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TECHNOLOGY ACCEPTANCE IN LEARNING HISTORY SUBJECT USING AUGMENTED REALITY TOWARDS SMART MOBILE LEARNING ENVIRONMENT: CASE IN MALAYSIA

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Abstract:
In alignment with smart city initiatives, Malaysia is shifting its educational landscape to a smart learning environment. The Ministry of Education (MoE) has made History a mandatory subject for passing the Malaysian Certificate of Education to grow awareness and instil patriotism among Malaysian students. However, History has been known as one of the difficult subjects to study for many students. On the other hand, the Malaysian Government Education Blueprint 2013-2025 seeks to "leverage ICT scale up quality learning" across the country. Therefore, this study aims to identify the factors that influence the intention to use Augmented Reality (AR) for mobile learning in learning History subject among secondary school students in Malaysia. Quantitative approach has been chosen as the research method for this study. A direct survey was conducted on 400 secondary school students in one of the smart cities in Malaysia as the target respondents. The collected data are analysed through descriptive statistics and Multiple Linear Regression analysis by using Statistical Package for the Social Sciences. Based on the results, the identified factors that influence the intention to use AR for mobile learning in learning History subject are Gender, Perceived Usefulness, Perceived Enjoyment, and Attitude Towards Use. The identified factors can be a good reference for schools and teachers to strategize their teaching and learning methods in pertaining to History subject among secondary school students in Malaysia. Future studies may include the study of various types of schools in Malaysia and explore more moderating effects of demographic factors.

Keywords: *Smart City Education, Mobile Learning, Augmented Reality, History, Technology Acceptance Model*

1. INTRODUCTION

With the integration of various digital technologies into the learning and teaching process, the demand for smart learning has grown steadily in recent years, especially in smart city scenarios. Citizens' engagement with smart city ecosystems in various ways using smartphones and mobile devices has paved a new way for a better learning experience in a smart learning environment [1].

Advanced technology in education should be applied at the school level so that the learning process will become more interactive especially for a factual and informative subject such as History. In addition, effective utilization of technology can develop the interest in learning among students in the classroom while making the teaching and learning process more interactive and meaningful. Thus, technology in education plays a significant role to assist the student to understand the subject better to increase the number of students to pass History subject in order to obtain the Malaysian Certificate of Education.

The Malaysian Government Education Blueprint 2013-2025 roadmap seeks to "leverage ICT to scale up quality learning" across the country. The importance of improving the curriculum in order to keep up with emerging changes has therefore been recognized and is being introduced as one of the 11 adjustments in the roadmap of pre-school and post-secondary education [2].

Mobile learning is considered as a part of a new educational environment introduced by affordable and portable supporting technologies. Mobile learning enhances ubiquitous learning experiences anytime and anywhere with the aid of mobile devices such as tablets, smartphones, PDA, and so on. Nowadays, mobile learning is projected to be used in both formal and informal learning in educational institutions [3]. In addition, mobile learning approach supports Goal 4 of Sustainable Development Goal (SDG) which is focusing on Quality of Education [4].

Furthermore, according to Gartner [5], the Top 10 Strategic Technology trends for 2019 are autonomous things, augmented analytics, AI-driven development, digital twins, empowered edge, immersive experience, blockchain, smart spaces, digital privacy and ethics, and quantum computing. Strategic technology trends can be defined as disruptive technology that can give an impact on the emerging state for the next five years. AR is one of the immersive technologies which can change the interaction between users with the world. Thus, it is hoped that AR would be an appropriate technology that will help students in enhancing the experience and interactivity in learning History subject.

A study conducted by Mohamed & Zali, in their research on enhancing essay abilities on History subject, recognized some challenges students had

with the topic [6]. In their research, it was found that students are lack interest in reading, have difficulty in memorizing a number of facts, have no interest in the topic, incapacity to understand certain topics and inefficient teaching methods by the teachers. One of the reasons that contribute to the challenges above is due to the huge number of factual data packed in textbooks [7].

