and inferential analysis. A normality test is also performed to assess whether the data obtained has a normal distribution.

Data interpretation for teachers' knowledge, attitudes and teaching practices explained through standard deviation values, mean percentages and frequencies. The interpretation of the mean score value proposed by Ramli & Zulkifli (2022) was used to interpret the mean score of construct 1: Technical Knowledge and Skills; 2: Online Teaching and Learning Experience; and 4: Commitment and Time Management. Meanwhile, the interpretation of teachers' attitudes toward online learning was made by referring to the Teacher Attitudes towards Change (TATC) model, proposed by (Kin and Kareem, 2017).

An inferential analysis is used to test the hypothesis involved in the study, either to see differences or relationships between groups or specific variables. To carry out inference analysis, the main requirement that needs to be ensured is normality testing to determine whether the data is normally distributed or not, then determine the type of parametric test that can be carried out. The determination of the normality test for this study is using Kolmogorov Smirnov (KS) as well as Skewness and Kurtosis.

Research Findings

Out of a total of 249 questionnaires distributed by the researcher, 243 forms were returned, showing that the questionnaire return rate was 97.2%. However, of this total, only 229 questionnaires were filled out without recording missing values and were taken for use in data analysis.

Teacher Knowledge and Technology Skills Level in Conducting Online Teaching

The results of the descriptive analysis of the construct of teachers' technology knowledge and skills show a high level ($M = 3.63$, $SD = 0.71$). The result of this mean score indicates that private kindergarten teachers in the Kota Bharu district have high technical skills and knowledge. The mean score for all the items contained in the construct of teachers' technology knowledge and skills is in the range between 2.55 - 4.12 (Table 2). This situation shows that the readiness of private kindergarten teachers in the Kota Bharu district for the aspect of technology knowledge and skills is at a high level.

Table 2

Standard deviation values and mean scores of knowledge and technology skills

Bil	Item	Mean (M)	Standard Deviation (SP)	Interpretation
1	I have a personal computer or my own computer at home or in the office.	3.93	1.10	High
2	I can access the internet frequently and can use the Internet according to my needs.	4.12	0.87	High
3	I know the basic functions of each computer component (speaker, mouse, keyboard, etc.).	4.05	0.92	High
4	I am good at using email.	3.90	0.99	High
5	I am proficient in using word processing software (Microsoft Word, Open Office, etc.).	3.83	0.96	High
6	I can download files from the Internet and can attach files with emails.	3.90	1.02	High
7	I am proficient in using computer software for presentations (such as PowerPoint/Canva).	3.54	0.95	High
8	I am able to blog.	2.69	1.04	Medium
9	I am able to create a website.	2.55	0.95	Medium
10	I am proficient in using social networking technologies, such as Twitter and Facebook.	3.79	0.96	High
11	I have used technology to support my face-to-face teaching.	3.71	0.98	High
Total		3.63	0.71	High

Item number 9 has the lowest mean score value with a mean score of 2.55. Followed by item number 8 with a mean score value of 2.69. This shows that the ability and skills of teachers in creating websites and blogs for the use of online teaching are at a moderate level. Item 2 shows the highest mean score which is 4.12. This high mean score indicates that teachers can use the Internet very well.

Teacher Attitude, Commitment and Time Management Toward Online Teaching

Table 3

Teacher readiness from the aspects of attitude, commitment and time management

Construct	Mean (M)	Standard Deviation (SD)	Interpretation
Attitude	3.80	0.66	Positive
Commitment and Time Management	3.55	0.62	Positive

Based on Table 3, the interpretation of the mean score shows that private kindergarten teachers in the Kota Bharu district indicate a positive attitude towards online teaching with a high mean score value ($M = 3.80$, $SP = 0.66$). Meanwhile, the mean score for the teacher's commitment and time management is also at a high level ($M = 3.55$, $SD = 0.62$). This finding indicates that private kindergarten teachers in Kota Bharu show a positive attitude toward online teaching.

Correlation between Technology Knowledge and Skills with Teachers' Attitudes

Ho1: There is no significant relationship between technological knowledge and skills with teachers' attitudes toward online teaching.

