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Mobile Assisted Teaching and Learning in an Institute of Higher Education

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Abstract

The advancement of mobile technology has enhanced educational environment from conventional classroom teaching into virtual, interactivesetting in the last few decades. However, factors i.e. cost, network coverage, mobile choices etc. have been the main constraints in utilizing mobile technology in teaching and learning. Therefore, this study employed quantitative approach to explore the level of readiness among lecturers and students in using mobile devices for teaching and learning process. The subjects have been chosen randomly from a Malaysia private university. The data was collected from 196 undergraduates and 56 academicians and was analyzed descriptively. The most significant finding revealed that most students used Wi-Fi to access the Internet (M=3.27, SD = 1.57) rather than subscribing to their service provider (M=2.46, SD=1.46). A significant number of academics preferred conventional teaching to mobile assisted teaching (M = 3.2, SD = .961). Correlation analysis was done to explore the relationship between academics' hand phone facilities and internet access ($p < .05$). The relationship was negative and strong, = -.783. The findings indicate that most students and academics owned the mobile devices; however the implementation of M-learning in higher institution were impeded by the accessibility of the internet.

Keywords: M-learning, M-Teaching, smartphone readiness, tertiary education, Technological Pedagogical Content Knowledge (TPACK).

I. Introduction

The sharp increase of mobile learning products and services, mobile learning tools and platforms with new learning content and apps creating a lot of excitement in the learning community these days. Mobile devices such as cellular telephones, I-pad and I-pod are commonly used in this technological savvy environment. Undoubtedly, the mobile devices have established its significant status in this technology era because they meet the needs of the society. Wireless and portable features have brought it to perform the borderless communication regardless of time and geographical distance. In recent decades, mobile device provide quick access to obtain information, promoting education from traditional classroom teaching and learning methods to technological based teaching and learning environment.

Undoubtedly mobile device has its influence in the modern education world. With the increase of popularity and affordability of the mobile devices, universities have been occupied by 'digitally native' students (Zur and Zur, 2011), thus it is worth investigating the implementation possibility and pedagogical effectiveness of mobile teaching and learning in higher education institutions (Cruz-Cunha and Moreira, 2011).Recognizing a framework for learning in the mobile age has the fundamental role in communication process of coming to comprehend the world and in negotiating agreements among various perspectives (Sharples, 2005). However, the understanding of the needs of using mobile devices in education is yet to be confirmed. The availability of the devices and cost incur in engaging the devices are always the challenges for the evolution

On the other hand, mobile learning (M-learning) tends to replace the traditional e-learning in distance education. Learning can be conducted anywhere and anytime with a mobile device (Kadirire, 2009). In fact, M-learningis a new field which has great potential for the use of mobile devices in e-learning (Attewell & Savill-Smith, 2004). Mobile devices have features and functionality for supporting learners. A wide range of mobile devices emerged in the market recently i.e. laptops, e-book readers, mobile phone and smart phone. The devices ranged from a small screen, medium screen to big screen. A laptop, offers users access to a standard keyboard with big screen and full suite of computing tools; medium screen device such as a tablet, while not necessarily as robust in terms of computing power, is often smaller and provides fast, direct access to customized mobile learning applications. Nowadays, the smart phone with its small screen has been widely used for its' multifunctional, convenience and generally affordable price.

M-learning provides a virtual learning environment over the time and space. An aspect of M-learning enable students to engage in their lecture without moving from one class to another staying in the same location and study by using the portable learning device (Seppälä & Alamäki, 2003). Apart from that, previous research reported that using SMS to deliver informationon teacher's classroom preparationenhances thestudent's experiences in adapting online classes, increasing motivation for taking the classes, and improving expectations for M-learning (Wang, Shen, Novak, & Pan, 2009). Moreover, learners in informal learning environment often find their learning activities more motivating than learning in formal learning environment such as schools or university because they have freedom and time to define tasks related to their activities. By the characteristic of informal learning, relationship among learners' goals and interests will be raised which means that intrinsic motivation is likely to be high (Sharples, 2006).