In addition, a study by Magro [8] stated History subject was regarded by students as less interactive and demotivating. This is probably because the teaching process is separated from the reality and experience of the students. In fact, the SPM Subject Grade Point Average (SGPA) of History subject decline from 5.23 in 2017 to 4.98 in 2018. Literature analysis by Yilmaz [9] focusing on trends of AR in education between the year 2016 to 2017 shows that AR technology was mostly introduced in primary and graduate education. In addition, science education is the researchers' most explored field of education. Therefore, it can be concluded that there is still a lack of studies and attention to the application of AR technology in secondary school and History subject. A feasibility study has been conducted on the readiness of M-Learning AR in learning History [10].

On the other hand, Technology Acceptance Model (TAM) is the most valid and robust model developed by Davis [11]. TAM perceives the user in determining behaviour of people in utilizing technology. Besides, the ability to predict people's acceptance on technology by measuring their intentions, ability to explain their intentions in terms of their attitudes towards use, perceived usefulness, perceived ease of use, and external variables.

Despite promising features of mobile learning and AR, there is still a lack of implementation acceptance of these technologies at schools in Malaysia. Therefore, this study aims to identify the factors that influence the intention to use AR for mobile learning in learning History subject among secondary school students in Malaysia.

1.1. Problem Statement

The Malaysian government Education Blueprint 2013-2025 roadmap seeks to "leverage ICT scale up quality learning" across Malaysia (Malaysia Ministry of Education, 2012) [2]. The significance of improving the curriculum in order to keep up with evolving trends has therefore been recognized and is being implemented as one of the 11 revisions to the strategic plan for Pre-school and Post-Secondary Education. In order to achieve Shift 7 which is to leverage ICT to scale up quality learning across the country, mobile learning plays an important role in this paradigm. AR technology has great potential to provide a better teaching and learning experience in challenging subjects such as History.

Based on preliminary study, most teachers and students are lack of awareness and understanding of AR mobile learning technology. This statement has been supported by the interview sessions with three History teachers and six students from selected secondary schools. According to the teachers, the exposure of mobile learning through AR technology is still not exposed enough among Malaysian teachers, especially among senior teachers. Most of them still prefer to teach in a traditional way by using a whiteboard, books, and hands-on. Even though History subject was introduced at the school approximately three decades ago, the teaching methods can still be seen as traditional approach which depends entirely on the textbook. On the other hand, History subject is one of challenging subject to teach and learn since it requires a lot of memorizations of factual and dates with events happened in the past. As for the students, they also stated that they are not aware of mobile learning and AR technology since lack exposure in their learning process at the school.

Even though there is a number of mobile learning applications available in the market, these applications still do not get enough attention from both teachers and students. Features such as animation, audio 3D graphics, and other media content can provide many remarkable benefits for the students which can make learning History subject more interactive.

In addition, nowadays, the majority of the students own smartphones which can make it easier for them to get access to these applications on their devices.

However, there is still a lack of AR technology exposure and implementation in mobile learning for History subject. Therefore, there is a need to identify the influence factors of interactive mobile learning based on AR to assist teachers and students to enhance the learning experience through the new promising technology.

2. LITERATURE REVIEW

2.1. Smart Learning Environment in Smart Cities

IEEE IoT Initiative's Smart Cities Working Group defines a Smart City as an urban area that uses technological or non-technological services or products that can enhance the social and ethical well-being of its citizens, provide quality, performance, and interactivity of urban services to reduce costs and resource consumption, and increase contact between citizens and government [12].

With the integration of various digital technologies into the learning and teaching process, the demand for smart learning has grown steadily in recent years, especially in smart city scenarios. As the need for life-long learning has become more important in the digital age, smart learning environments in cities should be equipped to meet people's demands. Furthermore, smart learning represents one of the key applications of smart cities [13]. Taking into consideration of the significant roles that education and learning play in the development of sustainability of a city, smart learning environments could be seen as a response to the needs of the new knowledge society [14]. By utilizing current advanced technology, smart education enables the process of teaching and learning to become more effective, efficient, flexible,

