

# Teachers' Attitudes Towards the Use of Augmented Reality Technology in Teaching Arabic in Primary School Malaysia

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**Abstract**—The era of Industrial Revolution 4.0 has brought the debate of teachers' willingness to use information technology in teaching Arabic. Thus, new technologies have emerged with a positive effect on teaching, such as augmented reality technology applied in the education system, especially in teaching. However, there is still limited research with regards to teaching in a foreign language. Therefore, the present study discusses the readiness of teachers from the aspect of knowledge and their attitude towards the use of augmented reality technology in the teaching of Arabic in Malaysia. The study was carried out using quantitative methodology with the use of survey questionnaire that is distributed to 36 Arabic language teachers as respondents. The usage of questionnaires as a research instrument forms the basis for data collection to identify respondents' level of readiness. Afterwards, data analysis was carried out using the Statistical Package for the Social Science version 26 (SPSS). The results of the study show that the level of readiness of the teachers in terms of their attitude towards the use of augmented reality technology in the teaching of Arabic in Malaysia is at a moderate level. Nevertheless, teachers' attitudes and knowledge are still found to be at a low level, especially for veteran teachers who have no experience in information technology to influence their enthusiasm towards the use of technology in their teaching. The implication of the current study is hoped to be useful and beneficial as a guide to stakeholders who are responsible for ensuring the process of teaching and learning Arabic which is based on augmented reality technology can be implemented in a meaningful way, thereby improving the performance of students in mastering the Arabic language.

**Keywords**—Attitude; teachers; augmented reality; Arabic language; primary school

## I. INTRODUCTION

Contemporarily, augmented reality technology has its own advantages and importance in line with the development of various rapidly growing and sophisticated technologies. The augmented reality technology is an application that is often used in developed countries' educational system as a teaching and learning process of the 21st century. With the availability of technology and evidence of its use in most developed countries, it proves that the teaching and learning process in any school or institution in developing countries, especially Malaysia requires an urgent attention in order to keep up with

the current fast changing world order in technological advancement. This is because, the use of technology can apply a culture of innovation among teachers, in addition to encouraging teachers or lecturers to be more creative in teaching which allows teaching and learning to be more interactive that will eventually help raise the quality of education in Malaysia [1].

For a teacher, there are many steps or efforts that need to be known and mastered including knowledge, skills, approaches, attitudes, methods, and the best techniques to make the teaching process interesting. Preliminary research [2] has found that there are a number of learning processes that have the potential to affect the excellence and interest among students during teaching process. Information technology is one that has significant ability to increase student's understanding, thus requires the knowledge and preparation of teachers to make augmented reality technology an educational tool. Active learning is a process that involves the combination of the students and teachers' participation [3]. For example, the teacher provides freedom to the students so that they are able to learn in a more enjoyable atmosphere and this will create interest in the students as well as make the teaching process more effective and fun.

Based on this, the study [4] identified that teaching Arabic is not separated from the influence and role of information technology. This is because research carried out on modules and Arabic language learning techniques have shown the need for the usage of information and communication technology, particularly at primary level. In [5] and [6], there is a common view on the influence of information and communication technology that can attract students to learn Arabic. This statement is also supported by Muhammad Nazir's view in his study which emphasized the function of multimedia Arabic language games which are seen to be able to have a good impact in understanding the Quran [7].

As such, study [8] identified that teachers are the most accurate and responsible individual to implement this transformation in their teaching. This includes integrating technological advances in the teaching of Arabic. Quality teachers have a level of readiness that covers the aspects of knowledge, including attitudes towards the use of technology

and are able to link their knowledge with more effective teaching methods [9]. Next, study [10] found that 21st century education requires teachers to produce students who are creative, critical, and innovative. Therefore, teachers must first be prepared to master and equip themselves with the latest pedagogical knowledge in accordance with the development progress of the Industrial Revolution 4.0 (4IR) so that teaching can be carried out to meet the 21st century learning standards outlined by the Malaysian Ministry of Education while also being able to attract student's interest and motivation in learning, as teacher is the main factor or role model who will contribute to the success of progress in a modern education system on par with other developed countries.