Considering the evolution of teaching and learning which thrust by the advancement of information technology world, this study aims to investigate to what extent are students and academicians ready for M-learning and to determine the differences in readiness level among students and academics within two strands; social sciences and science technology. This survey based study explored the prior knowledge and readiness of undergraduate students and academics about M-learning technology in academic setting in a Malaysian private higher learning institution. The results serve as a reference and fundamental knowledge for educators and students in shifting the teaching and learning methods from traditional classroom based learning to the interactive technology based learning.

II. Literature Review

It is practical to combine several multimedia tools to reach specific learning goalsin differentfields. IPod educational content is helpful to enhance students' understanding as it provides various facilities and opportunities. Scientific educational approaches such as simulations, computer-based laboratories, and video are able to solve the learning problem (Pasnik, 2007). Students watch video through IPod that is especially effective when their learning skill along with visual component. Software combines into research-based instructional design, so animation and video can increases learning process when it involves in motion or action. The iPod Touch is device that has chosen to use as an "Internet Device. The I Pod touch is quickly filling up with useful applications for teaching and learning (Pasnik, 2007).

Studies showed the preference of university students and teacher training in using mobile phone in learning. Students who receive mobile email gain more input than those who are not.71 percent of the subjects preferred to receive lessons on mobile phones rather than computers while 93 percent responded that it is a valuable teaching method (Thornton & Houser, 2004). Teacher trainee and their supervising teacher were found to prefer M-learning for its convenience, expediency, immediacy (Alamaki, 2003). The result on a study of mobile device supported peer assisted learning system indicated that mobile device helped improve collaboration in elementary school level English for Foreign Language learners and promotes their reading motivation (Lan, Sung, & Chang, 2007).

Open University of Malaysia hadapplied their version of M-learning in some courses and the studentsresponded that they werehighly satisfiedwith the implementation ofM-learning. Higher satisfactions are related to the study material, important notifications and reminder that receive them daily. M-learning has also improved and assisted undergraduate especially in distance learning courses. Some research reports that respondents are not satisfied with the cost of communication with the tutor and other students in M-learning assisted courses (Ismail, Gunasegaran, Koh, & Idrus, 2010).

A. Definition of M-learning

A clear difference between conventional learning and M-learning is that M-learning initiates from the assumption that learners can receive information without time constrain. They can conduct their learning across places and time same as opposed in taking learning materials and information in one specific location. Like call upon again learners revisit information in various contexts and interface designs through new strategies which have provided a multimedia framework for learning. Educational system frameworks supply and manage a range of personal learning activities, more than by just following a single curriculum. Learners are also on and off in the engagement with technology, for instance they connect and leave mobile phone coverage (Sharples, Taylor, & Vavoula, 2005).

M-learning is a method of using wireless mobile technologies for educational purposes. It enables the extension ofdata access in educational system from a desktop-based online device to such as mobile phones and I-Pads.M-learning can be utilized to support a wireless online virtual community that is connected to a campus server (Farooq, Schafer, Rosson, & Carroll, 2002). Mobile communication mechanisms can support M-learningmaterials such as voice communication, learn via SMS and retrieve data from learning portal on the internet. M-learning could be interactive with the assembly of audio, text, image,web and mobile technologies in one package (Ting, 2005).

M-learning is a pedagogical approach that inculcate technological device in content delivery. Koehler and Mishra (2009) describe a framework of Technological Pedagogical Content Knowledge (TPACK) as the knowledge teachers need to teach effectively with technology. The TPACK framework consists of three primary forms of knowledge: Content (CK), Pedagogy (PK), and Technology (TK). The three knowledge bases are interrelated. Besides knowing how to use the technology, the framework emphasizes on the understanding of the interaction among technology, pedagogy and content to support students' learning. The knowledge at the intersections between them, representing four more knowledge bases teachers applicable to teaching with technology: Pedagogical Content Knowledge (PCK), Technological Content Knowledge (TCK), Technological Pedagogical Knowledge (TPK), and the interaction of these bodies of knowledge, both theoretically and in practice, produces Technological Pedagogical Content Knowledge (TPACK) (as presented in figure 1). In other words, TPACK is the understanding of the usage of a tool in delivering a specific curricular topic to enhance students' learning.