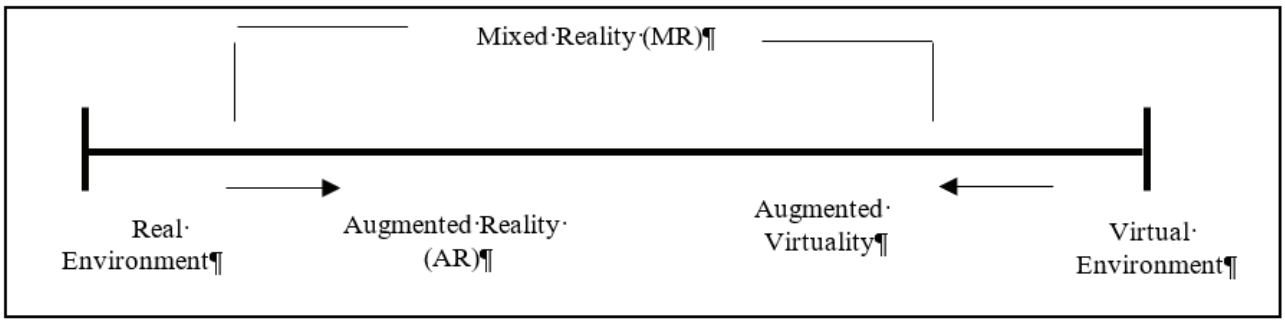

Fig. 1. Miligram Reality-Virtuality Continuum

and comfortable [15]. Pallavi stated in his study that Smart Education can lead to a smart city [16].

2.2. Mobile Learning

In this technology era, smartphones play a significant role in the current education system. The educational applications for mobile devices have become an essential tool to provide accessibility, user-friendly, and efficient teaching and learning processes. It provides students with numerous opportunities to expand their use of Information and Communication Technologies [17].

Existing mobile learning definitions vary depending on the context that the authors and their studies focus on. Some literature focuses on technological aspects [18] and there are also broader definitions that include the role of the student [19] in the context of mobile learning as in the case of Petrova and Li which define mobile learning as "an omnipresent learning activity that occurs by person-to-person interaction using a mobile device." The researchers discuss the technical and accessibility aspect, and three basic components of mobile learning which are software, application, and pedagogical architecture [20].

Mobile learning was developed from distance learning (d-learning) and electronic learning (e-learning) methods [21, 22, 23]. It is a learning continuum that provides users with flexibility. The word "learning" meant mobility because mobile learning should take place everywhere and at any time [10]. According to Shuib [24], mobile learning methods have in fact been practiced in Europe and the United States education systems.

According to Adkins [25], mobile learning has spread across the globe primarily due to the launch of dozens of successful Mobile Learning value-added service products sold directly to consumers. As of 2016, development in educational technology is heavily focused on four forms of learning goods: simulation-based, game-based, cognitive, and mobile learning. The market is flooded with highly advanced, low-cost products.

2.3. Augmented Reality

Augmented reality (AR) refers to a simple combination of real and virtual (computer-generated) worlds. Given a real subject, captured on video or camera, the technology 'augments' that real world image with extra layers of digital information" [26].

Augmented Reality (AR) is a technology that allows computer-generated sensory input like images, video, or even sound to exactly overlay physical objects in real-time. On the other hand, virtual reality technology enabling the user to immerse them in the created virtual environment. AR allows users to interact and view 2-Dimensional or 3-Dimensional data with the real environment. Besides, AR is placed in between the real-world and the virtual. Both have the same environment namely "mixed reality". Where, mixed reality shows the real environment shown in integrates digital information [27].

As shown in Figure 1, a real environment that is the reality that can be observed when looking at the real-world with the virtual environment is a scale of Milgram's Reality-Virtuality Continuum [28]. Space real environment and virtual environment called mixed reality (MR) in the space continuum [29]. The Continuum MR easy to determine as the environment in which the real-world and the virtual world are combined together. Augmented reality and augmented virtually are the two main elements that support MR. As shown in Figure 1 AR is a combination of a real object with a small amount of data the virtual while AV is a virtual element that contains more digital data written in a virtual environment.