Table 4

Correlation between technological knowledge and skills with teachers' attitudes

		TK	Attitudes
Technology	Correlation	1.000	.617**
Knowledge and Skills	Sig. (2-tailed)		.000
(TK)	N		229

Table 4 shows that there is a significant, positive and strong correlation between the teacher's knowledge and technology skills with teacher attitude, $r = .617$, $n = 229$, $p < .01$. This finding indicates that teachers' technology knowledge and skills affecting teacher's attitudes towards online teaching. In conclusion, null hypothesis 1 needs to be rejected.

Correlation between Experiences in Learning and Teaching Online with Teacher's Attitudes:

Ho2: There is no significant relationship between online teaching and learning experience and teachers' attitudes towards online teaching.

Table 5

Correlation value between experience and teacher attitude

		Experience	Attitudes
Online Teaching and	Correlation	1.000	.528**
Learning Experience	Sig. (2-tailed)		.000
	N		229

Table 5 shows the existence of a significant positive relationship between the variable of online teaching and learning experience and the variable of teacher's attitude towards online teaching, $r = .528$, $n = 229$, $p < .01$. The strength of the relationship between online teaching and learning experience and the variable of teacher's attitude is strong. The results of this finding explain that teachers' attitudes towards online teaching will increase when the teachers' experience in online teaching and learning is increased. In conclusion, the results of the Spearman-Rho correlation analysis concluded that null hypothesis 2 should be rejected ($p = .000 < .01$).

Discussions

Level of Teacher Knowledge and Technology Skills in Conducting Online Teaching:

Based on the findings of the study reported that private kindergarten teachers have high knowledge and skills related to the use of technology in teaching practice. This finding

coincides with the findings in a study by Kamaruddin (2020) who reported that the level of teachers' knowledge who have less than five years of teaching experience is at a high level. Amatan and Han (2020) also explained that teacher knowledge tends to develop according to the level of teacher efficacy. They found that teachers who have less than 7 years of teaching experience often make innovations and changes in teaching practice by integrating the theory learned with practice in the classroom. The ability of teachers to accept and make innovations in teaching plays a role in strengthening the competence of teachers in teaching practice.

The findings of Venyaten's study (2018) also found that the level of teachers' knowledge and skills in the Philippines is high. The report from his study on the exploration of teacher readiness which includes technical skills and knowledge, experience and online learning, attitude, commitment and time management of teachers in Philippine universities shows that teachers are ready and proficient in handling technology in teaching. As a result of the analysis found that there is no difference in knowledge and technical skills based on age factors, education level and teacher's gender.

However, the findings of this study were found to be inconsistent with the findings by (Omar et al., 2021). The findings of a study on 297 Malay teachers in Kelantan found that the level of ICT use skills was at a moderate level. Although teachers were found to have high skills in sending and receiving e-mails, most of the teachers stated that they did not agree with the statement of being skilled in subscription services and skilled in developing programs using essay or language systems. The average mean score for all 40 items of information and communication technology skills shows that Malay teachers in Kelantan have moderate information and communication technology skills. Ling and Mohamed (2022) in their study of 300 teachers throughout Malaysia also found that teachers' readiness from the aspect of knowledge towards online teaching was at a moderate level.

Teacher Attitude, Commitment and Time Management Toward Online Teaching

The findings of the study show that private kindergarten teachers show a positive attitude toward the implementation of online teaching. The findings of this study are supported by Venyaten (2018) who reported that teachers in the Philippines have a positive attitude toward the online learning environment. The majority of respondents in his study stated that they are ready to implement online teaching. This is because, teachers in the Philippines are accustomed to the use of blended learning approaches and the use of social media in the context of education.

Yang (2020) also reported that a large number of 15 438 teachers in China supported online teaching initiatives during school closures due to COVID-19. Meanwhile, the percentage of teachers who disagree with the implementation of online teaching in China shows very low percentage. This finding shows that although online teaching is seen to be implemented hastily and only temporarily, teachers are seen to be willing to implement it to ensure that systematic learning can continue. In addition, Mihat (2022) also showed the same findings where the mean average value for the attitude construct was at a high level indicating that teachers have a positive attitude towards the use of multimedia in teaching reading skills.

However, Spiteri and Rundgren (2018) found that teachers are still not ready for the use of digital technology in teaching based on attitudes. The conclusion from the analysis of 27 previous studies reported that the attitude of teachers towards the use of digital technology in teaching is at a low level. Most teachers stated that they are not confident in their ability

to use technology in teaching. Most teachers think that the use of technology in teaching practice makes them unable to provide clear instructions to students.