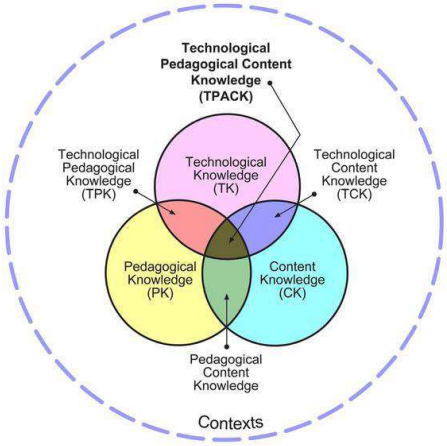

Figure 1: Sources: Matthew J. Koehler (2012).

B. Challenges and Benefits of M-learning

There are several factors to consider over the implementation of M-learning in education domain. The factors include training, device limitations, security, support, and the cost of implementation and maintenance. Barker, Krull, & Mallinson, (2005) have recommended implementing M-learning through simple format and content which is fully informative to the learners by using mobile phone.

According to Chen, Kao and Sheu (2003), M-learning implementation requires an emphasis in support-fading component of scaffolding, where academics need to assess learners' mastery level through scaffolding process. High dynamics in technology imposed new challenges which are mainly caused by many combinations of M-learning services. The challenge is to exploit the changing situation with a new classification of learning applications that can match to dynamic learning environment. Context awareness mobile learning that

senses mobile environment and responds to altering context during learning process is the other challengeable issue in this area (Yuan-Kai, 2004).

A number of surveys have revealed the benefits of mobile technology to learners, such as prompt feedback, enhanced engagement, motivation; collaborative activity and team work. Mobile devices can also function as a reference tool. The advantages of using this evolution for educators are probably observed in students' motivation, participation rate in classroom-based activities, retention and performance. It also encourages the sense of responsibility among learners (Kukulska-Hulme, Evans & Traxler, 2005). In information system (IS), user's satisfaction depicts the degree users' belief that how much IS conforms to their requirements (Cyert & March, 1992). Learners' satisfaction is now shifting in designing aM-learning system due to an increase in reflective thinking and problem-solving skills among novices (Chen & Yen, 2007).

C. Characteristics of Mobile Learning

Mobile learning can be defined as any form of learning processes that occur with the support of a mobile device or in mobile environment (Trifonova, 2003). Its characteristics are not technical or device specific, but they have more implication to the accessibility of learning materials to be delivered to the users. Firstly, mobile learning services are accessible ubiquitously with the growing coverage support from mobile network providers. Availability of mobile technology provides comfort for learners (Hill &Roldan, 2005). Learners can engage inM-learning whenever needed besides replying to subscribers. Secondly, short learning modules can be attached in the abstract through bite-sized approach. Such learning content is suitable for rendering and delivering on small mobile devices since mobile learning components enable information retrieval within shorter and faster time duration. These would be a probable reason which necessitates 'bite-sized' learning (Kukulska-Hulme, et al., 2005). Thirdly, mobile technology are able to boost one's motivation as it collaborativelyassists learners in both informal and formal environment in managing activities and to complete tasks (Laurillard, 2007).Collaborative learning implemented along mobile learning include SMS (short message services), MMS (multimedia message sending), voice, email contact and information sharing such as the MMLS (Multimedia Learning System). Fourthly, mobile learning has performance support function. The current mobile technology attempts to enhance the productivity, creativity, effectiveness, and efficiency of mobile subscribers (Gayeski, 2002).

