Investigating the technological pedagogical content knowledge (TPACK) skill among Arabic school trainee teachers in online assessment during COVID-19 pandemic

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Abstract

TPACK (Technological Pedagogical Content Knowledge) is a crucial necessity for instructors and teachers during the teaching and learning process, particularly when using instructional technologies. The goal of this study is to learn more about the TPACK level of knowledge and skill among school trainee teachers in teaching Arabic language and conducting online teaching and assessment during the shutdown of schools in Malaysia due to COVID-19 Movement Restriction Control (MCO). The 32 final year students from the Kulliyyah of Education, International Islamic University Malaysia, were purposefully selected as trainee instructors (IIUM). They were assigned to teach practicum in several secondary schools in Selangor, Malaysia, in order to fulfil the Bachelor of Education degree's graduation requirement. Open-ended surveys on obstacles and challenges faced during the use of educational technology in teaching and online assessment of Arabic learning at home before and during MCO, platforms used, and further suggestions to strengthen the use of educational technology in implementing online assessment of Arabic learning were used to investigate the teachers' knowledge about three main components of TPACK, which include technology, content, and pedagogy, as well as open-ended surveys on obstacles and challenges faced during the use of educational technology in teaching and online assessment of Arabic learning at home before and during MCO. The findings and findings are helping to improve the trainee teachers' comprehension of their level of knowledge and skill in technology, pedagogy, and material in teaching Arabic, particularly during online instruction and assessment during the COVID-19 epidemic. The research could also help schools enhance their online learning techniques in preparation for post-COVID 19 schooling.

Keywords: TPACK; home-based learning; online assessment; Arabic language; COVID-19 pandemic

1. Introduction

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When it comes to teaching and learning, the TPACK is critical for every researcher, educator, and teacher, especially when integrating instructional technology. Mishra and Koehler (2006) coined the phrase as a generic guideline for all instructors in regard to technology integration for teaching and learning (TPCK). This educational framework was then renamed TPACK (Thompson & Mishra, 2007–2008) to make it easier to follow by integrating the three parts of technology, pedagogy, and content. The term TPCK also refers to Niess's technology-enhanced version of PCK (2005). There are three key components of TPACK that must be considered and incorporated into any teaching and learning session using a variety of technological platforms, particularly in light of the current COVID-19 pandemic, which requires instructors to adapt with appropriate instructional remote strategies, including online assessment. Furthermore, TPACK is based on Shulman's PCK (1986), and Mishra and Koehler (2006) added technological knowledge to explain effective teaching and instruction in the technology workplace. Although TPACK, as described by Mishra and Koehler (2006), is not a novel paradigm, numerous academics have used comparable notions in their own thoughts and viewpoints to describe the relationships between technology, content, and pedagogy.

1.1 Online Teaching During COVID-19 Pandemic

The use of instructional technology in teaching and learning has become a must-have for instructors and educators, particularly in 21st-century education. Furthermore, the current global emergent condition of the COVID-19 pandemic has prompted educators to use various online platforms and technologies to conduct emergency remote teaching and learning (ERTL) and home-based learning (HBL) (Leon, Trian, Ellen and Yogi, 2021). However, in order to ensure the correct conduct of online teaching and assessment, educators must possess the TPACK knowledge and expertise. TPACK conceptualizes the pedagogical techniques by developing these three interconnected components of instruction: content, pedagogy, and technology (Mishra & Koehler, 2006). ERTL is a well-planned online learning experience for courses delivered in response to a crisis or disaster, according to Hodges, Moore, Lockee, Trust, and Bond (2020). In addition, learners are driven to choose online learning in specific conditions, such as being in a war (Rajab, 2018), living in remote areas (Chen & Koricich, 2014), working and not having time to attend normal schools (Bourne, et al., 2005), and biological crisis (Bourne et al., 2005). (Alshehri et al., 2020). On the other hand, amid the present COVID-19 global epidemic, home-based learning (HBL) is an inevitable option. Home-based learning, according to Holt (2020), the Father of HBL, does not have to be like school; rather, it can be a continuation of how your family lived before your children reached "school age."