Relationship between Technology Knowledge and Skills with Teachers' Attitudes

Correlation testing found that there is a significant and positive relationship between technological knowledge and skills and teachers' attitudes toward online teaching. With the strength of the strong relationship between these two aspects, it shows that teachers who have high technological knowledge and skills will behave positively toward online teaching. In line with the findings by Mihat (2022) who found that there is a significant relationship between knowledge and skills in the use of multimedia and teachers' attitude. His study aims to see the level of multimedia use in learning and facilitation among special rehabilitation teachers in Selangor and reports that the knowledge and skills of teachers have a significant influence on teachers' attitudes toward using multimedia. In the context of his study, the skill of using multimedia means the teacher's ability to use various appropriate elements in teaching, in line with the 21st-century learning approach. Therefore, solid knowledge and competence in handling multimedia are very important because, without knowledge and skills, teachers will experience difficulties in integrating the use of multimedia in teaching practice.

Similar findings were reported by Mahat et al (2022) through their study of trainee teachers who teach Geography at Universiti Pendidikan Sultan Idris, Perak. They found that there is a positive and significant relationship between trainee teachers' knowledge and teachers' attitudes toward online teaching. The difference is, the strength of the relationship between these two aspects is at a moderate level. However, this finding is contrary to the findings in the study of (Valtonen et al., 2020). Their study on pre-service teachers at Finish university aims to identify teachers' perceptions of the use of ICT in teaching. They reported that even though the level of teacher knowledge was at a low level, teachers exhibited a positive attitude towards the integration of technology in teaching.

Relationship between Experiences in Learning and Teaching Online with Teacher's Attitudes

The correlation analysis carried out found that there is a positive and significant relationship between the teacher's experience in online teaching and learning with the teacher's attitude, with a strong correlation. Therefore, it can be concluded that teachers' attitude toward online teaching is influenced by the teacher's experience in online teaching and learning. This finding has similarities with the findings of Yang's study (2020) which aims to assess the readiness of teachers in delivering online teaching. He found that a large number of teachers already had experience learning from e-learning platforms. In fact, the inferential analysis found that teachers who have experience using online learning sites tend to support the implementation of online teaching.

Research Implications and Suggestions

This survey is able to provide in-depth information related to teacher readiness for online teaching. The information from this finding can be used by the Private Education Division (BPS) in designing training programs and seminars for the purpose of improving the skills and professionalism of private kindergarten teachers. This is because, improving the skills and professionalism of teachers is very important to improve the ability of teachers to plan and implement online teaching that is more effective and able to optimize student success.

The organization of workshops and courses that emphasize aspects of online teaching practice is very important to familiarize teachers with the use of technology in teaching. This kind of continuous effort will be able to provide teachers with knowledge training and related skills. With the exposure to knowledge gained from participating in workshops and courses, teachers will be able to help teachers choose technology devices and software that are suitable, relevant, effective and suitable for the age, abilities and abilities of students. In addition, to ensure that teaching objectives can be achieved easily, teachers need to prepare themselves with relevant skills, competence, knowledge and experience. This is because by having accurate skills, competence, knowledge and experience, teachers will be born who have a positive attitude toward online teaching.

There are several suggestions for further research that can be noted for future studies such as:

- a. Using probability sampling can help provide an accurate formulation of the scope to be studied. This is because this study on teachers' readiness for online teaching uses non-probability sampling (non-random sampling), where despite not having any biased influence, teachers in the population of private kindergarten teachers in the Kota Bharu district do not have the same opportunity or probability to be selected as a study respondent. It makes it difficult to summarize the readiness of teachers regarding the implementation of online teaching for the population of private kindergarten teachers in Kota Bharu.
- b. Future researchers prepare questions in the form of open questions so that respondents could answer the questions according to their own opinions, ideas, emotions and wishes. In fact, the use of open-ended questions also provides space for respondents to give independent and more accurate answers to the scope of the questions highlighted by the researcher.

