TAYLOR'S UNIVERSITY
Wisdom • Integrity • Excellence

SCHOOL OF MEDIA AND COMMUNICATION

THE 6TH INTERNATIONAL SEARCH CONFERENCE

2019 PROCEEDINGS

NEW MEDIA AND DIGITAL INCLUSION:

EMBRACING THE 4TH INDUSTRIAL REVOLUTION

27 - 28 JUNE 2019

TAYLOR'S UNIVERSITY LAKESIDE CAMPUS
KUALA LUMPUR, MALAYSIA

Edited by

Yang Lai Fong

THE USE OF MOBILE TECHNOLOGIES FOR LEARNING IN HIGHER EDUCATION: STUDENTS' READINESS

Cheng Ean (Catherine) Lee[1], Serena Wai Yee Leow[2], Xiang Jie Kong[3]
Sunway University, Malaysia
catherinelee@sunway.edu.my[1], serenaleow@sunway.edu.my[2], kongxj96@hotmail.com[3]

Abstract

A rapid evolution in technologies has created a new paradigm of learning with universities embarking on integrating mobile technologies in higher education. As a result, mobile learning has emerged as a new way of learning which utilises mobile technologies such as smartphones, laptops, tablets and the Internet, allowing students to learn anywhere and obtain learning resources anytime. To ensure a successful implementation of mobile learning in higher education, it is imperative to understand students' readiness towards using mobile technologies for learning. This paper examines whether undergraduate students of a private university are ready to adapt to the mobility of learning through the use of mobile technologies in higher education. Through a questionnaire survey with 234 students of a private university, data were analysed using descriptive statistics. Results shows that students are fairly comfortable (61.1%) with the use of mobile technologies for learning purposes (98.3%), specifically for accessing and downloading online journals (82.5%) and searching for information (82.1%); students somehow agreed that product and services that use technologies are much more convenient to use (M=3.75) and they are open to learning new and different technologies (M=3.71); as well as students were moderately ready for mobile learning if it is to be implemented by their universities (M=3.32). This paper provides an insight on students' readiness in adopting mobile technologies for learning in Malaysian higher education.
Keywords: mobile technologies, mobile learning, students' readiness, private university

Introduction

A rapid evolution in technologies has created a new paradigm of learning with universities embarking on integrating mobile technologies in higher education. The integration of mobile technologies (such as mobile phone, smartphone, tablet and laptop) in education has allowed students to communicate with peers as well as with their lecturers. Students also use mobile technologies to gather educational materials on the Internet because they perceive the Internet as the fastest way to gain knowledge (Joorabchi, Hj Hassan, & Osman, 2013). Mobile technologies have brought benefits to the way teaching and learning are conducted in education (Klassen, Eibrink-Lunzenauer, & Gloggler, 2013) and the increasing penetration of technology in smartphones has caused a new paradigm of learning – mobile learning – to emerge. This new way of learning which utilises mobile technologies allows students to learn anywhere and obtain learning resources anytime.

Quinn (2000) described that mobile learning (M-Learning) takes place when students use mobile devices for educational purposes, and Kengwe and Bhargava (2014, cited in Kutluk, et al., 2015) defined M-Learning 'as a dynamic learning environment through the use of mobile technologies especially in the field of education' (p. 58). In addition, Ozdamli and Cavus (2011) categorised mobile technologies as instant, portable, interactive, collaborative and ubiquitous and the authors described M-Learning as a learning method that allows learners to gather learning resources at anytime and anywhere.

Mobile technology has provided a new way of integrating M-Learning in academia. Many universities are testing out the possibilities of mobile technologies implementation in higher education (Briz-Ponce et al., 2016), however in the Malaysian context, research has been conducted only in the scale of public universities (see Alzaza, & Yaakub, 2011; Abuhassna, & Amin, 2014; Said, 2015; Ismail, Azizan, & Gunasegaran, 2016). One of the major influences that allow M-Learning to be implemented in the Malaysian education field is the usage of mobile devices among the younger generation in Malaysia. A survey conducted by the Malaysian Communication and Multimedia Commission (MCMC) in 2017 reported that the main users of mobile technologies are from the 20-24 years' age group, which accounts for 18.4%; and they are also the majority users of the Internet compared to other age groups (21.4%).