Although Romeo (2006) reports that information and communication technology (ICT) has a favorable impact on various learning processes, Cox and Graham (2009) suggest that TPACK is critical for educators to grasp the potential contributions of new technologies in education. According to Graham (2011), TPACK may be used to evaluate how teachers' professional growth influences their classroom performance when using ICT. The added value of TPACK is seen in the support it provides students in their learning and development of conceptual and procedural qualities using technology (Voogt et al., 2013). The pedagogical approaches are conceptualized in TPACK by the development of three overlapping components of learning: content, pedagogy, and technology. It is extensively used by educators and teachers to comprehend, absorb, and describe many sorts of knowledge (Mishra & Koehler, 2006). As a result, it backs up Bransford, Brown and Cocking's (2000) claim that general teaching skills are required in order to revise with the employment of advanced technologies for effective teaching. Simultaneously, Lee (2002) proposed that, with the incorporation of ICT into schools, teachers should serve as mentors rather than expert in formation providers. Furthermore, educational technological improvements should not only be concentrated, but there is also a need for more effective learning tools (Romeo, 2006). In order to develop and utilize technology in teaching

and learning, decision and policy makers should provide appropriate direction while creating education policies (Lee, 2002).

1.2 COVID-19 Pandemic and Home-Based Learning (HBL)

There was an increasing report on the acute respiratory illness that began in China on December 31, 2019, specifically in the area of Wuhan City, Hubei Province, China. The virus, eventually known as COVID-19, affects the respiratory system and has killed tens of thousands of people around the world (Hasan & Hossain, 2020; Chen et al., 2020; Ali et al., 2020). Hence, a majority of countries have announced the temporary closure of schools, impacting more than 91 per cent of students worldwide around 1.6 billion children and young people (Miks & McIlwaine, 2020). Due to the seriousness of the rapid spread of this disease and to further prevent the spread, almost 1 billion people across the globe are put on home confinement (lockdown/movement control order) (NST Online, 22, March 2020) and Malaysia is of no exception. COVID-19 transmits quickly from person to person by droplets or direct touch (Lai et al., 2020). It spreads when someone infected with COVID-19 coughs, sneezes, or exhales (Williams, 2020).

Malaysia's Prime Minister declared that the first phase of the Movement Control Order (MCO) would begin on March 18 and last until 2021. As a result, all sectors, including education, are adversely affected, particularly Higher Education Institutions and schools. Teachers have been asked to investigate the finest teaching or instructional methods or tactics for educating their students remotely because the partial lockout or MCO is unprecedented. As a result, instructors and support staff are experimenting with online learning activities in the hopes of creating a support system for parents and a sense of routine for children. The Ministry of Education (MOE) responded by issuing a circular on Teaching and Learning Implementation Guidelines (PdP) during the COVID-19 pandemic Movement Control Order (MCO). The Teaching and Learning Implementation Guidelines (PdP) circular reflects KPM's commitment to ensuring that students are not left behind and can continue their education in a safe environment. Teachers are not permitted to enter the school for this purpose and must complete all homework assignments from their homes (MOE, 2020-a). The Malaysian Ministry of Education has also produced a basic manual or guideline for instructors to conduct teaching and learning activities at home, however there isn't much detail on how to carry out specific teaching and learning activities, such as assessment (MOE, 2020-b).

Computers have been finding their way into Malaysian schools since the late 1990s, thanks to the Smart Schools programme, such as the "1Bestarinet" project (Simin et al., 2016). Since 2006, e-learning has been a staple in education (Tunku Badariah, 2020). On April 16, 2011, Malaysia's national e-learning policy (DePAN 2.0) was officially launched, paving the way for e-learning and online education in the country (MOHE, 2011). As a result, due to the current situation of the COVID-19 pandemic, this study is being conducted to investigate the level of TPACK skill among Arabic language school teachers in Johor, which necessitates the teacher to adapt with appropriate teaching and learning remote strategies, including online assessment. In Malaysia, online teaching and learning has yet to meet the expectations of both educators and students. This is problematic for some teachers because they still lack the necessary abilities in the usage of information technology to be able to present educational materials online (Tunku Badariah, 2020; Simin et al., 2020). Students' attention and achievement in online classrooms, as well as the usefulness of online teaching, are also discussed (Tao et al., 2020).