Therefore, the use of augmented reality technology that combines virtual objects into the real world so that users can interact with virtual objects in real time becomes eminent to be applied in the education system of Malaysia, especially in the teaching of Arabic language [11]. The existence of user-friendly augmented reality applications can help teachers integrate virtual and improve the quality of their teaching and learning process to a more realistic experience [12,13]. A study related to the analysis of the use of applications based on augmented reality technology found that in order to make a better learning, student and teachers need a convenient atmosphere in addition to making learning and teaching more interesting to increase students' interest in learning [14]. As can be seen from the development of technology in the national education system, augmented reality technology is a new and sophisticated form of technology that has yet to be fully explored by researchers. Therefore, it is necessary for the current study to focus on the development of augmented reality technology usage in the national education system in line with the 21st century learning standards outlined by the Malaysian Ministry of Education.

## II. PROBLEM STATEMENT

Malaysia is now a developing country with an economic condition that is very competitive among developing countries. This has led to the presence of 4IR which emphasizes the construction of virtual reality technology without much use of human energy, which has an impact on various aspects of life. In order to face the challenges of 4IR in the era of national education, especially in the teaching and learning of the Arabic language, it is necessary to get out of the comfort zone.

Arabic language subject requires teaching and learning methods that emphasize practice or practicality based on information technology in line with the development of 4IR. This is due to the fact that Arabic language teachers in primary or secondary schools face problem with students' attitude that are easily bored and then feel that learning Arabic language in the classroom setting is not interesting. This unfavorable condition gets more critical when the conventional way of learning produces many students who are weak in the command of the Arabic language which at later stage causes a decline in Arabic language achievement at the primary and secondary school levels in Malaysia. However, as at current, the national education policy strongly emphasizes the aspect of systematic learning which is expected to change

the direction of learning and teaching in Arabic. Therefore, it is opined that teaching methods that have a combination of practicality and usage of information technology can have a more positive effect in teaching Arabic language [2].

In recent time, teachers' problems in teaching Arabic language are often debated. Many past studies have discussed the issues faced by teachers in delivering Arabic lessons to school students in Malaysia. According to [15], there are various problems faced by Arabic language teachers in Malaysia during lessons' delivery. Among the problems often faced by the teachers are ability, pedagogy, motivation, teaching aids, environment, and lack of exposure related to information technology.

Other researchers found that the level of teachers' readiness for information technology platforms is still at a less than satisfactory level. This has been supported through the study [16] who found that 39 percent of teachers in Malaysian schools have a weak level of knowledge about the use of computers and smartphones in their teaching method and the integration of learning process by using such gadgets. As such, it is opined that more problems will arise if teachers are not interested in mastering knowledge and skills of information technology.

The result of the foregoing shows that there are many studies that have identified problems associated with Arabic language teachers, testing teaching models based on information technology, the methods of teachers who teach Arabic and connection with the use of information technology among others. Nevertheless, the booming era of 4IR also requires and encourages researchers to focus their studies on teaching and learning methods for Arabic subjects that are more practical, such as the use of augmented reality technology as there are still limited researchers in Malaysia compared to other countries. Therefore, the present study aims to identify teachers' readiness from the aspect of attitude towards the use of augmented reality technology in the teaching of Arabic language in Malaysia.

## III. AUGMENTED REALITY TECHNOLOGY

### A. Concept and Definition

The development of digital technology has led to the dire need of augmented reality technology. According to [17], the concept of augmented reality technology was first introduced by Ivan Sutherland in 1965. However, in the early 1990s, the term augmented reality began to be used by [18], who developed an augmented reality technology system as a tool to train employees at Boeing Corporation USA to understand and operate the wiring of the aircraft.

Thereafter, study [19] introduced the reality-virtuality as a continuum taxonomy that identifies the relationship between the real environment and virtual reality technology or virtual reality. Based on the taxonomy, the virtual environment refers to a virtual reality technology environment that features all objects virtually. Augmented reality technology is located near the real world where it is expanded with virtual objects produced by computers [17].

This technology has the ability to keep users connected to the real world while interacting with virtual and physical objects [20]. Previous researchers stated that augmented reality technology can be defined as a behavior between human and computers, acting as an additional virtual object to the real environment through display of video cameras or other computers gadget in real time [21].

Study [22] stated that augmented reality is a variation of virtual environments or virtual reality environments commonly known as virtual reality. This is a system or application that is able to create a view in the real world by inserting virtual objects produced by computers including objects in 3-dimensional form into the real environment in real time [22].

There are distinct differences between augmented reality technology and virtual reality technology. The later refers to a situation where the goal is to fully immerse the user in a synthetic environment while earlier is a situation where the goal is to complete the user's perception or view of the real world through the addition of virtual objects. The virtual environment completely replaces the real world, while with augmented reality technology users see the real environment, which is the merging of the virtual with the real [17].

