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Comparative study on the readiness of Mobile Learning Application in Learning

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Abstract— Mobile application has been widely used as a learning aid in education. It could be the best learning service for adult's learner. The benefits of mobile app include increasing learning accessibility, reducing learning costs, promoting lifelong learning and many others. However, early studies have reported that there are challenges in promoting mobile learning due to the readiness of the users. Therefore, this project aims to conduct a comparative study by examining the students' readiness towards the use of mobile application in learning. The investigation will focus on 100 students from UTP, Malaysia and Uhamka, Indonesia. Questionnaire has been distributed using random sampling method. The results have shown that there was no significant difference between the two samples, hence, it can be concluded that both students from universities are ready for the use of mobile learning.

Keywords—mobile learning, readiness, mobile technology, perception

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I. INTRODUCTION

In today's digital age, information and communication technology (ICT) has become very relevant tools, where it has become an integral part of modern society having a tremendous impact on people's lives globally. This has seen the introduction of ICT courses worldwide across schools as well as tertiary curricula. The benefits of such a program are overwhelming in terms of improving learning quality, improving access to education, improving cost-effectiveness, increasing skills, achieving skills, performing tasks efficiently and effectively, as well as the growing demand for ICT and computing skills [1]. Education is undeniably the point of departure in one's life which leads to information acquisition. Consequently, in line with the introduction of ICT, the cycle of teaching and learning through conventional method has begun to take a turning point in the way people obtain and disseminate knowledge. In addition, incorporating ICT in the teaching and learning phase will aid in achieving the educational goal of making the phase more productive and meaningful.

Figure 1 illustrates the timeline for the technology used in education [2]. Mobile technology has thus been widely used to help the educational processes [3]. The affordability, complexity and popularity of mobile devices among students

in higher education has motivated educators to consider using them as a new learning tool.

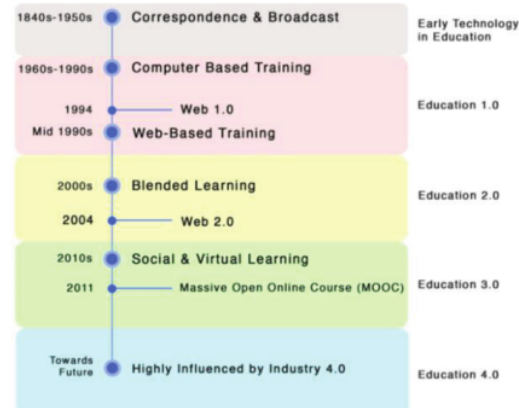


Fig. 1. Technology in Education Timeline [2]

reported on the usage of information and communication technology (ICT) in education. In particular, this article reviews work that has examined the capacity of ICTs implemented in schools, obstacles or challenges faced by the use of ICTs, factors influencing the successful adoption of ICTs, the attitudes, expectations and trust of teachers in the use of ICTs and the importance of school culture in the use of ICTs. The modern form of revision is currently still pretty much based on books and notes. To plan for an examination, students must read the thick books and flip through their lecture notes. This approach takes more time for students, however, who are given only a limited duration of revision time. Research has also shown that students perceive mobile learning as an advantage over current learning practices [5]. Besides that, there is also lack of mobile applications that incorporate theories/concepts in mobile learning. A better understanding of the students' requirements will help the decision maker to adopt m-learning successfully.

II. MOBILE TECHNOLOGY

A. Mobile Learning

The advent of multimedia technology has provided a range of new technologies that rising technology has never offered. Multimedia technology is an alternative platform for the teaching and learning process, due in particular to its ability to incorporate different elements such as texts, images, animation, audio and video in a digital environment. It also integrates unique features that allow for user-developed interactivity with the applications. Research has shown that multimedia apps were developed primarily for teaching and learning through the introduction of a wide variety of approached apps like mobile learning.

Mobile learning (M-learning) is a modern paradigm in the learning process that emphasizes the potential to promote the learning process without being bound to a learning process's physical location. Mobile phones, notebooks or netbooks, mobile PCs and smart phones do it everywhere. Among the advantages are the sharing of teaching and learning materials; learners conducting educational tasks on the basis of their own efforts; teaching and learning activities can be carried out at any time and place; and finally, using resources in the learning process [6; 7; 8].