Despite the problems they have faced thus far, Malaysian teachers are optimistic and optimistic about the future (The Sun Daily, 2020). Taking attendance as one of the most difficult tasks to do online, as educators wonder if the learners are truly checked in (Agatha, 2020), the effectiveness of

teaching writing online (Sueraya, 2021), students' attention in online, achievement, and the efficacy of online teaching are also raised as challenges (Tao et al., 2020). The greatest barrier, according to most research, is educators' preparedness and optimism to accept and implement the new teaching and learning paradigm (Sueraya et al., 2021). Despite the difficulties of teaching and learning in schools, several webinars have been held to facilitate online guides and instructional supports, such as the one hosted by the ICESCO Centre of Education in Malaysia in partnership with the Malaysian Ministry of Education as shown in Figure 1.

Figure 1. Online Webinar on Teaching Arabic during Pandemic

2. Research Objectives

The following research questions are addressed in this study:

1- What is the level of understanding of technology, pedagogy, and content among Arabic school teachers, including combinations of these domains, after they have completed the TPACK training in creating teaching and online assessment?

2- What are your thoughts and recommendations for enhancing the use of instructional technology in Arabic classrooms?

3- What are your thoughts and ideas for enhancing the use of educational technology in Arabic online assessment?

3. Methodology

As previously stated, the purpose of this study is to determine the level of technological pedagogical content knowledge (TPACK) skill among Arabic trainee teachers in implementing online teaching and assessment during school closures due to the Malaysian government's Movement Restriction Control (MCO) of COVID-19. The trainee teachers were chosen from 32 final-year Bachelor of Education in Teaching Arabic as a Second Language students from the International Islamic University Malaysia (IIUM) Kulliyyah of Education and distributed to various secondary schools to fulfil the teaching practise and practicum requirement of the Bachelor of Education. Teachers' knowledge of three fundamental components of TPACK, namely technology, content, and pedagogy, as well as their ideas and feedback on using online assessment via Google Form, were investigated using these study instruments.

After finishing the teaching practise and practicum period in December 2020, the respondents were asked to complete the adapted TPACK survey by (Mishra & Koehler, 2006; Shulman, 1986) in their own chosen location at a time that was convenient to them, via self-administered survey (Robson, 2002). The first section of the survey is dedicated to gathering demographic data, such as participants' gender. The second section of the questionnaire is based on an adapted TPACK as a guiding framework for designing online assessments in 10 questions and four open-ended surveys (Mishra & Koehler, 2006; Shulman, 1986; Archambault & Barnett, 2010; Roberts, 1999; Schmidt, 2009), followed by open-ended surveys on problems and challenges encountered during the use of educational technology in teaching and online assessment of Arabic learning at home.

4. Results and Findings

The results for the results and findings are presented in separate subsections such as the followings:

4.1. Demographic Information

As shown in Table 1, it is very clear that most of the respondents are male with 22 respondents (55%), while the rests are female (45%). They were distributed in various secondary schools in Selangor to fulfill the teaching practice and practicum requirement of Bachelor of Education degree in their fourth year of study. The details of school names and locations are not disclosed in this study due to classified category of information.

Table 1. Gender

Gender	Frequency (N)	Percentage (%)
Male	5	15.6
Female	27	84.4
Total	32	100

4.2 Competency Level on Technological Pedagogical Content Knowledge (TPACK)

The results competency level on technological pedagogical content knowledge (TPACK) among Arabic school teachers are displayed in Table 2 as the following:

Table 2. Results of TPACK Knowledge and Skill

No.	Item	Frequency and Percentage				
		SD	D	N	A	SA
1	I can search for materials with the help of educational technology to understand Arabic and use them in the teaching process.	0	0	0	18 (56.3%)	14 (43.6%)
2	I can use the internet to understand Arabic and use it in the T&L process.	0	0	0	18 (56.3%)	14 (43.6%)
3	I can use a teaching strategy that combines Arabic content, educational technology and pedagogy.	0	0	2 (6.3%)	21 (65.6%)	9 (28.1%)
4	I can choose Arabic resources and educational technology innovations based on suitability to meet the needs of the Arabic T&L.	0	0	2 (6.3%)	23 (71.9%)	7 (21.9%)
5	I can teach Arabic by combining pedagogy, Arabic content and educational technology.	0	0	3 (9.4%)	20 (62.5%)	9 (28.1%)
6	I can assess Arabic resources and educational technology innovations to meet the needs of the Arabic T&L.	0	0	8 (25%)	19 (59.4%)	5 (15.6%)
7	I can use educational technology to	0	0	1	20	11