Research [23] studied the concept of augmented reality technology and found that there are generally three types of augmented reality methods which are based on marker-based augmented reality technology; (i) Marker-Based Augmented Reality technology, (ii) Markerless Augmented Reality technology, and (iii) GPS Based Tracking. According to [24], marker-based augmented reality technology requires certain markers or labels to register the position of an object that will be displayed in the real environment. Whereas, in the Markerless Augmented Reality method, users do not need to use markers to show digital elements [25]. Also, markerless technology that is growing through android devices can make augmented reality technology more interesting and can be used anytime and anywhere [26].

Nevertheless, the concept of augmented reality technology that uses GPS Based Tracking is the most widely used method nowadays. It is often developed in various mobile phone applications, such as IOS and Android. This technique accesses the GPS and the compass in the mobile device usually takes data from the GPS while the compass shows the desired direction in real time [27].

#### B. Related Works

Globally, augmented reality technology is used to increase the level of proficiency in Arabic language, especially in Malaysia. A study related to 3D Arabic Augmented Reality (3D BAAR) and focused on the ability to improve Arabic language proficiency among students conducted by [4]. The objective of that research was to test Arabic reading and speaking skills among Year 4 students at a school in the Johor Bahru district through 3D BAAR application that uses augmented reality technology. The results of the study showed a positive effect of the application in improving Arabic reading and speaking skills among the Year 4 students. The majority of students show that they are very satisfied with the

use of applications based on augmented reality technology in their learning. The researchers stated that the students were very interested in the multimedia elements found in the application and displayed through the smartphone screen. Such application allows the students to learn to recognize and pronounce Arabic words with the correct pronunciation. The researchers concluded that the mastery of the Arabic language, such as the ability to speak and read the Arabic language can be improved with the availability of technology based on augmented reality.

Apart from that, the testing of effectiveness of augmented reality applications in basic Arabic language education had been carried out. According to [28], an application has been developed using a Mobile Augmented Reality (MAR) approach specifically for use in teaching basic Arabic language. This application uses the ADDIE (Analyze, Design, Develop, Implement, and Evaluate) technique in terms of design, implementation, testing phase and others. The advantage of the application involves two teaching modules developed by researchers, namely the teaching module and a set of practice questions. The results of the study found that the students showed so much interest in using it, as they stated that the application is interesting, very useful, and easy to use. They are also very satisfied due to the opportunity to learn Arabic words quickly.

Another study by [29] titled "The Application of Augmented Reality Technology in Arabic Language Learning Media: Durus Al-Lughah Volume 1" stated that an application related to augmented reality technology was developed for learning Arabic language at Universitas Darussalam Gontor (UNIDA). The application uses the Android platform and is developed in software, such as Blender 3D, Corel Draw, and Unity 3D. The application is useful for people who use mobile phone with a minimum specification of android version OS 4.0 Jellybean, screen size 4 inches, RAM 512 MB, free memory space (phone memory) with a minimum 200 MB and rear camera 13 MP. The results of the study showed that the application developed is very interesting for learning Durus Al Lughah because it has a very good design, operation, display method, and information structure. However, some aspects still need to be improved from time to time so that the appearance of the application can attract the attention of students to use it in learning Arabic language.

#### IV. METHODOLOGY

The present study purpose is to determine Malaysian teachers' perspectives and attitude to use augmented reality technology in teaching Arabic language. This study was carried out across 14 states comprising several schools in different locations of Malaysia. The respondents include 36 teachers who are chosen through basic random sampling procedure. The teachers selected to participate in this research are Arabic language teachers who teach at the participating schools.

Additionally, a survey questionnaire containing demographic information and teachers' preparedness was employed in this investigation across several stages. The first stage involves collecting respondents' information by determining variances in respondents' levels of preparation

depending on gender, age, education level, teaching experience, type of option, location of the school where they serve, and experience with various information technologies (IT). The second section is a construct designed to assess teachers' attitudes on the usage of augmented reality technology in the classroom in Malaysia.