Fifthly, mobile learning supports blended approaches in teaching and learning environment to present pictures, graphs, animations, simulations, and video clips that to learners. Mobile blended learning consists of several activities such as extending a course, supplying packaged content that can act as performance support and providing access to tutors and learners (Bonk, Kim, & Zeng, 2006). Sixthly, mobile learning assists to diversify the students' learning strategies. According to constructivist learning environments (CLEs), each problem should be authentic and engaging, involving all parts of an activity system and impose as a challenge for the learners and making it more meaningful for learners (Jonassen & Rohrer-Murphy, 1999). Mobile learning components should be built through proper learning strategies. Learner-centered strategies should be developed on inquiry-based, discovery-based or problem based learning strategies which are based on constructivism theory (Rogers, Scaife, Gabrielli, Smith, & Harris, 2002). Seventhly, the invention of multiple mobile devices is supported by innovation through mobile research device category. The term 'mobile technology' can be seen in devices such as mobile phones, smartphones, PDAs, netbooks, notebooks, laptops, and tablet PCs (Sharma & Barrett, 2007). Mobile wireless phones are popular as personal communication tool (Kim, Mims, & Holmes, 2006) and smartphones, a combination of mobile phone and computer is so prevalent nowadays.

D. Interaction through Mobile Devices

SMS is the broadcast of short text messages to and from a mobile wireless phone, fax machineand many wireless devices that have the ability of sending and catching text data. Research shows that learners prefer using SMS instead of making telephone calls to communicate among themselves (Wang et al., 2009). It supports "Constructivist learning which focuses on skills and strategies, rather than facts and rote memorization" that creates and evaluates new perspectives in content design (Honebein, Duffy, & Fishman, 1993). By exploiting SMS in the design of mobile learning activities, learners become able to discuss, communicate and support their ideas. Seeking help from the tutors become the second option because students might avoid looking 'dumb' by the other students which then lead to the deterioration of self-esteem and self-confidence (Kitsantas & Chow, 2007). From a research by Rau, Gao, and Wu (2008), a group of students who engaged themselves with online forum underwent more pressure after the experiment while another group of students who engaged themselves with SMS and email experienced more private communication space with less feeling of embarrassment. MMS is a more advanced messaging application than SMS. It can include text, sound, images, and video in a message. Exploiting of SMS and MMS will potentially be intensified the qualification of educational process (Trifonova, 2003).

With internet and Wifi access provided in the campus, students prefer to use online social messaging rather than SMS and MMS. Applications such as Wechat, Whatsapp and Line are common among the youths. These applications are fun with interesting emoticons and information can be easily shared either in text form, voice record or video.

This study adopted the framework suggested by (Harris and Hofer, 2009). The "Successful technology integration is rooted in curriculum content and students' content-related learning processes primarily and secondarily in savvy use of educational technologies. When integrating educational technologies into instruction, teachers' planning must occur at the nexus of standards-based curriculum requirements, effective pedagogical practices, and available technologies' affordances and constraints." (Harris & Hofer, 2009) Successful technology integration is needed in the curriculum and student learning process related to the content, the use of primary and secondary education technology savvy when integrated educational technology into teaching, the teacher's planning must occur in the course requirements, standards-based relationship, effective teaching methods, and existing technology "available and constraints."

III. Methodology

This research examined the readiness of undergraduates and academics in using mobile learning at a private university in Malaysia. The samples have been chosen randomly. As a result, a total of 195 data has been collected from students (n=195).These comprise students of Science and Technology (n=99) and social science students (n=96). Besides,data has been collected from academicians from various faculties (n=56). The questionnaire is divided into four parts, namely part A, B, C, and D. Part A was about respondents' demographic information and Part B was related to their hand phone facilities. Part C emphasized on the way respondents connect to the internet and their online activities with their hand phones. Lastly, part D focused on respondents' knowledge of mobile learning. The results were obtained descriptively and analyzed by using IBM SPSS Statistics software version 19. A T-test was used to compare the statistics between social science and science and technology students.

IV. Results

A. Students' Demography

The result shows majority of respondents were first year students (n=128). Most of the students were between ages of 17-20 years old (n=131). These students are from both science and technology stream (n=99), and social science stream (n=96). Meanwhile, most respondents were Chinese (n =74) and male (n=123) compare to female (n=68).

B. Students' Hand Phone Facilities

All respondents owned a mobile phone. Majority of students (88.2 percent, n=172) have memory card in their hand phones that enable them to save more data on their phones, (86.7 percent, n=169) stated their phones can access to the internet, (91.8 percent, n = 179) could open files such as photos, (87.2 percent, n=170) have audio functions, and (86.7 percent, n=169) have video functions. Besides, a large number of students own a mobile phone that has MMS network (85.6 percent, n=166). However, only a few students responded that their hand phones could read word documents (49.7 percent, n=96), excel documents (42.8 percent, n=83) and PowerPoint documents (42.8 percent, n=83). As few as 13.8 percent (n=7) of the respondents have hand phones with 4G service.