By taking into the account of the above-mentioned advantages of m-learning, many facets of the educational process can be enhanced, including learners and institutions achieving academic achievement, assessing the consistency of the teaching outcomes, enhancing interactions, increasing self-confidence, and many others. In addition to designing mobile learning applications for knowledge acquisition, mobile learning applications can also be used as an important student revision tool.

Implementation of M-learning gives the users the ability to learn anywhere anytime. When accessing learning materials at any time and at any location, users must ensure that there is mobile coverage or wireless connectivity at the site, or else learning activities cannot be carried out. The restricted area of mobile coverage and wireless communication would affect the unavailability of an m-learning device [9]. So instead of making the m-learning app online, developers need to consider creating an offline m-learning app. Users can get the learning materials by downloading them from either cell phones or personal computers (PCs) and installing them into the mobile phones of users. Thus, users can access the materials anywhere without thinking about cell coverage and wireless connectivity being inaccessible at the current venue.

In addition, the versatility of mobile learning apps in education has made it an alternative tool for both education and learning processes. To ensure that students continue to concentrate on learning, the instructional materials should also provide a range of exciting and entertaining elements, such as audio, video and animation, which have been shown to improve comprehension and memory of the learning content presented [10].

In addition, the broader range of capabilities provided by mobile devices has led to the development of various types of teaching and learning instruments. In addition, several studies have been carried out on the creation of learning material, e.g. learning material to understand English literature [11],

mathematics [12], religious studies [13], and disabled children [14]. Nowadays, the advancement of mobile technology has effectively created a modern learning application tool to be used at any time and place desired. In addition, the application of mobile technology to multimedia courseware allows all target users to engage actively in the learning process, as time and location constraints are reduced [15].

B. Related Studies

[16] has investigated the effectiveness of mobile learning apps in higher education in India. The findings showed that, in the higher education context, mobile learning apps can be very useful. The findings also showed the students were pleased and had sufficient information. Their understanding of using mobile devices and the Internet has increased immensely in their educational climate. They agreed strongly that access to mobile learning apps is very necessary for their intent of learning and study.

[17] studied on the ability of university students to integrate mobile technology into their academic institutions in the education system. Most of the students were only moderately ready for mobile learning in Malaysian public universities. Many of them seemed not to be happy with the new method of learning while there is a desire among them to explore through mobile learning. In addition, interviewees had average degree of awareness on the educational advantages of mobile technologies. It may mean that they did not really understand the value that mobile learning may bring in.

[18] investigated on mobile apps commonly used to improve or support learning in a graduate level Occupational Therapy program to promote the achievement of the students. The findings showed that most students are using their mobile devices as means of learning. Most of them use mobile devices as learning platforms with web applications, or "scripts," in particular, Quizlet LLC "app." Table 1 shows the summary of studies conducted in various countries on the readiness of the mobile learning.

TABLE I. PREVIOUS STUDIES

ID	Title	Factors
30	An Investigation of Effectiveness of Mobile Learning Apps in Higher Education in India [16]	awareness and usage, usability and effectiveness
45	Mobile Learning Readiness among Malaysian Students [17]	perceptions, awareness, readiness and satisfaction
5	Assessment of Students' Readiness Towards Mobile Learning at AIOU, Pakistan [19]	Availability, affordability, exposure and willingness
25	Students' readiness for mobile learning in Republic of Yemen [20]	Infrastructure, student's abilities and perceptions

III. METHODOLOGY

An online survey was distributed to 100 participants. The aim was to research the readiness of mobile learning between Universiti Teknologi PETRONAS (UTP) students and Universitas Muhammadiyah Prof Dr HAMKA (Uhamka) students. The questions were divided into 2 sections. Section A is on the demographic and background on the usage of mobile. Section B involved questions based five factors:

awareness, usage, perception, acceptance and experience. The questions are adapted [34] [16,17]. Four points Likert scale has been used which range from “Strongly Disagree” (1) to “Strongly Agree” (4).

IV. RESULTS AND DISCUSSIONS

43 students from UTP and 57 students from Uhamka were involved in the survey. The age of the participants ranges from 18 – 24 years old. This is shown in Table II. All the students are from the undergraduate level. Most of them are using Android platform.