Conclusion

In conclusion, the findings from this study show that the teachers' technology knowledge and skills, attitude, commitment and time management are at a high level. This indicator is a measure of the high level of readiness to implement online teaching among private kindergarten teachers in Kota Bharu. As a result, all these elements play a role in determining the repulsive force not only among teachers but also among students. This is because, the teacher's ability to implement appropriate, planned and effective teaching practices will influence the students' willingness to accept the implementation of the online teaching approach in the future.

In summary, this research findings are expected to provide some crucial explanation on the important of teacher professionalism development program. This is because through professionalism development program, it gives teachers the opportunity to stay up to date with the latest teaching methods and educational research. Secondly, it allows them to network with other professionals and share best practices. Moreover, it can help them to improve their teaching pedagogy and boost their confidence. Therefore, the Private Education Division (BPS) should design training programs and seminars that focus on improving the skills and professionalism of private kindergarten teachers. This is because the study found that the teachers who were ready to teach online had many qualities that set them apart from the teachers who were not ready. By improving the skills and

professionalism of teachers, the Private Education Division (BPS) will be able to improve the ability of teachers to plan and implement online teaching that is more effective and able to optimize student success. In addition, this findings also show that a positive attitude towards online teaching is essential. Teachers need to be open to new ideas and willing to try new things. They also need to be able to handle the challenges that come with teaching online. Coincides with the Basic Teaching Model by Robert Glaser in 1962 which states that teacher attitude is also very instrumental in ensuring the teacher's ability to make modifications to teaching procedures, teaching aids and teaching mediums used so that teaching objectives can be achieved. This is because the teacher's attitude also includes the willingness and willingness of the teacher to devise structured teaching steps so that the use of the medium of teaching aids is used according to the student's ability and needs. This proves that attitude is also a very important element in determining the direction of the teacher's teaching.

References

- Amatan, M. A., & Han, C. G. K. (2020). Perbezaan Faktor Demografi dalam Efikasi Kendiri Guru dan Amalan Pengajaran dan Pembelajaran Abad ke 21. *Journal of Advanced Research in Social and Behavioural Sciences*, 18(1), 17-36.
https://www.akademiabaru.com/doc/ARSBSV18_N1_P17_36.pdf
- Bovermann, K., Weidlich, J., & Bastiaens, T. (2018). Online learning readiness and attitudes towards gaming in gamified online learning – a mixed methods case study. *International Journal of Educational Technology in Higher Education*, 15 (27), 1-17.
<https://doi.org/10.1186/s41239018-0107-0>
- Churiyah, M., Sholikhah, S., Filianti, F., & Sakdiyyah, D.A. (2020). Indonesia education readiness conducting distance learning in COVID-19 pandemic situation. *International Journal of Multicultural and Multireligious Understanding*, 7(6), 491-507.
<http://dx.doi.org/10.18415/ijmmu.v7i6.1833>
- Gozum, A. I. C., & Demir, Ö. (2021). Technological pedagogical content knowledge self-confidence of prospective pre-school teachers for Science Education during the COVID-19 period: A structural equational modelling. *International Journal of Curriculum and Instruction*, 13(1), 712-742.
<https://files.eric.ed.gov/fulltext/EJ1285807.pdf>
- Ibrahim, M. Y. (2017). *Sembang Santai Penyelidikan*. Bandar Ilmu Publication.
- Kamaruddin, M. I. (2020). Perbezaan tahap pengetahuan, penggunaan dan penerimaan guru Bahasa Melayu berdasarkan faktor umur dan pengalaman mengajar ketika mengaplikasikan persekitaran pembelajaran maya. *Jurnal Pendidikan Bahasa Melayu*, 10(2), 15-28. <https://spaj.ukm.my/jpbm/index.php/jpbm/article/viewFile/233/179>
- Khan, K. A., & Rafi, S. M. T. (2020). Online education & MOOCs: Teacher self-disclosure in online education and a mediating role of social presence. *South Asian Journal of Management Sciences*, 14(1), 142-158. <https://doi.org/10.21621/sajms.2020141.08>
- Khan, M. A., Vivek, S., Nabi, M. K., Khojah, M., & Tahir, M. (2021). Students' perception towards e learning during COVID-19 pandemic in India: An empirical study. *Sustainability*, 13(1), 1-14. <https://doi.org/10.3390/su13010057>
- Kin, T. M., & Kareem, O. A. (2017). Measuring teacher attitudes towards change: An empirical validation. *International Journal Management in Education*, 11(4), 437-469.
<https://doi.org/10.1504/IJMIE.2017.10005987>