Conversely, in order to measure the teachers' attitude in using augmented reality technology, four levels of the Likert scale were employed, namely, 4 (Strongly agree), 3 (Agree), 2 (Disagree), and 1 (Strongly Disagree). A high score will give an impression of a positive level of readiness towards a certain criterion and vice versa. Furthermore, in order to obtain data regarding the constructs found through literature and expert studies, questionnaires were delivered to respondents via Google Forms. Thereafter, the data were then examined using descriptive statistics like frequency, percentage, mean, and standard deviation in the Statistical Package for the Social Sciences (SPSS) version 26 software.

## V. ANALYSIS FINDINGS

### A. Respondent Demographics

The respondents involved in the present study are Arabic language teachers from schools throughout Malaysia, in which 36 people represent the total number of Arabic language teachers of the population sample. Table I below shows the demographics of the study, which is divided into 7 questions, such as personal background i.e., gender, age, education level, teaching experience, type of option, experience using information technology, and the name of the school where they serve.

Based on Table I, a total of 31 people (86.1%) are female teachers who teach Arabic subjects, and the remaining 5 people (13.9%) are male teachers. The total number of respondents for this study is 36 people. The findings show that from all the respondents of the study, the number of female Arabic teachers from the sample is more than the total number of their male Arabic teachers' counterparts.

In terms of the distribution of respondents age, it can be seen that the largest number of teachers are between the age of 30 to 39 years and between the age of 40 to 49 years, representing 11 people each with a percentage of 30.6%. This is followed by teachers who are within the age of 20 to 29 years, representing a total of 9 people (25.0%), while the least number of teachers are from the age group of 50 to 59 years, representing a total of 5 people (13.9%). This finding explains that the teachers who teach Arabic language subjects in Malaysia are young, in which the majority are between the age of 20 and 39 years with a percentage of 55.6%. This further explains that the strength possessed by Arabic language teachers is from the aspect of human resources, in which the majority of them are adults. This age group teachers are also easier to accept and make changes to their teaching practices. This group is highly motivated and exposed to many of the latest elements in education, especially creative and innovative teaching that are capable of bringing a positive reform to the country's education.

Meanwhile, the demographics of the study sample also show that the majority of teachers who teach Arabic language

have their highest education at the bachelor's degree level, representing a total of 17 people (47.2%). This is followed by the Malaysian Higher Certificate of Religion (STAM) and Malaysian Higher Certificate of Education (STPM), which are 9 people (25%). The total numbers of the Malaysian Certificate of Education (SPM) are as many as 7 people (19.4%). Meanwhile, at the master's degree and Diploma level, there is one person (2.8%) each who has the qualification. Lastly, there seem to be no teachers who teach Arabic language subject with a Doctor of Philosophy (PhD) degree. This confirms the findings of previous studies that stated the number of Arabic language teachers who hold master's and PhD degree are not much in schools compared to teachers who hold bachelor's degree or diploma.

Regarding the aspect of teachers' teaching experience, it was found that respondents who have taught between 5 and 15 years surpass the others with a total of 7 people (47.2%) followed by more than 15 years with a total of 11 people (30.6%). Only 8 people (22.2%) have less than 5 years of teaching experience. This finding explains that the majority of teachers who teach Arabic language in Malaysia have more than 5 years of teaching experience with a percentage of 77.8%. This can be seen that the Arabic language teachers in this study consist of experienced teachers who are able to implement the teaching and learning process effectively.

On the other hand, the majority of respondents are teachers of Al-Quran and Fardhu Ain (KAFA) which represent the type of teacher option that teaches Arabic which are 24 people (66.7%), followed by Islamic Education Teachers (GPI) which are 8 people (22.2%), while only 4 people (11.1%) are Arabic Language Teachers (GBA). This finding shows that there is no religious teacher who teaches Arabic language.

Referring to the aspect of experience using information technology, the majority of respondents have less than 5 years of experience deploying information technology, with a total of 22 people (61.1%) while 14 people (38.9%) have more than 5 years of experience employing information technology. In general, it was found that not all Arabic language teachers are literate in information technology, especially the group of teachers who are categorized as veteran teachers. They struggle to surf the internet and apply various systems and applications that are beginning to be used in the country's education system.

