Enhancement of Learning Style in Kolej Poly-Tech MARA (KPTM) via Mobile EEF Learning System (MEEFLS)

M. E. Marwan, A. R. Madar, N. Fuad

Abstract—Mobile communication provides access to the outside world without borders everywhere and at any time. The learning method that related to mobile communication technology is known as mobile learning (M-learning). It is a method that communicates learning materials with mobile device technology. The purpose of this method is to increase the interest in learning among students and assist them in obtaining learning materials at Kolej Poly-Tech MARA (KPTM) in order to improve the student's performance in their study and to encourage educators to diversify the teaching practices. This paper discusses the student's awareness for enhancement of learning style using mobile technologies and their readiness to apply the elements of mobile learning in learning to improve performance and interest in learning among students. An application called Mobile EEF Learning System (MEEFLS) has been developed as a tool to be used as a pilot test in KPTM.

Keywords—Awareness, MEEFLS, mobile learning, readiness.

I. INTRODUCTION

M-LEARNING is the application of electronic devices and mobile computer that used in collaborative and interactive learning process. It also can be applied for guidance, fieldwork or counseling [1]. M-learning process emphasizes the specific knowledge area and encourages the improvement of application in learning content [2]. Students can implement M-learning at anywhere by using mobile devices to gain additional knowledge and better understanding related to topic that has been discussed in class.

According to Prensky [3], M-learning is a computer aided learning style which using the latest mobile devices such as PDAs, cell phones, laptops and tablet PCs. However, M-learning is not a solely learning approach through mobile phone or learning using wireless internet but it is an evolution of e-learning, which is complete the deficiencies in previous e-learning [4]. M-learning is also associated with e-learning and distance learning. If M-learning is associated with the internet and wireless, it is not dissimilar to the original concept of e-learning [5]. Therefore, the ability of a learning occurred even

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where the student is, or to wherever their destination regardless of the direction of time is an advantage of the M-learning.

Currently, the teaching and learning method among students at Kolej Poly-Tech MARA (KPTM) is more to teacher centered learning style. Notes, handout, textbooks and references book are mostly used as teaching aids. The revolution of learning method has been created [2] by using mobile devices and wireless technology. This scenario has encouraged the mobile device in education [6]. The application of M-learning will become a benchmark to a new learning method at KPTM. From the observation, this method has not been implemented in any branch of KPTM. There are several problems in the teaching and learning environment in KPTM.

There are some motivations founded to M-learning projects and many projects that related to M-learning. They were concentrating on improving interactivity in learning [7], [8] and improve the availability of access among students to learning material [9]. For example, an application for international students who studied at United Kingdom has been built to help them to get adapted and cope with culture shock [9].

The tablets and mobile phones are mostly used in classes for the purpose of education [10]. At the same time, the iPad technology is used in the development of M-learning. Nevertheless, the application was used in their daily practices and effects a cultural change regarding the usage of social media and mobile technology in the work community [11]. In summary, research into M-learning in higher education is in an exploratory phase with many learning and teaching issues still to be investigated.

II. METHODOLOGY

This paper will discuss the development process of M-learning application known as Mobile EEF Learning System (MEEFLS) for Electric and Electronic Fundamental course. A system development life cycle (SDLC) is used which consists of several phases or stages such as requirements analysis, designing, coding, testing, and maintenance. The purpose of SDLC is to deliver a system which perform each defined phase, within scheduled time-frames and cost estimates [12]. The result of all phases is a quality application that achieves or exceeds customer expectations. The overall development process of the MEEFLS is depicted in Fig. 1.
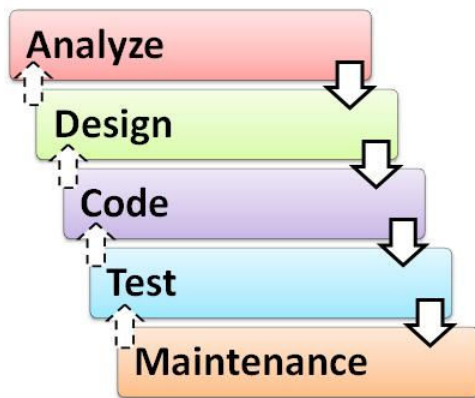
Fig. 1 System Development Life Cycle Phases

In the analysis phase, a preliminary survey has been conducted from 200 diploma KPTM students to find out the awareness and the readiness for applying the mobile technology in learning process [13]. From this study, most of the students are able to learn using mobile technology. An addition, they are aware and give a positive response to mobile technology and willing to use this technology in learning.