No.	Statement					
	understand Arabic to support the Arabic T&L.			(3.1%)	(62.5%)	(34.4%)
8	I can use educational technology to understand Arabic to support Arabic research.	0	0	2 (6.3%)	21 (65.6%)	9 (28.1%)
9	I can demonstrate leadership in helping others coordinate the use of Arabic content, educational technology and pedagogy in schools.	0	0	9 (28.1%)	17 (53.1%)	6 (18.8%)
10	I can find materials with the help of educational technologies to understand Arabic language and use them in the process of evaluating and assessment of Arabic language.	0	1 (3.1%)	4 (12.5%)	20 (62.5%)	7 (21.9%)
Total Score		0	0.1 (3.1%)	3.1 (9.7%)	19.7 (61.6%)	9.1 (28.4%)

Based on above Table 2, the average frequency and percentage results and findings are showing a clear high level TPACK competency level among the respondents. The Arabic language trainee teachers are having high confidence of TPACK skill in searching and using Arabic resources and educational technology to meet the needs of the Arabic teaching and learning (item 1, 2 and 7). However, few of them are still not sure and weak in selecting and assessing Arabic resources and educational technology to facilitate the needs of the Arabic teaching, learning and research (item 6, 9 and 10). Item 10 is the alarming indicator that shows the lowest TPACK skill in finding materials with the help of educational technologies to understand Arabic language and use them in the process of evaluating and assessment of Arabic language. This finding is showing that the trainee teachers are still in need of continuous teaching training and career development when they are appointed officially at the schools as licensed teachers by the Ministry of Education.

4.3 Open-ended survey on problems and challenges faced during the use of educational technology in teaching and learning (T&L) Arabic in schools before MCO.

Table 3. Problems and challenges faced during the use of educational technology in teaching and learning (T&L) Arabic in schools before MCO

No.	Main Theme	Sub Theme
1	Technical support	• Absence of complete technology in the classrooms such as projectors, computers and etc. • Internet constraint in the school. • Limited available projectors to be shared with many teachers in schools. • Heavy and problematic projectors. • Lack of PCs in schools and aids such as projectors and screens. • Lack of infrastructure in using educational technology. • Very high data usage for classrooms and search for teaching materials • Lack of convenience such as projector, LCD. • There's no completeness of technology support in school.
2	E-Learning resources	• Limited use of technology • Lack of knowledge relating to applications or interactive learning mediums and the use of appropriate technologies to be applied in the classroom. • Lack of exposure to the use of technology in teaching and learning (T& L).
3	Instructional support	• Schools lack the resources of technology. Labs are for specific subjects only. • ICT technology materials are lacking.

		• Lack of school technology materials that are suitable for learning. • Schools lack technological materials that correspond to learning. • Applications are less friendly for Arabic learning, it is created more suitable for English. • Lack of knowledge about other platforms to teach causes students to get bored. • A short T&L timetable that limits the use of technology in class.
4	Human resource issues	• Unsatisfactory readiness of teachers and students for online learning – most schools shorten each class session for considering the equality of each student. • Fully speaking Arabic, students lacked understanding. Get to say don't fast and use words that easily can be understood.

From the open-ended responses in Table 3, the findings in general can be divided into 4 main themes of technical support, e-learning resources, instructional support and human resource issues for both of comments and suggestions in light of problems and challenges faced during the use of educational technology in teaching and learning (T&L) Arabic in schools before MCO.

4.4 Open-ended survey on problems and challenges faced during the use of educational technology in teaching (T&L) Arabic online at home during MCO.