Finally, Table I shows that the majority of respondents serve at Sekolah Kebangsaan Penambang, totalling 13 people (36.1%), followed by respondents from Sekolah Kebangsaan Kedai Buloh 2, which is 5 people (13.9%). Respondents from Sekolah Kebangsaan Che Latif and Sekolah Kebangsaan Pulau Kundor have the same number of 4 people each (11.1%), followed by Sekolah Kebangsaan Pasir Gudang 3 which are 2 people (5.6%). Also, only one respondent (2.8%) is from Sekolah Kebangsaan Bukit Kuchai, including Sekolah Kebangsaan Bandar Seri Alam, Sekolah Kebangsaan Setiawangsa, Sekolah Kebangsaan Convent Jalan Peel, Sekolah Kebangsaan Seafield 3, Sekolah Kebangsaan Taman Desa 2, Sekolah Kebangsaan Salak South and Sekolah Kebangsaan Chicha Menyabong, all represent the least participating respondents.

TABLE I. DEMOGRAPHIC OF RESPONDENTS

Variable	Item	Frequency	Percentage
Gender	Male	5	13.9
	Female	31	86.1
Age	20 to 29 years old	9	25.0
	30 to 39 years old	11	30.6
	40 to 49 years old	11	30.6
	50 to 59 years old	5	13.9
Educational status	SMU/SMA	1	2.8
	SPM	7	19.4
	STAM/STPM	9	25
	Diploma	1	2.8
	Bachelor	17	47.2
	Master	1	2.8
	PHD	0	0
Teaching experience	Less 5 years	8	22.2
	5 to 15 years	17	47.2
	Over 15 years	11	30.6
Option type	Arabic Teacher	4	11.1
	Islamic Education Teacher	8	22.2
	KAFA Teacher	24	66.7
	Dini Teacher	0	0
Experience using Information Technology (IT)	Less 5 years	22	61.1
	Over 5 years	14	38.9
Name of school where you serve	Sk Penambang	13	36.1
	Sk Che Latiff	4	11.1
	Sk Bukit Kuchai	1	2.8
	Sk Kedai Buloh 2	5	13.9
	Sk Pasir Gudang 3	2	5.6
	Sk Bandar Seri Alam	1	2.8
	Sk Setiawangsa	1	2.8
	Sk Pulau Kundor	4	11.1
	Sk Convent Jalan Peel	1	2.8
	Sk Seafield 3	1	2.8
	Sk Taman Desa 2	1	2.8
	Sk Salak South	1	2.8
	Sk Chicha Menyabong	1	2.8

### B. Teachers' Attitudes Towards the use of Augmented Reality Technology in Teaching Arabic in Malaysia

This study has used descriptive statistical analysis referred to as descriptive statistics to describe the characteristics of a variable by using indicators of mean, standard deviation, frequency, percentage, and then draw conclusions based on numerical data [30]. For the data obtained from the questionnaire, the present study has used the interpretation value of the mean score level outlined by [31] which is 1.0 to

2.4 indicating a low-level interpretation, while the mean score between 2.5 and 3.4 shows medium level and 3.5 to 5.0 is at a high level.

Table II shows the distribution of frequency, percentage, mean, standard deviation, and mean interpretation based on descending order to identify the level of readiness from the aspect of teachers' attitude towards the use of augmented reality technology in teaching Arabic language subject in Malaysia. The overall mean of all items for teachers' attitudes towards the use of augmented reality technology in teaching

Arabic language subject in Malaysia is 3.36 which is at a simple level of interpretation. This explains that the majority of teachers who teach Arabic language at the school level are at a moderate level in terms of the teacher's attitude towards the use of this technology and they are able to use it effectively in the teaching as well as learning process of Arabic language. This finding shows that all 8 statements presented are at a moderate level of interpretation. The mean range is between 3.28 and 3.44.

Additionally, Table II explains that the two highest mean scores have the same value for the level of readiness from the aspect of teachers' attitudes towards the use of augmented reality technology in the teaching of Arabic in Malaysia, which is a statement that refers to augmented reality technology capable of increasing students' interest in learning the language Arabic (Mean = 3.44, SP = 0.65) and the statement referring to augmented reality technology is able to attract students' attention to focus on a topic being taught (Mean = 3.44, SP = 0.56).

The findings of the study show that 19 teachers (52.8%) strongly agree, 14 teachers (38.9%) agree, and 3 teachers (8%) choose to disagree that augmented reality technology can increase students' interest in learning Arabic language. In addition, a total of 17 teachers (47.2%) strongly agree, 18 teachers (50%) agree and only one teacher (2.8%) chooses to disagree that augmented reality technology is able to attract students' attention to focus on a topic being taught.