2.4. Augmented Reality in Mobile Learning

AR can be described as a condition where the user can see a mixture of objects in the virtual and real-world in real-time. Many researchers describe AR as a general system that incorporates data such as photographs and video streaming [30].

Although AR appears to have the potential for mobile learning, there are some challenges that hinder the educational content provider from including AR in the learning context. This may be attributed to the need for software storage and computing processing power that goes beyond the limitations of mobile devices. In contrast, the high cost of server-based solutions and relatively low connectivity networks linking mobile devices to databases are other factors that delay the introduction of AR [31].

AR implementation is rapidly increased in alignment with technology advancement. For instance,

the current version of mobile operating systems is equipped with features that can provide AR mapping tools to provide graphical information to users. Additionally, images have a more significant memory effect than text and can, therefore, facilitate the preservation of details by laying additional images and facts about the AR world [27].

2.5. Technology Acceptance Model (TAM)

The Theory Acceptance Model (TAM) is a model developed by Davis to predict in a workplace environment the acceptance of new technology [11]. Acceptance prediction and assessment are based on Perceived Usefulness (PU) and Perceived Ease of Use (PEoU) towards the system or technology. TAM is the most influential model used to study the new technology's acceptance in various contexts. TAM also is one of the most well-known and well-developed models in the examination of the usage and acceptance of IT technology and related devices [32]. It provides a conceptual framework that is built on theories of social psychology. It also suggests the relationship between psychological aspects, attitude, intention, and behaviour to explain IT technology user acceptance.

As shown in Figure 2, the original Technology Acceptance Model (TAM) consists of 6 variables. These variables are related and may affect the actual system's acceptance. Davis also explained that Perceived Usefulness is defined as the degree to which a user believes their job performance could be enhanced by using specific IT technology. The variable can be categorized into two types which are constructs variables and measured variables. Construct variables consist of three variables which are Perceived Usefulness, Perceived Ease of Use, and Attitudes Toward Use. The measured variable consists of other three variables which are External Variables, Intention to Use, and Actual System Usage. External variables are a self-measure such as years of experience, job category, or familiarity with the technology. Intention To Use refers to the number of times the respondent's intent to use the technology and lastly, Actual System Usage which is referred to the actual times the system usage by the users.

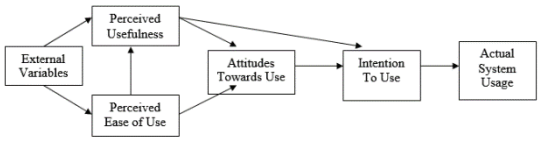

Fig. 2. Original Technology Acceptance Model

3. RESEARCH METHODOLOGY

The aim of this study is to identify the factors that influence the intention to use AR for mobile learning in learning History subject among secondary school students in Malaysia. Based on the identified factors, the proposed recommendations to increase the acceptance of AR for mobile learning in learning History is discussed in this study. A direct survey was conducted with 400 students from a secondary school in one of the smart cities in Malaysia as the target respondents.

A demonstration video on how AR works in the learning process was demonstrated to the students before they completed the survey. From the video, the students could see interactive components such as 3D models, animation, graphics, sound, and video that create an immersive experience, which comprise the AR application. Based on observations made while the demonstration video was being played, they expressed their curiosity and desire to try and use it in the future for their learning process.