Table 4. Problems and challenges faced during the use of educational technology in teaching and learning (T&L) Arabic online at home during MCO

No.	Main Theme	Sub Theme
1	Technical support	• Internet access problems. • Students have no equal chance of accessing the internet, mobile phones, etc. • Limited internet networks. • Internet lost, internet loading, it's hard to get respondents from students. • Some students were unable to follow classes due to internet problems. • Schools are asking teachers to less use platforms that require students to have plenty of internet data to follow classes (YouTube, GoogleMeet, etc). • Internet problems to be accessed by students. • Internet access problems in the residential area of the students. • Requires more 1 laptop to run T&L in Zoom and Google Meet to avoid hanging lines especially in the rural areas. • Internet access that is not accessible to all students. • Students rarely use google meet platforms. Some areas experience slow internet as well as limited use of data. So, to save on usage, I tend to use Whatsapp as alternative T&L platform. • Disruptive time of teaching caused by data/line disconnected while teaching. • Not all students have handphones, computers • Unsanctioned internet access, especially during rainy weather.
2	E-Learning resources	• Need to find suitable resources that suit the teaching of language skills in online platform. • It's hard to teach writing skills-related activities because some pupils don't have Arabic keyboards.

3	Instructional support	• Providing appropriate and interesting teaching materials, so that students are not bored. • Considering the background of students who do not all have plenty of internet access and fast. • Need to teach suitable activities that suit the teaching of language skills in online platform. • Technical errors when running T&L that interfere with class smoothness because some applications are slightly complicated their use.
4	Human resource issues	• It's hard to trace students with Internet problems who are missing from learning online. • Most of the missing students who are not able to attend classes are caused by internet problems or no devices used for T&L. • Lack of student interaction in online classroom, and difficulty to track their learning progress.
5	Online Pedagogy	• The environment is not suitable for being in a home that is packed with many works and homework. • Not so suitable to conduct group activities in an online learning. • Not all students responded. Unable to evaluate the writing skills of the students. There are students having constraints where they tend to use Google Translate rather than dictionaries. • Less smooth even if the internet is no problem. Students are less active. • 3. Students are only eager for T&L at the beginning of the MCO and are increasingly lacklustre after a few weeks of classes conducted online as no year-end exams will be conducted. • Students are less response. Students are not focused and do not listen to teacher's instructions if the teacher asks to open a camera or send school work.

From the open-ended responses in Table 4, the findings in general can be divided into 5 main themes of technical support, e-learning resources, instructional support, human resource and online pedagogy issues for both of comments and suggestions in light of problems and challenges faced during the use of educational technology in teaching (T&L) Arabic in schools during MCO.

4.5 Open-ended survey on e-learning and technological applications and platforms used in teaching and learning (T&L) Arabic online at home during MCO.

Table 5. E-learning and technological applications and platforms used in online teaching and learning (T&L) Arabic at home during MCO.

No.	Main Theme	Sub Theme
1	Short Messages Service	Whatsapp Telegram
2	Online Video Conference	Google meet Zoom
3	Open Educational Resource	YouTube
4	Educational Platform/App	Google classroom Wordwall Quizizz Instagram Googleform Voicenote Padlet Kahoot ClassDojo

		Classtools Wheelofnames Mentimeter
5	Computer software/courseware	PowerPoint Google docs Google form

From the open-ended responses in Table 5, the findings in general can be divided into 5 main e-learning and technological applications and platforms used in teaching and learning (T&L) Arabic online at home during MCO.

4.6 Open-ended survey on problems and challenges faced during the use of educational technology in conducting Arabic online assessment in home-based learning during MCO.

Table 6. Problems and challenges faced during the use of educational technology in conducting Arabic online assessment in home-based learning during MCO

No.	Main Theme	Sub Theme
1	Technical support	• It is difficult to get the appropriate response from students due to poor internet access as well as data savings. • Not all students attended online classes and not all have smartphones.
2	E-Learning resources	• Not all students are able to access assessment sections such as the absence of Arabic keyboards on equipment that causes them to write and send. • Students use Google Translate in looking for translation, internet and technology facilities as students share it with the parents.
3	Instructional support	• Too strict scoring like Google Form and Quizzes that marks wrong answers simply because of the existence of points or excessive word distancing. • Some pupils are unable to complete the tasks given for sharing devices.
4	Human resource issues	• There are parents who quarrel with their children when the child wants to use the smartphone to learn. • Every student rarely comes to online classes despite being assigned a simple task. • Some pupils are unable to complete the training given for sharing devices. • Some pupils did not respond despite being asked repeatedly. There are pupils who prioritize other things from performing their classes and tests. • Some students do not attend classes. • A handful of pupils do not cooperate in online classes carried out and don't do the work given.
5	Online Assessment	• Students' understanding and performance through online learning at a moderate level and unable to focus one to one with poor students. • Not all students submit assigned tasks, cannot track the level of understanding of students • Cannot afford to evaluate writing skills even by typing in answers because not all students have Arabic keyboards and not all students responded in the learning process. • There are students who ignore school work when asked to send. Some just want to complete the school work given. • There are a number of students who are unable to reach a minimum of score to determine their level of understanding from the T&L carried out.