Meanwhile, two items in the questions were used to respond to the current study, namely the statement referring to augmented reality technology makes it easier for teachers to deliver teaching information faster and augmented reality technology is very effective in helping to improve the quality of teaching and learning Arabic subjects in Malaysia,

recording the mean score and value of the same standard deviation (Mean = 3.44, SP = 0.56). The two statements also recorded the same frequency and percentage, in which a total of 16 teachers (44.4%) choose strongly agree, 18 teachers (50%) agree and only 2 teachers (5.6%) choose to disagree.

Referring to the statement of augmented reality technology, the percentage of students' proficiency in Arabic language recorded the third lowest mean score (Mean = 3.36, SP = 0.54), showing an increased number with a frequency of agree and strongly agree of 35 people (97.2%), disagree and strongly 1 person disagreed (2.8%). This is followed by the statement that augmented reality technology is a new teaching material around the world of education (Mean = 3.31, SP = 0.62) with a frequency of agree and strongly agree of 33 people (91.7%), disagree and strongly disagree of 3 people (8.3%).

Meanwhile, Table II shows that 2 items out of 8 items related to the level of readiness from the aspect of teachers' attitudes towards the use of augmented reality technology in the teaching of Arabic language in Malaysia, both recorded the same mean score and are the lowest among the statements presented. The statement that refers to augmented reality technology is very suitable to be applied in the teaching of Arabic language in Malaysia (Mean = 3.28, SP = 0.57). A total of 12 teachers (33.3%) chooses strongly agree, 22 teachers (61.1%) agree, and 2 teachers (5.6%) choose to disagree. Meanwhile, for the statement that refers to augmented reality technology is a sophisticated teaching material to be used in Malaysia when teaching Arabic (Min = 3.28, SP = 0.66), the results show a total of 13 teachers (36.1%) strongly agree, 21 teachers (58.3%) agree, and 1 teacher (2.8%) chooses to disagree. However, there is also one teacher (2.8%) who chooses to strongly disagree with the statement.

TABLE II. FREQUENCY, PERCENTAGE, MEAN, STANDARD DEVIATION AND INTERPRETATION OF TEACHERS' ATTITUDES TOWARDS THE USE OF AUGMENTED REALITY TECHNOLOGY IN TEACHING ARABIC LANGUAGE IN MALAYSIA

Statement	Frequency				Mean	SD	Interpretation
	SD	D	A	SA			
Augmented reality technology is able to increase student interest to learn the Arabic language.	0 0%	3 8.3%	14 38.9%	19 52.8%	3.44	0.65	Moderate
Augmented reality technology is capable to draw students' attention to focus on a topic that taught.	0 0%	1 2.8%	18 50%	17 47.2%	3.44	0.56	Moderate
Augmented reality technology make it easier for teachers to deliver teaching information faster.	0 0%	2 5.6%	18 50%	16 44.4%	3.39	0.60	Moderate
Augmented reality technology is very effective to help improve the quality of P&P in Arabic subject in Malaysia	0 0%	2 5.6%	18 50%	16 44.4%	3.39	0.60	Moderate
Augmented reality technology is able to increase the percentage of students' proficiency in Arabic.	0 0%	1 2.8%	21 58.3%	14 38.9%	3.36	0.54	Moderate
Augmented reality technology is a new teaching material in the world of education.	0 0%	3 8.3%	19 52.8%	14 38.9%	3.31	0.62	Moderate
Augmented reality technology is very suitable to be applied in teaching Arabic in Malaysia.	0 0%	2 5.6%	22 61.1%	12 33.3%	3.28	0.57	Moderate
Augmented reality technology is a sophisticated teaching material to use in teaching Arabic language in Malaysia.	1 2.8%	1 2.8%	21 58.3%	13 36.1%	3.28	0.66	Moderate
<b>Overall mean</b>					<b>3.36</b>		<b>Moderate</b>

Overall, the findings explain that teachers who teach Arabic language in Malaysia have a moderate level of attitude towards the use of augmented reality technology. On average, the respondents are positive and open to accepting the use of augmented reality technology in the teaching of Arabic language at school and believe that augmented reality technology is able to enhance the teaching and learning process of Arabic language by combining elements of technology and knowledge. This indirectly means that they will master the creativity of teaching, especially in the aspects of motivation and environment when implementing the teaching process using augmented reality technology.