In design phase, the contents of MEEFLS were designed. The content flow of the Electric and Electronic Fundamental course content had been outline as in Fig. 2 and the interface prototype also been designed.
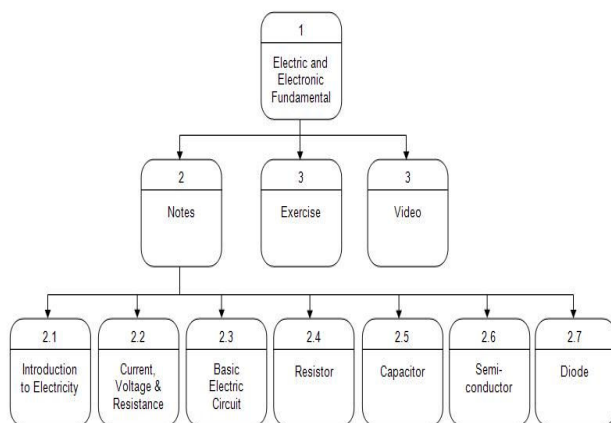

Fig. 2 Content design

In this phase, the MEEFLS were developed using J2ME and XML together with Flash file. In the same time, there are several additional software used to write the code. Among the software used are Adobe Flash, Java SDK and Java Runtime Environment (JRE).
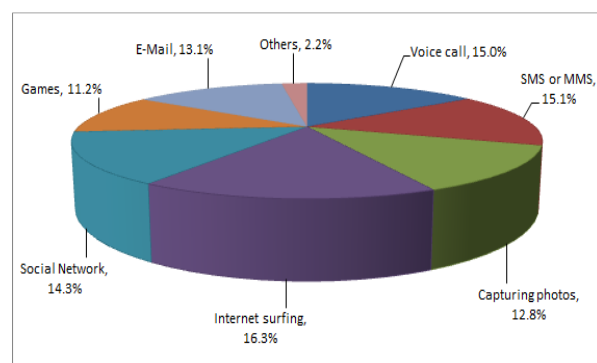
The functionality of MEEFLS application was tested and validated by conducting the evaluation and edit based on the feedbacks from several expert lecturers that conduct this course. The final output of this phase is the final prototype of the MEEFLS application.
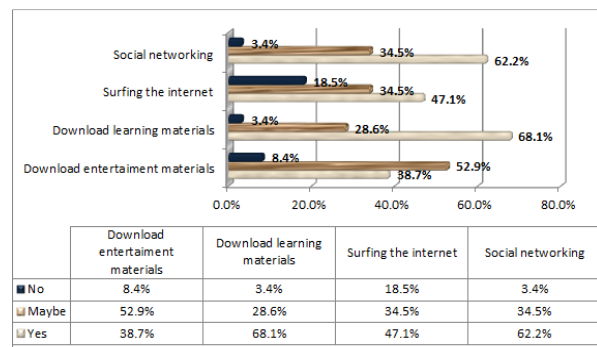
III. RESULTS

A. Student's Awareness and Readiness for Mobile Learning

A study has been carried out to find out the awareness and the readiness of KPTM's student for applying the mobile technology in learning process. The participant of the study is 200 students.

The perception on mobile learning was being examined. From the findings in Figs. 3 (a) and (b), it can be conclude that students will use the mobile gadgets for voice call (15.0%), SMS or MMS (15.1%), capturing photos (12.8%), Internet surfing (16.3%), social network (14.3%), games (11.2%), e-mail (13.1%) and others (2.2%). This study also carried out that if they have the mobile devices with the internet or Wi-Fi connection, they tend to download learning materials (68.1%), surfing the internet (47.1%) and social networking (62.2%) rather than download entertainment materials (38.7%).

(a)

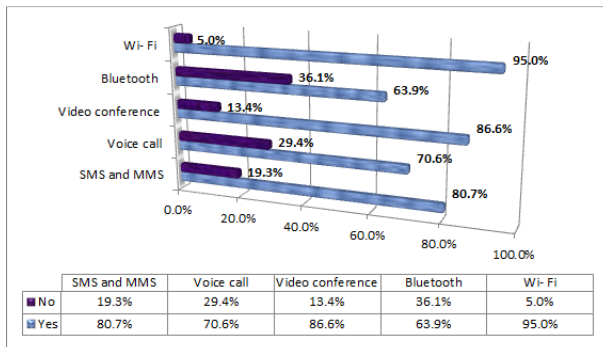|	Download entertaiment materials	Download learning materials	Surfing the internet	Social networking
No	8.4%	3.4%	18.5%	3.4%
Maybe	52.9%	28.6%	34.5%	34.5%
Yes	38.7%	68.1%	47.1%	62.2%

(b)