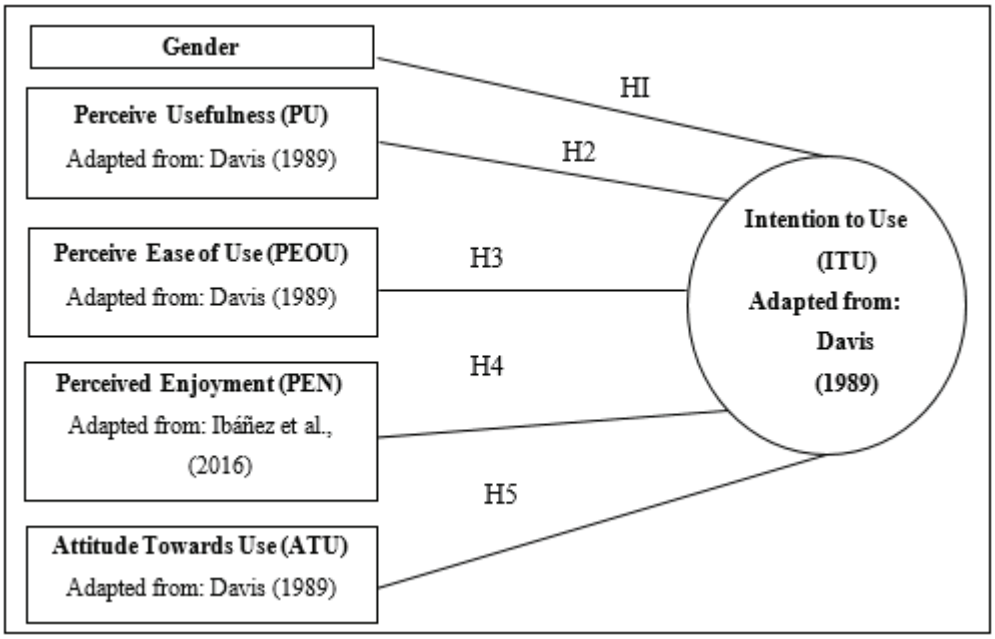

Fig. 3. Research Model on the Acceptance of Mobile Learning in AR for History subject

Tab. 2. Multiple Regression Analysis Research Model Result

N=391	Construct (Dependent Variable: ITU)		
Construct (Independent Variables)	**Pearson Correlation (r)**	**Sig. (2-tailed) (ρ)**	**Strength of Relationship**
Gender	-0.247**	.000	Strong
PU	.616**	.000	Strong
PEOU	.600**	.000	Strong
PEN	.748**	.000	Strong
ATU	.833**	.000	Strong

A set of questionnaires has been distributed to form four students from a selected school. Figure 3 shows the research model that has been adapted and modified for this study based on the Technology Acceptance Model (TAM).

Intention to Use depends on the independent variables, which are Perceived Usefulness, Perceived Ease of Use, Perceived Enjoyment, Attitude Towards Use, and Gender.

Perceived Usefulness in this study focuses on the implementation of AR-based mobile learning where it can improve the user's efficiency. Perceived Ease of Use refers to the student's belief that mobile learning does not need any effort to conduct or use it. Perceived Enjoyment refers to how AR-based mobile learning is considered enjoyable by the students. Attitude Towards Use refers to the students' behaviour either positive or negative behaviour towards using MAR.

The aim of this study is to identify the factors that influence the intention to use AR for mobile learning in learning History subject among secondary school students in Malaysia. Based on the identified factors, the study proposed few recommendations to increase the acceptance of AR for mobile learning in learning History. A direct survey was conducted with 400 students from a secondary school in one of the smart cities in Malaysia as the target respondents. A set of five-point Likert-scale closed-ended questionnaires was used as an instrument for data collection and among Form Four students from selected secondary school in one of the smart cities in Malaysia as target respondents.

4. RESULT AND FINDINGS

From 400 respondents, only 391 respondents have given complete feedback on the questionnaire survey. This section will discuss the results and findings of this study.

4.1. Descriptive Analysis (Respondent Demographic)

Table 1 shows the respondent's gender where 61.9% of respondents are male and 38.1% are female.

Tab. 1. Gender of Respondents (N=391)

Gender	Frequency	Percent	Valid Percent	Cumulative Percent
Male	242	61.9	61.9	61.9
Female	149	38.1	38.1	100.0
Total	391	100.0	100.0	

4.2. Pearson's Correlation Coefficient

The collected data were analysed using Pearson's correlation coefficient is to determine the relationship between two independent variables and the dependent variable. The dependent variable is Intention to Use (ITU) while the independent variables are Gender, Perceived Usefulness (PU), Perceived Ease of Use (PEOU), Perceived Enjoyment (PEN), and Attitude towards Use (ATU). According to Cohen [33], to determine whether the relationship strength is weak, moderate, or strong it can be referred to its r value. If $r < 0.30$ or $r < -0.30$, the relationship is weak. If $0.30 > r < 0.50$ or $-0.30 > r < -0.50$, the relationship is moderate. If $r > -0.50$ or $r > -0.50$, the relationship is strong.