## VI. DISCUSSION

### A. *Augmented Reality Technology is a New and Advanced Teaching Material in the World of Education*

According to [32], augmented reality technology is a technology that has been discovered for the past 40 years, which has sophisticated and interesting attributes or characteristics that are able to accommodate deficiencies that are not found in existing teaching media and traditional teaching systems. which has long been practiced in Malaysia. This technology is capable of becoming a new teaching material to be used in the world of education in Malaysia. Augmented reality technology has new and advanced features, such as allowing users to interact in real time with 3D virtual objects as if holding real objects [11,33,34]. It can be said that augmented reality technology is an advanced technology that brings virtual imagination to the real world by mixing the virtual environment with the physical environment instantly [35].

According to the study [36], augmented reality technology can encourage students, especially children to use different and creative new learning approaches. Students can learn independently by using their own style and able to train themselves to act efficiently as well as learn personally. This clearly shows that augmented reality technology is capable of creating new teaching and learning methods that are more interesting, dynamic, interactive, contextual, easy to understand, and be interpreted due to the two-way transfer of information. Therefore, it is not surprising that the finding of this study shows a positive effect on teachers' attitudes towards the use of augmented reality technology in the teaching of Arabic language in Malaysia.

### B. *Augmented Reality Technology is Able to Increase Students' Interest in Learning Arabic*

The findings of the study show that the majority of teachers who teach Arabic language have a good opinion that augmented reality technology is effective and able to stimulate interest in learning Arabic language. The effect of using augmented reality technology applications in language learning has also been proven by [37] who used an augmented reality application named Letters Alive! It not only increases the percentage of students' reading proficiency but also in the ability to form sentences correctly. This is in line with the opinion of [38], who stated that the visual effect and user interaction in real time on an object can improve the memory and cognitive process of students in visualization.

Similarly, [39] found that augmented reality technology has advantages, such as being able to attract the attention and stimulate the interest of students, especially children in the learning process because it facilitates the understanding of learning content, maintains long-term memory, and user-friendly. It clearly shows that augmented reality technology provides benefits in the learning of students at the primary level.

Teaching aids used by teachers are referred to as platforms to ease the teachers in providing students clear understanding during teaching. This finding is supported by the study of [40], where the use of teaching aids, such as augmented reality technology has a positive impact in improving students' understanding of a subject.

According to [41], students will increase their interest in learning because of the advantages of augmented reality technology that combines the virtual world with the potential to increase students' imagination in relation to the real world [42]. As such, it is able to mobilize students' creativity in learning, especially in Arabic language. This then allows students' concentration to increase along with their interest in the technology [34].

### C. *Augmented Reality Technology is Able to Attract Students' Attention to Focus on a Topic being Taught*

Findings show that the augmented reality technology application is not only able to attract the attention of teachers involved in the study but also prove that the augmented reality technology is able to attract the attention of students to focus on a topic being taught and the students' curiosity in the lessons being studied [11,29]. This statement is supported by the study [33] who found that students, especially children are very interested in using mobile phones in order to learn something new which is often used by them in their daily lives. Therefore, study [33] chose new software which is the use of augmented reality technology in learning words in English where preschool children can use mobile phones in learning as independent learning in line with PAK21.

Study [43] also supported that technology which applies interesting teaching aids and has gamification elements in teaching can increase students' focus and interest. Through this method, the teacher will be able to increase the interest and curiosity of the students towards his/her teaching. This is because, students who get motivation from the teacher will usually be more interested which in turn helps the process of achieving learning objectives.

### D. *Augmented Reality Technology makes it Easier for Teachers to Deliver Teaching Information Faster*

The findings of the present study also show that teachers have a positive attitude towards augmented reality technology because not only it helps teachers in carrying out interesting teaching process, but also delivers the teaching information faster [11]. According to [44] augmented reality technology can help teachers to bring learning experiences outside the classroom to students that are previously impossible. Therefore, with augmented reality technology, teaching information can be done quickly. For example, teachers are able to bring the atmosphere of a visit to the zoo without

having to visit the zoo as the augmented reality technology will take the student to a virtual world with the atmosphere of being in the zoo to see animals. Hence, it is proven that using augmented reality technology in learning would help the students to understand something quickly [45,11]. Besides that, the development tools for AR environments have seen significant change over the past ten years, and currently there are many options. However, it is challenging to create an AR educational environment and to develop content in a simple and efficient approach because all these solutions still demand a high level of technical knowledge or a lot of time to generate [50, 51].