Fig. 3 (a) Awareness of the mobile gadget usage, (b) Student's reactions if they have mobile gadgets with the internet or Wi-Fi connection
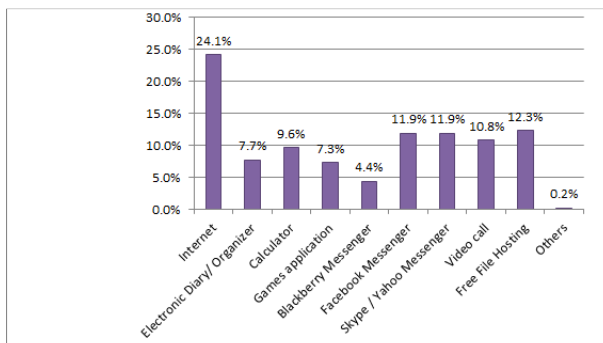
According to the result in Fig. 4 (a) and (b), students are ready to use SMS and MMS (80.7%), voice call (70.6%), video conference (86.6%), Bluetooth (63.9%) and Wi-Fi (95.0%) as mediums in learning. In the other hands, they also willing to use the alternative mediums such as Internet (24.1%), electronic diary/ organizer (7.7%), calculator (9.6%), games application as well as messengers like Blackberry Messenger, Facebook Messenger and Skype/Yahoo

Messenger (28.1%), video call (10.8%), free file hosting (12.3%) and others (0.2%).

As a result, this study shows that students are willing to use the mobile technology in learning process. At the same time, they have a positive perception and awareness of mobile technology and will use the elements in mobile technology in learning process.

|	SMS and MMS	Voice call	Video conference	Bluetooth	Wi-Fi
■ No	19.3%	29.4%	13.4%	36.1%	5.0%
▨ Yes	80.7%	70.6%	86.6%	63.9%	95.0%

(a)

(b)

Fig. 4 (a) Readiness to use elements in learning process, (b) Alternative elements to be used in learning process
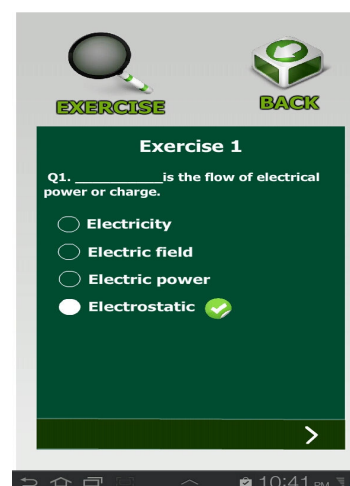
B. The MEEFLS Interface

The MEEFLS application's user interfaces is most important entity in the design. The analysis and evaluation of mobile students' need have been worked out to facilitate the beginner to expert students to make sure that the application is ease to use and also provides technical support to the students. Figs. 5 (a)–(c) illustrate the flow of MEEFLS application.

(a)

(b)

(c)
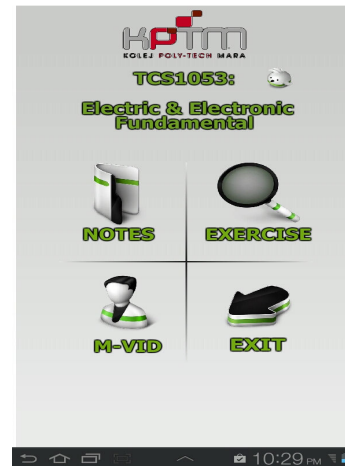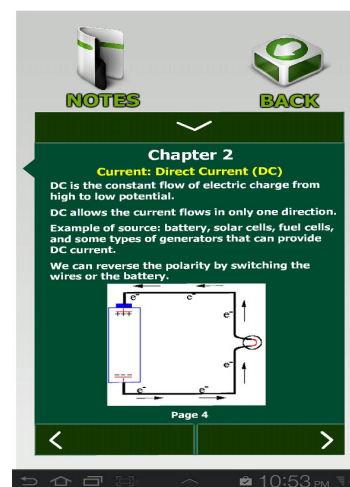
Fig. 5 MEELFS interfaces (a) Main Menu (b) Example of course material (c) Exercise

The learning materials for the course were listed by topic in the Notes menu as shown in Fig. 5 (a). As a user, students will select a topic and the notes will be appeared together with figures for reference as shown in Fig. 4 (b). At the bottom of the display, the navigation buttons are placed which function as a guideline to keep track the progress of the lesson. For the purpose of identifying the student understanding, the Exercise menu was designed to assist the self- enrichment for related topic (Fig. 4 (c)). As a result, the functionalities of the designed menu and option have considering the task flow and complexities to maximize the usability.

IV. Conclusion

M-learning has begun to play an important role in learning. The existence of wireless mobile technology has made it a reality. Flexibility for students to learn and acquire information to make the M-learning is very popular. Thus, it was shown that students of KPTM have the awareness and ready to implement M-learning. The benefits that can be obtained with the use of M-learning can be used as motivation in the success of this new teaching method. It is the key to success that need to be taken into account for the realization of teaching and learning methods M-learning. MEEFLS application fulfills the learning objectives and student's need to facilitate them to learn and access the learning material at anytime and anywhere. The important factor in developing this application is to make this application user- centered and flexible. At the same time, students will have a good experience and satisfied when using MEEFLS application.

Acknowledgment

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