The result of the analysis reveals significant differences between the difference in Gender and ITU with $r = -0.274$ and $\rho = 0.000$. Besides, the results in determining the relationship between the PEOU and ITU also show a positive strong correlation with $r = 0.616$ and $\rho = 0.000$. The results between PEOU and ITU also indicated a strong relationship with $r = 0.600$ and $\rho = 0.000$. In addition, based on the results, PEN is independent of ITU with $r = 0.748$, $\rho = 0.000$. The strongest relationships of study are the relationships between ATU and ITU with $r = 0.833$ and $\rho = 0.000$. As a summary, the r value for all constructs (Gender, PU, PEOU, PEN, ATU) has a strong relationship as shown in Table 2.

4.3. Multiple Linear Regression

MLR is the statistical procedure to predict the values of a response (dependent) variable from a collection of the predictor (independent) variable values [34]. MLR is used to identify the factors that influence intention to use AR for mobile learning in learning History subject among secondary schools in Malaysia.

According to Table 3, the model summary adjusted R^2 is 0.732. This indicates that 73% of study factors influence ITU explained in this model while 27% is influenced by other factors that may contribute to the intention to use mobile learning based on AR. According to Maxwell (2010), this is a large effect on the model.

Tab. 3. Multiple Regression Analysis Research Model Result

R	R Square	Adjusted R Square	Significant F Change
0.857	0.735	0.732	.000

Table 4 tabulated the results of multiple regression analyses for the research model. To find the value of y (dependent variable), the unstandardized B value of independent variables was calculated. The equation is $y = X\_1\ \beta\_1 + X\_1\ \beta\_2 + \ldots X\_\kappa\ \beta\_\kappa + \varepsilon$. Therefore, the predicted value of y=0.911.

Tab. 4. Multiple Regression Analysis Research Model Result

	Unstandardized B	Coefficients Std. Error	Standardized Coefficients Beta	t	Sig.
(Constant)	1.002	0.151		6.633	.000
Gender	-0.227	0.40	-0.175	-5.652	.000
PU	-0.96	0.041	-0.109	-2.362	.019
PEOU	-0.06	0.037	-0.006	-0.151	.880
PEN	0.151	0.066	0.130	2.279	.023
ATU	0.778	0.053	0.799	14.693	.000

Table 5 shows the summary of hypothesis testing for this study. Hypothesis H01, H02, Hα3, H04, and H05 was supported, while hypothesis Hα1, Hα2, H03, Hα4, Hα5 was not supported.

Figure 4 shows the result of the research model. The figure indicates the significance levels of every factor towards intention to use mobile learning based on AR. The results show ρ -value of gender (ρ =.000), PU (ρ =.019), PEOU (ρ =.880), PEN (ρ =.023), and ATU (ρ =.000). From the ρ -value this study found that PEOU is the only factor that does not have a significance towards intention to use.

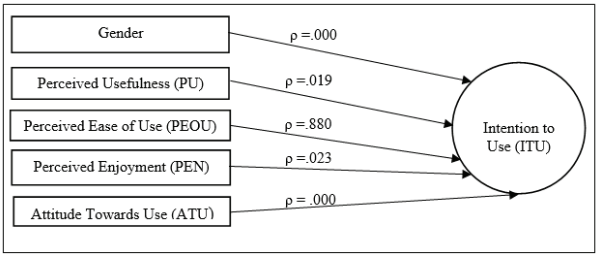

Fig. 4. Research of Research Model

5. DISCUSSION

This section discusses the findings from the analysis result. This study aims to identify the factors that influence the intention to use AR for mobile learning in learning History subject among secondary school students in Malaysia. A direct survey was conducted from a secondary school in one of the smart cities in Malaysia as the target respondents. This study focuses on student's intention to use AR in mobile learning on History subject.

Based on the analysis result, most of the null hypotheses failed to reject and only one null hypothesis is rejected.