Comparing students' hand phone internet access by stream of study, a significance difference, $t(193) = 2.044$, $p < .05$, was found. More students in science stream have internet access in their hand phones ($M = 1.18$, $SD = .388$) compared to students in social science stream ($M = 1.08$, $SD = .278$).

C. Students' Internet Access

The most significant finding shows most students used Wi-Fi to access the Internet (M=3.27, SD = 1.57) rather than subscribing to their service provider (M=2.46, SD=1.46). It was found that students mostly use internet by using a mobile phone to access Facebook and other social networking sites such as Twitter and LinkedIn (M=3.19, SD=1.56), followed by (M=2.70, SD=1.44) to download files (M=2.48, SD=1.48) to send or receive emails and (M=2.48, SD=1.47) to read online news To add on,, very few students have ever sent 3GP files to others (M=1.93, 1.17) and know how to convert PowerPoint files into a 3GP format (M=1.67, SD=1.06).

D. Mobile Learning

Overall, most of the students know what mobile learning is all about (M=2.81, SD=.70). It was found that most students are interested to know more about mobile learning (M=3.12, SD=.69) and they would like their lecturers to integrate mobile learning in addition to face-to-face meetings in the class (M=3.04, SD=.81). Students agreed to upgrade their hand phones if mobile learning is implemented in their learning especially to read online notes in PDF files (M=3.02, SD=.95). Besides, majority of the respondents perceived mobile learning as an alternative to conventional learning (M=3.01, SD=.81) as well as web based learning (M=2.97, SD=.80).

In addition, a significant difference is found by stream of study in perceiving mobile learning as an alternative to conventional learning, $t(185) = -2.195$, $p < .05$. More students from social science (M=3.14, SD=.82) agreed with the statement as compared to students from science programmes (M=2.89, SD=.78). In addition, hand phone facilities were found to be significantly correlated to internet access ($p < .05$). The relationship was negative and strong

(p =-.612). This means that despite having different facilities in their hand phones, students seldom use their hand phones to access Internet. Internet access was also significantly correlated to mobile learning (p< .05) with p =.155. This means that the relationship was positive but very weak. Hence, student's accessibility to internet connection determines their frequency to engage in mobile assisted learning.

E. Academics' Demography

The respondents consisted of 24 academics (42.9 percent) from science and technology discipline and 32 academics or s (57.1percent) from social science discipline. In describing the respondents by gender, there were 25 male academics (44.6 percent) and 31 female academics (55.4 percent). Majority of them were between the age of 30-39 years old (54.2 percent, n = 26) and 41.1percent had 11 to 15 years of teaching experience. Meanwhile, most of the respondents or (44.6 percent, n = 25) were Malay and (35.7 percent, n = 20) were Chinese and (19.7 percent, n=11) were Indians.

F. Academics' Hand Phone Facilities

All the academics owned a mobile phone. Most of the mobile phones can open up photo or graphic files (80.4 percent, n = 45) and video files (78.6 percent, n = 44). Besides, majority of academics had a smart phone which can store digital files in a memory card (75 percent, n = 42), support MMS network (73.2 percent, n = 41) as well as access to the Internet (73.2 percent, n = 41). However, as few as 19 academics (34.5 percent) had ever used a video call and only 8 of the academics' mobile phone can support 4G network (14.5 percent).

In comparing academics' mobile phone facilities by discipline, a significance difference was found in MMS network support (t (38) = 2.785, p< .05), video call support (t (54) = 2.592, p< .05) and internet access (t (40) = 2.139, p< .05). More academics from science stream have hand phones with MMS network (M = 1.46, SD = .509) and video call support (M = 1.71, SD = .464) as well as internet access (M = 1.42, SD = .504) than academics from social science.. Meanwhile, male academics (M = 1.8, SD = .408) significantly had more experience in using a video call compared to female academics (t (53) = 2.159, p< .05).