Despite the numerous advantages of integrating mobile technologies for learning in higher education, as shown in prior literature, successful implementation of mobile technologies in higher education does not come without understanding the perspective of the students, especially on the factors that affect students to adopt M-Learning (Masrek, 2015; Sarrab, Al Shibli, & Badursha, 2016; Zainol, Yahaya, Mohamat Yahaya, & Md Zain, 2017) and their readiness in using mobile technologies for learning (Figaro-Henry, & James, 2015; Ismail, Azizan, & Gunasegaran, 2016). Therefore, this paper, aims to determine students' usage of mobile technologies for university learning, and to gauge students' readiness in adopting M-Learning. The two research questions guiding this paper are: RQ1: What is the use of mobile technologies by students for university learning?, and RQ2: What is the readiness of students towards M-Learning? The findings of this paper are useful to researchers and readers who seek to understand the uses and perception of university students towards adopting mobile technologies for learning, as well as for universities administrators to assess students' interests towards the use of mobile technologies for learning, allowing them to make better decisions in identifying the criteria to successfully implement M-Learning in higher education. In addition, this paper provides information to mobile learning applications developers, by allowing them to understand students' perspectives when using mobile learning applications which enable them to further enhance and fine-tune the applications.

Literature Review

Mobile Technologies

Mobile technologies include technological devices which are handheld, portable, and lightweight through computing devices with Internet connection and accessibility from anywhere with a wireless or mobile network (Wiebrands, 2012; Kengwe, & Bhargava, 2014). The devices range from mobile phones, smart phones, tablets, iPads, to laptops and personal digital assistants (PDAs) (Hussin, Manap, Amir, & Krish, 2012). These mobile devices are becoming 'a new form of the handheld computer that has capabilities to be used in the learning processes' (Prensky, 2005, cited in Alzaza, & Yaakub, 2011, p. 95). Thus, 'mobile technologies if employed effectively, can support social constructivist approaches to learning' which allow students to collaborate and communicate with peers within the class or around the world, as well as to expand discussion and learning beyond the classroom (Cobcroft, Towers, Smith, & Axel, 2006, p. 25) and to perform on their studies (Adegbija, & Bola, 2015). However, it can be a distraction when these devices are used excessively for entertainment purposes (Montrieux, Vanderlinde, Schellens, & De Marez, 2015). According to Zhang (2015), 'although there are both pros and cons for the use of mobile technologies in education, the advantages far outweigh the disadvantages'. Thus, mobile technologies play a significant role in the field of education with a new way of learning through M-Learning (p. 506).

Some authors quoted that millennials are one of the first generations of having being exposed to technology and the Internet since young (Djamasbi, Siegel, & Tullis, 2010) and millennial students owned at least a handphone or other mobile devices because they are surrounded with technological gadgets which keep on changing rapidly (Rahamat et al., 2012). Mobile technologies now offer a new generation of learning for people of all ages, especially millennial students, anywhere and anytime (Alzaza, & Yaakub, 2011). Due to the characteristics of being instantaneous, portable, interactive and collaborative (Ozdamli, & Cavus, 2011), the rapid evolution of mobile technologies has caused massive changes to the way teaching is being conducted in higher education. According to Abuhassna and Amin (2014), lecturer-student interactions have evolved due to the advancements of mobile technologies, which enable lecturers and students to interact remotely at any time and any setting, not merely through face-to-face communication in a traditional classroom setting.

Several studies were conducted to investigate students' perception towards the use of mobile technologies in the Malaysian higher education context. Among them is the study by Yeap, Ramayah and Soto-Acosta (2016) investigated students' perception towards the use of mobile technologies in the Malaysian higher education context. The study was conducted based on 900 students of a public university in Malaysia, which resulted in 92.3% of the respondents owning smartphones and tablets (42.6%).

> 'Students are more likely to adopt technology for learning when the use of that particular technology aligns with their learning approaches… using mobile devices for learning actually empowers the students to take control of their learning pace and help them in their academic development and productivity' (Yeap, Ramayah, & Soto-Acosta, 2016, p. 334).

Two other studies were conducted by Said (2015) and Abuhassna and Amin (2014) on student population of a public university in Malaysia. In Said's (2015) study, the findings showed that all respondents (N=86) owned a laptop and 80.2% of them have access to smartphones, which revealed the extensive use of mobile devices by students in accessing a variety of learning services in the university. As for the comfortability and confidence of using mobile technologies, 40.7% of the respondents were very comfortable, 47.7% of them were fairly comfortable and 67.4% of them were confident in frequently using mobile technologies for learning purposes (54.4%) due to the significant advantages of mobile technologies and devices such as efficiency, easy to use, pleasing and comforting (Said, 2015). Similarly, Abuhassna and Amin's (2014, p. 76) study showed 'a high level of comfortability towards using mobile devices among the students of a public university which is about 88% (fairly and very comfortable)'. The authors concluded that the respondents seem to be familiar with mobile technologies with majority of the students used email through laptops/notebooks (50%) and smartphones (32%) to communicate with their lecturers.