	• Homework tasks were not completed online, assessments are incomplete.
	• Difficulty in ensuring that each student completed the assessment so that they can be assessed by the teachers.
	• There are some students missing from the radar; undetectable (material constraints) make the assessment not completely running.
	• Cannot evaluate all students as there is a family matter and internet line problem.
	• Hard to reinterpret the ability of Arabic-speaking pupils with simple answers.
	• Students slowly responded, there are students who do answered and did the assessments at all.
	• It's hard to mark if a written question. It is suitable for objective nature of questions only.

From the open-ended responses in Table 6, the findings in general can be divided into 5 main themes of technical support, e-learning resources, instructional support, human resource and online assessment issues for both of comments related to problems and challenges faced during the use of educational technology in conducting Arabic online assessment in home-based learning during MCO.

4.7 Open-ended survey on e-learning and technological applications and platforms used in online Arabic language evaluation and assessment in home-based learning during MCO.

Table 7. E-learning and technological applications and platforms used in online Arabic language evaluation and assessment in home-based learning during MCO

No.	*Main Theme*	*Sub Theme*
1	Short Messages Service	Whatsapp Telegram
2	Online Video Conference	Googlemeet
3	Open Educational Resource	Youtube Resources from school worksheets
4	Educational Platform/App	Quizziz Wordwall Google classroom Padlet Kahoot Liveworksheet Word Wall, Quizziz Nearpod Mentimeter Quizalize
5	Computer software/courseware	Googleform PowerPoint Game templates

From the open-ended responses in Table 7, the findings in general can be divided into 5 main e-learning and technological applications and platforms used in evaluation and assessment in home-based learning during MCO.

4.8 Open-ended survey on further suggestions to strengthen the use of educational technology in the evaluation and assessment of Arabic language in Malaysia.

Table 8. Further suggestions to strengthen the use of educational technology in the evaluation and assessment of Arabic language in Malaysia

No.	Main Theme	Sub Theme
1	Technical support	• Enhance Internet facility and increase the search for interesting resources/ websites /platforms for T&L to the students. • Create a system to evaluate student work throughout online learning. • Provide internet or yes for every teacher and student. • Government subsidies such as internet and telephone or gadgets to students if this situation persists. • Ensure that every student has easy access to basic technology to ensure the continuity of online learning.
2	E-Learning resources	• Explore the use of Whatsapp, YouTube, Live Instagram, LiveFacebook. • Innovate existing applications and strengthen their use in the evaluation and assessment of Arabic language in Malaysia. • Increase the number of friendly applications for Arabic. • Teachers need to be further exposed to new apps and platforms for T&L sessions. • Provide training courses to teachers, especially practical teachers in using technology in learning.
3	Instructional support	• Requires skills to attract students. Diverse delivery methods and types of activities for evaluation. • Create more educational technology platforms that do not allow students to imitate friends' answers and simplify the answer review system for the teachers. • Has a specific subject-matter expert to train the use of technology. • Organize workshops on the use of technology and applications for final year students before the practical sessions are conducted. provide a special place and space outside the classroom equipped with screens, projectors and various technologies for the use of teachers and students. • Next, identify the problems of students who are unable to attend classes and do not do assignments. Need to support them so that they do not miss lessons. • Familiarize teachers and students with technology in T&L such as holding seminars or a special day a month that provides online classes.
4	Human resource issues	• The creativity of a teacher is important in creating interesting methods of questioning using technology so that students see the assessment of Arabic language using educational technology is something that is fun and easy to learn. • Teachers need to think creatively and innovate to attract students for the spirit of learning using technology while online.
5	Online Assessment	• Applications or platforms that provide games need to be multiplied so that students can learn while entertaining. • Create a variety of offline applications, so that students can perform assessments easily without limited

		time.