Part C: Internet Access

Most of the academics used their hand phones to access the Internet via Wi-Fi facility (M = 2.98, SD = 1.601), receive and send email (M = 2.52, SD = 1.595), download files from the internet (M = 2.52, SD = 1.501), access Facebook and/or other social networking sites (M = 2.52, SD = 1.607) and read online news (M = 2.52, SD = 1.465). The least done activities by the academics with their mobile phones were sending 3GP (video format) files (M = 1.18, SD = .606) and receiving 3GP files (M = 1.69, SD = 1.103). Moreover, very few academics (M = 1.65, SD = 1.142) knew how to convert PowerPoint files into a 3GP format.

A significant correlation was found between academics' mobile phone facilities and internet access (p< .05). The relationship was negative and strong= -.783. This finding indicates that despite having variety of facilities in their mobile phones, academics seldom access Internet via their mobile phones for teaching purposes.

Part D: Mobile Teaching

It was found that academics are willing to upgrade their hand phones if the university provide some funds (M =3.30, SD = .851). Most of the academics were interested to know more about mobile teaching (M = 3.23, SD = .66) and they agreed that mobile assisted teaching suits working adults who are pursuing their higher education (M = 3.21, SD = .731). However, a

big number of academics preferred conventional teaching to mobile assisted teaching (M = 3.2, SD = .961) as they will end up spending more money on their mobile phone bill due to mobile assisted teaching (M = 3.18, .834).

Overall, academics teaching social science subjects (M = 26.5, SD = 11.47) significantly showed more acceptance to mobile teaching than academics in science studies ($t(54) = -2.002$, $p < .05$). In addition, academics in social science discipline significantly have more knowledge on mobile teaching (M = 3.25, SD = .622, $t(54) = -2.643$, $p < .05$) and higher awareness on the usage of mobile teaching among their colleagues (M = 3.19, SD = 1.424, $t(54) = -2.251$, $p < .05$) than academics in science discipline.. Moreover, it was significant that female academics showed more interest in knowing more about mobile teaching (M = 3.39, SD = .761) as compared to male academics ($t(50) = -2.115$, $p < .05$).

V. Discussion

The research found that most of the lecturers and students have a memory card in their mobile phones. By having a memory card in mobile phones, it is easier for lecturers to download media, and prepare podcasting or podcasting lectures, tips, messages, review of subject and other learning material (Wilson & Steven, 2012). As for students, they have more space to save the learning materials in their mobile phones. Besides, most lecturers' and students are able to use Wi-Fi to access the Internet. The use of mobile assisted teaching and learning would be feasible if the university provide unlimited Wi-Fi service in all the faculties and hostels. The only concern is the speed and the bandwidth of the Wi-Fi facility, which has not been studied in this research. It was found that the most common usage of internet via mobile phone among students is for surfing Facebook and other social networking sites, followed by downloading MMLS (Multimedia Learning System) files which were uploaded by lecturers, and sending or receiving emails. This was probably because students like computer-mediated communication, such as interacting with friends through social network sites and corresponding via emails. This study found that if an encouraging internet supply is available at all time within the university; more students will be interested in mobile assisted learning. Meanwhile, lecturers were found to be involved in internet based activities too. Hence, the findings reveal that lecturers and students are engaged in technology mediated communication besides the face-to-face interaction during lecture sessions to make teaching and learning more interactive and savvy.

Most of the students are aware of mobile learning and they would like their lecturers to integratemobile teaching and learning in addition to face-to-face meetings in the class. Moreover, bothacademics and students are also interested to apply mobile applications in academic context andto get them updated with the latest innovation. Mobile learning promotes flexibility in learningwhere students can learn anywhere and at any time as it is convenient or they are motivated tolearn, without separating boundaries such as traditional classroom locations or by internetconnections (Wilson & Steven, 2012). In addition, receiving multimedia messages wouldenhance students' learning (Cavus& Ibrahim, 2009). Students also reported that they like toreceive learning materials in multimedia form, such as graphics and audio besides short textmessages.