This study focuses on five independent variables, which are Perceived Usefulness, Perceived Ease of Use, Perceived Enjoyment, Attitude Towards Use, and Gender. According to the MLR results, there was a highly significant effect of gender (β=-0.227, ρ= .000) showing that gender gives a big impact on the intention of using AR for mobile learning. Furthermore, Perceived Usefulness also gives a significant effect as (β=-0.96, ρ = .019) on an intention to use showing that students feel the use of AR in mobile learning is helpful for their learning process. This result is in line with the findings by Ibáñez et al. [35] and Cabero Al-menara et al. [36] who found that there is a positive effect from PU on an intention to use mobile learning.

Furthermore, based on the findings, it was also found that there was a significant impact of PEN

Tab. 5. Summary of Hypothesis Testing

No	Hypothesis	Result
$H_0$1	Gender will significantly influence the Intention to Use (ITU) of mobile learning based on AR	Supported
Hα1	Gender not significantly influence the Intention to Use (ITU) of mobile learning based on AR	Not supported
$H_0$2	Perceived Usefulness (PU) will significantly influence the Intention to Use (ITU) of mobile learning based on AR	Supported
Hα2	Perceived Usefulness (PU) not significantly influence the Intention to Use (ITU) of mobile learning based on AR	Not Supported
$H_0$3	Perceived Ease of Use (PEOU) will significantly influence the Intention to Use (ITU) of mobile learning based on AR	Not supported
Hα3	Perceived Ease of Use (PEOU) not significantly influence the Intention to Use (ITU) of mobile learning based on AR	Supported
$H_0$4	Perceived in Enjoyment (PEN) will significantly influence the Intention to Use (ITU) of mobile learning based on AR	Supported
Hα4	Perceived in Enjoyment (PEN) not significantly influence the Intention to Use (ITU) of mobile learning based on AR	Not Supported
$H_0$5	Attitude towards Use (ATU) will significantly affect the Intention to Use (ITU) of mobile learning based on AR	Supported
Hα5	Attitude towards Use (ATU) not significantly affect the Intention to Use (ITU) of mobile learning based on AR	Not Supported

(β=0.151, ρ = .023) on an intention to use AR for mobile learning. It shows that students find this kind of technology is enjoyable and can enhance their feelings to enjoy their learning process with fun. This finding was consistent with the findings of Ibáñez et al., Cabero Al-menara et al. and Poong et al. who found that perceived enjoyment had a positive impact on intention to use [35, 36, 37]

According to the findings, ATU also was found as a factor that has high significance on an intention to use as the value was (β=0.778, ρ = .000). The result indicates that the student has a positive attitude towards the intention to use mobile learning based on AR for their learning process. This finding was consistent with studies conducted by Ibáñez et al. [33] and Cabero Al-menara et al. [34] that found that there is a positive effect from Attitude Towards Use on an intention to use mobile learning. Based on these findings, Perceived Ease of Use is the only factor that does not have significance on an intention to use as the value was (β=-0.06, ρ = .880).

5.1. Factors that Influence Intention to Use AR for mobile learning in Learning History Subject among Secondary School in Malaysia

The first objective of this research is to identify the factors that influence the intention to use AR for mobile learning in learning History subject among secondary school students in Malaysia. According to the analysis result, four from five factors have been identified as the influence factors of the intention to use AR for mobile learning in learning History subject among secondary schools in Malaysia.

Based on the MLR analysis results, this study found that Gender and Attitude Towards Use are strong significant factors towards intention to use AR for mobile learning as both of them have .000 ρ-value, while the other two Perceived Usefulness and Perceived Enjoyment also have a positive significance that contributes to the intention to use R for mobile learning.

Figure 5 illustrates the factors that influence the intention to use AR for mobile learning in learning History subject among secondary school in Malaysia. Based on the analysis result, there are four factors that influence the intention to use AR for mobile learning in learning History subject among secondary school in Malaysia. The four factors are Gender, Perceived Usefulness, Perceived Enjoyment, and Attitude Towards Use. The results also show that gender and Attitude Towards Use show a high significance towards intention to use AR for mobile learning which is (ρ =.000). According to the result, it shows gender has a high significance towards Intention to Use, which means that gender plays a big role as a factor.