TABLE II. DEMOGRAPHIC

	Items	UTP	Uhamka	TOTAL
Gender	Female	23	47	70
	Male	20	10	30
	TOTAL	43	57	
Age	18Y/O	9	3	12
	19Y/O	2	18	20
	20Y/O	28	11	39
	21Y/O	1	14	15
	22Y/O	1	9	10
	23Y/O	1	1	2
	24Y/O	1	0	1

The reliability for questions in section B, the Cronbach alpha is 0.699. According to [17], if the Cronbach’s alpha coefficients is greater than 0.60, then the variable is reliable.

The results on the awareness of mobile learning can be seen in Figure 2. 64 out of 100 students rated aware and 27 students rated somewhat aware and 8 have rated not sure. Majority of the students believe that they can achieve personal educational goals by using m-learning, and they can use in-class mobile phones to improve their learning. The students see the advantages of using these learning devices and helping them get used to the new perception of learning would make them grow mobile technology self-efficacy. The participants found out that the use of mobile phones within the classroom brings positive results, by improving study skills and gaining information.

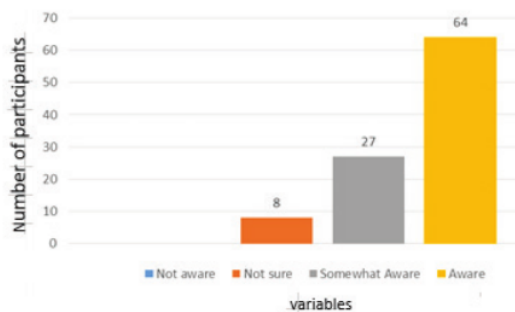


Fig. 2. Participant's Awareness of mobile learning

Based on the survey, the mean score of Section B is shown in Figure 3. For awareness, the mean score for UTP is 2.80 and Uhamka is 2.88. For usage, perception, acceptance and experience, there are no difference on the mean scores.

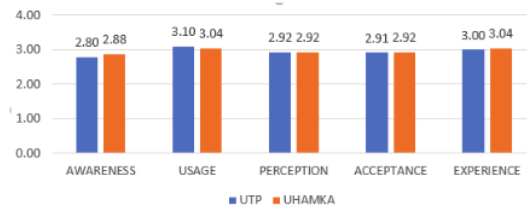


Fig. 3. Mean score results

An independent-samples t-test was conducted to compare the readiness of mobile learning between students from Universiti Teknologi PETRONAS (UTP) and students from Universitas Muhammadiyah Prof. Dr. HAMKA (Uhamka) (Table III). The hypothesis statement is:

H_0 : There was no significant difference in readiness and perception of mobile learning between the two samples.

H_1 : There was a significant difference in readiness and perception of mobile learning between the two samples

The results have shown that there was no significant difference between the two samples, hence, it can be concluded that both students from UTP and UHAMKA were ready for mobile learning. The results are in line with the findings from [17] who have conducted the similar study among the Malaysian universities. Most students agree that m-learning is useful because it enables them to learn, satisfy their needs and desires, and gain input from lecturers faster than conventional methods. Mobile learning is an innovative approach to university students. The benefits of learning improve the overall quality of the learning process and increase students ' motivation and satisfaction with the learning process.

TABLE III. RESULTS ON THE FACTORS

	α	p-value	DECISION
Awareness	0.05	0.376	Do not reject H_0
Usage	0.05	0.531	Do not reject H_0
Perception	0.05	0.988	Do not reject H_0
Acceptance	0.05	0.921	Do not reject H_0
Experience	0.05	0.717	Do not reject H_0

V. CONCLUSION

The paper has discussed on the readiness of two universities students from Malaysia and Indonesia on the use of mobile application in learning. This study is significant because the students' acceptance of mobile learning is a prerequisite for effectively integrating mobile learning in both formal and informal contexts. The results have shown

that students are optimistic that by using mobile learning will be useful to them and therefore have expressed their readiness to adopt it. Therefore, the institutions higher learning should take this opportunity to make the teaching and learning process in order to spark the students' thinking, develop their potential and promote lifelong learning. The future work will investigate on the suitable content, the Instructional Design Model and theoretical framework for mobile learning for both universities. Interviews or findings may be paired with questionnaires in future research to provide more reliable evidence. The experiences of students with specific youth and other target groups can be further discussed.

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