*E. Augmented Reality Technology is Very Effective in Helping to Improve the Quality of Arabic Subject Teaching and Learning in Malaysia*

Findings show that the teachers involved in the present study agree that the use of augmented reality technology is very effective and able to increase the quality of teaching Arabic language. This finding is supported by [24] who stated that most students consider augmented reality technology as an effective learning tool, which can help them understand the concepts learned and ultimately improve the quality of education as well as students' performance. Study [21] stated similar scenario with study [24], arguing that students who use augmented reality technology as a learning aid have shown higher academic performance compared to the use of traditional methods. Furthermore, this believe is supported by the study [25], which described augmented reality technology as interesting and effective to education. It can encourage students to explore learning content from different perspectives. Other than that, study [24] believed that the use of augmented reality technology in the world of education is able to improve the quality of teaching and improve the quality of student learning activities, especially teaching and learning of Arabic language subjects in Malaysia.

Based on a study by [41], the use of augmented reality technology as a teaching method is the latest trend capable of changing the learning landscape from traditional methods to the use of the latest elements, such as animation, simulation, and video. If the use of augmented reality technology is expanded, it will create a fresher, more interactive, and effective teaching as well as learning system. Indirectly, its use can improve the quality of national education [46].

*F. Augmented Reality Technology is Able to Increase the Percentage of Students' Proficiency in Arabic*

The majority of Arabic language teachers in the present study describe a positive attitude towards the use of augmented reality technology because they believe the technology can improve students' Arabic language. This believe is supported by the study [34] which stated that augmented reality technology can also be used to help visualize abstract concepts to understand the structure of a teaching model that can improve students' understanding of lessons. Also, study [47] stated that augmented reality technology creates an immersive experience by expanding the virtual environment so that students can visualize the content of learning, gain a better understanding, and view on a specific learning topic or subject.

According to [48], the use of technology-based teaching aids will produce students who behave positively, such as studying diligently and making efforts by showing a deep interest in mastering Arabic language subjects. This will be a platform for students' excellent mastery of the subject. A positive attitude will produce encouraging results for their performance.

*G. Augmented Reality Technology is Very Suitable to be Applied in Teaching Arabic Language in Malaysia*

Findings show that the teachers involved in the present study agree that augmented reality technology is very suitable to be applied in Malaysian education. This is supported by study [33], who stated that augmented reality technology is suitable for preschool children in learning English words. Having the technology according to that study would enable preschool children to learn new words in English through practicing self-learning without the guidance of a preschool teacher.

Similarly, study [49] stated that augmented reality technology is suitable for practice in coloring activities. This is because augmented reality technology can increase the level of creative thinking among preschool children. Preschool teachers in Malaysia can refer to the teaching and learning plan developed to plan coloring activities with the help of augmented reality technology. Augmented reality technology application software developers can also build applications with special features to develop creative thinking among preschoolers.

## VII. CONCLUSION

Overall, the present study shows that Arabic teachers' level of readiness from the aspect of attitude towards the use of augmented reality technology in teaching Arabic language in primary school in Malaysia is at a moderate level. However, if there is a low and negative attitude as well as knowledge of teachers, especially for veteran teachers who have no experience in information technology. This will affect their enthusiasm and willingness to practice the method of using augmented reality technology in teaching in the era of the technology, thereby undermining the effectiveness of the technology in the Malaysian education system.

Therefore, the drafters of the Arabic language curriculum at primary and secondary school level under the supervision of the Malaysian Ministry of Education are expected to be able to use the findings of the current study as a guide in designing the use of augmented reality technology in the teaching of Arabic language curriculum. This is because the implementation of augmented reality technology usage in education system requires readiness from all involved parties while considering various aspects. Apart from that, it also requires commitment from the authority in providing training, seminars, and workshops to ensure that the vision and mission of national education is achieved. Besides that, the present study would be helpful to increase the level of teachers' readiness from the aspect of knowledge and attitude to implement teaching using techniques as well as methods that are effective with the use of technology based in regard to 4IR.

Thus, this study's findings are very significant because they can be used to determine the level of readiness in terms of teacher knowledge of the use of augmented reality technology in teaching Arabic in Malaysia. The Ministry of Education Malaysia, through its division School management, can use this study as a starting point to design and plan programs, trainings, seminars, and other activities for teachers. However, this study has some limitations, one of which is that it only included responses from Arabic language teachers employed by Malaysia's Ministry of Education. Therefore, it is suggested that future research be expanded to include private schools in Malaysia or compared to other countries.

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