Nevertheless, the analysis showed that most students' smart phones could read word documents,excel documents and PowerPoint documents. Therefore, lecture notes, assignments and exerciseswhich are usually presented in word or PowerPoint formats should be uploaded to the coursewebsites. The ability to access web-based learning materials indicates that students are ready formobile learning. However, most students agreed to upgrade their smartphones if the there is ashift in paradigm, from the conventional use of hardcopy materials to an adoption of softcopy materials in classroom teaching and learning.

Research also shows that a big number of college-age students would not mind to spend a little more on their smartphones for learning utilization (Wilson & Steven, 2012).

Most academics responded that they will upgrade their smartphones as to keep abreast with themobile technology explosion among students. This indicates that using mobile devices inteaching is an alternative although it may not be compulsory. A large number of academics werealso found to prefer conventional teaching to mobile assisted learning and they are not willing tospend more money on their hand phone bills by incorporating the mobile use for professionalreasons. When internet line is unstable or slow, short message service (SMS) will be analternative to communicate among students or between lecturers and students. Nevertheless,sending SMS is not free (Cavus & Ibrahim, 2009). It will cost extra expenses for the lecturers tosend learning materials to students or to reply to students' short messages.

This study also shows very few lecturers and students have ever sent 3GP files to others andmost of them do not know how to convert PowerPoint files into a 3GP format. This shows thatmost lecturers and students are not familiar with software to make their learning easier. Forexample, if students can convert their PowerPoint files to 3GP format, which is embedded inmost of the smartphones, they can read the power point slides everywhere and they can alsoshare those files via Bluetooth.

VI. Conclusion

Technology is widely used nowadays in daily life. The usage of technology in education hasshifted the paradigm from computer assisted learning to mobile assisted learning as it capturestudents' attention and assist students' learning as well as lecturer's teaching. Integration ofcomputer technology in teaching and learning process is common, conventional and may be seentraditional in years to come. With the advancement in technology, the focus has now shifted onmobile assisted teaching and learning. This is due to the portability of mobile phones ascompared to computers and its dynamic evolution through research and developments. Thisstudy found that all students and lecturers in university own a smartphone or at least a mobile phone. This indicates that both students and lecturer can utilize computing power anywhere and anytime with the goal of accessing and retrieving wealth of information. In addition, the wireless technology throughout the university enhances the availability and accessibility of learning materials, and information as well as communication networks. Hence, it is time to consider implementing mobile assisted teaching and learning besides traditional classroom approaches in teaching and learning. Since both academics and students have smart phone facilities which are needed in mobile assisted teaching and learning, such as memory card for storage of teaching or learning materials and the access to university website, the university should provide high speed Wi-Fi service to enable lecturers and students to communicate online anytime in the campus, either through university's website or via social networking sites.

This study suggests the universities to provide a sufficiently fast internet services to support mobile assisted education to encounter problems in accessing internet in the campus focusing on students to upload and download documents. High speed broadband services and Wi-Fi services in all areas in campus will accelerate the learning rate among students and further motivate both academic and students to adapt to the current changes in technology.

Besides, to attract students towards mobile-assisted learning, a social environment that enables computer-mediated communication among students or between students and lecturers should be included. Students may prefer communication through electronic devices as compared to facetoface interaction because they can share their opinions and feelings conveniently at anytime and anywhere without having to appoint a time where all group members have to be physically available for a group discussion.

Referring to the Technological Pedagogical content knowledge (TPACK) framework, it's proved that both academics and students were well exposed to mobile technological knowledge (TK). Most students are eager to the use of mobile apps to support their learning and they would upgrade their phones as to keep abreast with the innovations. It is also seen that academics which are mainly from the former generation consist of Baby Boomers and the generation X may get themselves carried into the trend of the later generation or the Y's in the use of smartphones which is seen more of a need than a preference. However, the Technological Pedagogical knowledge (TPK) and Technological Content knowledge (TCK) is yet to be confirmed.

TPACK is essential for effective teaching and learning. There is a need to explore the knowledge in other areas in the framework, and research on factors influencing M-learning should also be identified to enhance the effectiveness of technology devices for educational purposes as it is found to be important to inculcate lifelong learning ability among students.

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