- Ling, T. H., & Mohamed, S. (2022). Kesiediaan guru bagi pembelajaran dalam talian semasa pandemik COVID 19. *International Research in Islamic Studies and Education (ARISE)*, 2(2), 80-89. <https://myedujournal.com/index.php/arise/article/view/128/123>
- Mahat, H., Lom, C., Saleh, Y., Hashim, M., Nayan, N., & Bikar, S. S. (2022). Persediaan guru pelatih Geografi dalam pelaksanaan pengajaran dan pembelajaran di rumah semasa latihan mengajar. *Malaysian Journal of Society and Space*, 8(3), 170-184. (170-184). <https://doi.org/10.17576/geo-2022-1803-11>
- Mihat, M. D. (2022). Tahap penggunaan multimedia bagi PdPc kemahiran membaca dalam kalangan guru pemulihan khas. *Akademika*, 92(1), 45-57. <https://doi.org/10.17576/akad-2022-9201-04>
- Ministry of Health Malaysia. (2020). Soalan lazim (FAQ) rasmi berkaitan COVID-19. Retrieved from <http://COVID-19.moh.gov.my/faqsop/faq-COVID-19-kkm>
- Omar, I. M., Mamat, S., Sulaiman, S., & Ismail, N. A. (2021). Tahap pengetahuan teknologi, kemahiran dan penggunaan TMK dalam pengajaran dan pemudahcaraan KOMSAS guru Bahasa Melayu di Kelantan. *Jurnal Kepimpinan Pendidikan*, 8(1), 47-60. <https://ejournal.um.edu.my/index.php/JUPIDI/article/view/28475/12760>
- Paliwal, M., & Singh, A. (2020). Teacher readiness for online teaching-learning during COVID-19 outbreak: A study of Indian institutions of higher education. *Interactive Technology and Smart Education*, 18(3), 403-421. <https://doi.org/10.1108/ITSE-07-2020-0118>
- Pressley, T., Ha, C., & Learn, E. (2021). Teacher stress and anxiety during COVID-19: An empirical study. *School Psychology International*, 36(5), 367-376. <https://doi.org/10.1037/spq0000468>
- Ramli, N., & Zulkifli, H. (2022). Tahap kesiediaan dan motivasi guru pendidikan islam terhadap pengajaran dan pembelajaran atas talian. *International Journal of Advanced Research in Islamic Studies and Education (ARISE)*, 2(2), 16-30. <https://myedujournal.com/index.php/arise/article/view/108/107>
- Spiteri, M., & Chang Rundgren, S.N. (2018). Literature review on the factors affecting primary teachers' use of digital technology. *Technology, Knowledge and Learning*, 25, 115-128. <https://doi.org/10.1007/s10758-018-9376-x>
- Valtonen, T., Leppanen, U., Hyypia, M., Sointu, E., Smits, A., & Tondeur, J. (2020). Fresh perspectives on TPACK: pre-service teachers' own appraisal of their challenging and confident TPACK areas. *Education and Information Technologies*, 25(4), 2823-2842. <https://doi.org/10.1007/s10639-019-10092-4>
- Ventayen, R. J. M. (2018). Teachers' readiness in online teaching environment: A case of department of education teacher. *Journal of education, Management and Social Sciences*, 2(1), 94-106. <https://www.psurj.org/wp-content/uploads/2019/05/JEMSS-2019-013.pdf>
- Xie, N. (2022). Evaluation of multimedia classroom teaching effectiveness based on RS-BP neural network. *Mathematical Problems in Engineering*, 2022,1-8. <https://doi.org/10.1155/2022/9416634>
- Yang, X. (2020). Teachers' perceptions of large-scale online teaching as an epidemic prevention and control strategy in China. *ECNU Review of Education*, 3(4), 739-744. <https://doi.org/10.1177/2096531120922244>
- Zheng, N., & Wang, Y. (2022). *ECEC online vs ECEC Face-to-face: Analysis of ECEC Online Education's Pros and Cons*. (MA Thesis). Laurea University of Applied Sciences. Retrieved from https://www.theseus.fi/bitstream/handle/10024/751212/Zheng_Nan_Wang_Yang.pdf