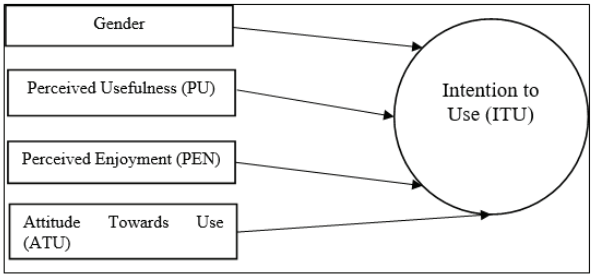

Fig. 5. Factors that Influence Intention to Use AR for Mobile Learning in Learning History Subject among Secondary School in Malaysia

5.2. Recommendation to Increase Influence Factors on Intention to use AR for mobile learning in learning History Subject among Secondary School in Malaysia

Based on the results of the analysis, there are four factors that influence the intention to use AR for mobile learning in learning History subject among secondary school in Malaysia. The four factors are Gender, Perceived Usefulness, Perceived Enjoyment, and Attitude towards Use. Gender gives a strong significance towards intention to use AR for mobile learning. This indicates that the gender-based digital divide between the intention to use mobile learning based on AR within the secondary school context is still big. In order to ensure that both genders play the same role equally, awareness programs about mobile learning should be organized by the school in order to attract students' interest in using mobile learning as a part of their learning process.

Some recommendations could be suggested to increase the factor Perceived Usefulness in using interactive mobile learning based on AR. Perceived usefulness is people's belief in using a system or technology can increase their job performance. Thus, Mobile Augmented Reality applications should come out with great content, detailed information, accessibility, and speed, as well as availability since they believe that it can improve their performance and understanding in the learning process [38].

Furthermore, Perceived Enjoyment is also a significant factor towards intention to utilize on intention to use AR for mobile learning. Perceived Enjoyment is how the system or technology is considered enjoyable by itself. In order to increase this influence factor, the application should be developed by having more interactive features in order to make the application is fun to use by the students. Elements such as audio, animation, graphics, and any media content can help to increase students' interactivity in the learning process [39]. By having more interactive Mobile Aug-

mented Reality, the students will be more engaged in using the application in their learning process.

The last influence factor is Attitude towards Use, which is having highly significant towards intention to use. Attitude towards use is people's behaviour either positive or negative behaviour towards utilizing a system or technology.

Another approach to make students having a positive attitude in using Mobile Augmented Reality towards their learning style is that both teachers and education institutions must encourage the use of Mobile Augmented Reality in the teaching process so that students can have a positive attitude towards using such educational application. By introducing Mobile Augmented Reality application with good features of AR for mobile learning applications such as providing good navigation, increase the usability of the application, enhance user experience, and taking into consideration of Human Computer Interaction (HCI) principles, it can increase student's satisfaction on using applications and will develop a positive attitude towards Mobile Augmented Reality [40].

6. CONCLUSION

The aim of this study is to identify the factors that influence the intention to use AR for mobile learning in learning History subject among secondary school students in Malaysia. Based on the analysis result, the factors that influence the intention to use AR for mobile learning in learning History subject among secondary school students in Malaysia are Gender, perceived usefulness, perceived enjoyment, and attitude towards use.

The identified factors can be a good reference for schools and teachers to strategize their teaching and learning methods in pertaining to History subject among secondary school students in Malaysia. Future studies may include the study of various types of schools in Malaysia and explore more moderating effects of demographic factors.

In conclusion, this study contributes towards a better insight for education institutions in Malaysia towards the development of a smart learning environment. The identified factors can be a good reference for schools and teachers to strategize their teaching and learning methods in pertaining to History subject among secondary school students in Malaysia. The use of AR technology in mobile learning can provide many benefits in enhancing learning experiences for better educational purposes in the future. Future studies may include the study of various types of schools in Malaysia and explore more moderating effects of demographic factors.

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