From the open-ended responses in Table 8, the findings in general can be divided into 5 main themes of technical support, e-learning resources, instructional support, human resource and online assessment issues for the comments related to further suggestions to strengthen the use of educational technology in the evaluation and assessment of Arabic language in Malaysia.

5. Discussions

In summary, the results of this study demonstrate that Arabic language trainee teachers have high trust in their TPACK skills when it comes to teaching and learning Arabic in schools. However, based on the outcomes and observations connected to the greater technological element of TPACK, a few elements still need to be enhanced. The study discovered the following issues that could be improved based on the open-ended responses:

5.1 Technical support

During a pandemic, internet accessibility has been identified as a key barrier to performing online education and evaluation. Furthermore, the inadequate technical support provided by laptops and other devices may obstruct the learning process. As a result, during the pandemic, a complete online synchronous learning session is not a possibility. Teachers and educators can experiment with asynchronous learning sessions that combine online and offline learning activities and assessments, depending on the nature of the lesson plan and objectives, particularly in Arabic. One method for overcoming the Internet bandwidth constraint is to employ one-stop facilities, such as a community learning centre with expanded IT support.

5.2 Instructional support

According to the findings, instructional support needs to be strengthened and enhanced as well. The assistance could be in the form of manpower, teaching and learning materials, assessment resources, and language assistance, especially in Arabic. The Ministry of Education and school administration, with the help of other parties, can strengthen teacher training institutions, followed by continuing professional teaching growth by the Ministry of Education and school administration. As online learning is vulnerable to the 'copy and paste' phenomena, more educational technology platforms that do not allow students to imitate friends' responses and simplify the answer evaluation system for teachers are also critical. Several e-learning and technical applications and platforms were also offered as tools for online Arabic language instruction and assessment in home-based learning during the pandemic.

5.3 Educational human resource

According to the findings, educational human resources are in desperate need of improvement and enhancement. Instructors' expertise in using IT applications and platforms, especially during pandemics, as well as supportive aid from school technology facilities and technical or administrative people, can all help teachers and students overcome hurdles and problems. It can also be done in a home-based learning setting in collaboration with parents as teaching assistants. Creating a mechanism that can evaluate student work during online learning during the epidemic is also an excellent idea that should be investigated.

5.4 Instructional support

During the pandemic, the Ministry of Education may need to empower the element of selecting and evaluating Arabic resources and educational technologies in order to meet the needs of Arabic teaching, learning, and research. Furthermore, a trainer or mentor for other peer school instructors is required to assist others in using Arabic material, educational technology, and pedagogy in schools and at home-based learning settings. As indicated in the comments, a teacher's creativity is also important in building an engaging instructional support system in using technology so that students regard Arabic language evaluation through educational technology as something that is enjoyable and simple to learn.

5.5 Online pedagogy and assessment

This study discovered that in a home-based learning context, the asynchronous learning session with a mix of online and offline learning activities and assessments is more suitable for teachers to execute. Furthermore, the e-learning platform and application should be carefully chosen in light of the students' logistical and IT resources. Furthermore, prior to implementation, learners' needs should be considered in the learning activities and assessment methodologies. Whatever learning objectives and platforms are chosen without first understanding the learning needs and supports, they will all end up in the same learning disaster as the pandemic.

6. Conclusion

During the MCO of the COVID-19 programme, this study was done to determine the level of technological pedagogical content knowledge (TPACK) skill among Arabic school trainee instructors in preparing online assessments for home-based learning environments. In light of the findings, it is clear that this study has revealed a few important issues that need to be addressed in terms of TPACK skill implementation, teaching, and assessment, particularly among Arabic language school trainee teachers, by the Kulliyyah of Education, IIUM, prior to sending the teachers for teaching practise and practicum during the pandemic. Various levels of authorities and individuals, such as instructors, expert teachers, schools, and school administration divisions at the district, state, and national levels, can collaborate to address the concerns and ideas. In order to maximise the efficient implementation of TPACK skill and instruction, better collaboration between these parties may be more useful and fruitful.

7. Acknowledgement

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