Mobile Learning (M-Learning)

The evolution of mobile technologies and its penetration into the education field have potentially created the next form of electronic learning (e-learning) which enables lecturers and students to conduct their learning anywhere and anytime (Alzaza, & Yaakub, 2011). This is also known as mobile learning (M-Learning). M-Learning refers to the use of mobile and handheld devices such as PDAs, mobile phones, laptops, and tablets for teaching and learning (Nassuora, 2013). Such forms of learning allow users and/or students to learn anywhere as long they have portable devices and wireless connection (Hoppe, Joiner, Milrad, & Sharples, 2003).

There are many descriptions given to M-Learning by scholars. Alexander (2004) described that M-Learning takes place using wireless technologies and emphasises on using personal mobile and portable devices which are held close to the body with access to Internet, for learning. Georgiev, Georgieva and Smrikarov (2004) stated that M-Learning is part of e-learning but has the ability to learn everywhere, at any time without permanent physical connection to cable networks through the use of mobile and portable devices. Naismith et al. (2004) described M-Learning as a rich, collaborative and conversational experience through the use of personal and portable technologies in which users can access educational materials whether in classrooms, homes or streets of a city and Traxler (2007) claimed that mobile learning is 'essentially personal, contextual and situated' through the use of mobile, personal and wireless devices such as handheld computers and mobile telephones in the classroom and community in supporting student learning (p. 10).

There is a growing body of literature about the uses and impacts of using M-Learning to support teaching and learning. For example, Evans (2008) investigated the effectiveness of M-Learning in the form of podcasting with 196 undergraduate students of a university in London, United Kingdom using an online survey. The findings showed that podcasts are more effective revision tools as it is efficient, effective, engaging and flexible because students can study when and where they want, as well as 'fill an important needs gap by allowing learners to continue the learning activities when it might not normally be possible' (Evans, 2008, p. 495). Next, Kutluk et al. (2015) conducted a study with 247 accounting students of a university in Turkey to determine their perspectives about M-Learning. Through a questionnaire survey, findings showed that students perceived M-Learning would be easy and reliable, and they intended to continue adopting M-Learning because of the immediate access to information, enable them to complete their homework on accounting lessons more quickly, as well as help them perform their studies at anyplace (Kutluk et al., 2015). The authors concluded that M-Learning has a significant influence on student learning because M-Learning is 'a combination of interactions between learners, their devices, and the social environment which requires new learning skills and the transformation of teachers' roles and identities… to provide high-quality education' (Kutluk et al., 2015, p. 65). Lastly, Al-Hunaiyyan, Alhajri and Al-Sharhan (2016) examined students' and instructors' perceptions towards the effectiveness of M-Learning and to understand the challenges that affect its implementation. The findings drew from a survey conducted with 623 students, and 132 instructors from various higher education institutions in Kuwait. Results revealed that both students and instructors had positive opinions about M-Learning because it is an attractive learning tool which allows the freedom to learn whenever and wherever they want; its mobility and its potential of providing various ways of learning and following up on students' records and grades. However, resistance to change is a challenge when implementing M-Learning in higher education because of the belief that M-Learning increases instructors' work, as it adds additional preparations (Al-Hunaiyyan, Alhajri, & Al-Sharhan, 2016).

Students' Readiness towards Mobile Technologies and M-Learning

Due to the advancement of technology and its penetration in the higher education sector, mobile technology is one of the technological advances that is considered as a new paradigm of higher education; while M-Learning is becoming an effective tool for student learning (Hussin, Manap, Amir, & Krish, 2012; Ismail, Azizan, & Gunasegran, 2016). Students are known as being technology savvy because they were exposed to advanced technologies such as mobile devices and Internet from a very early age (Djamasbi, Siegel, & Tullis, 2010). Therefore, even though students are using mobile technologies frequently, it does not give an assumption that students are ready to utilise it for university learning (Ismail, Azizan, & Gunasegran, 2016). In order to

have a successful and effective implementation of M-Learning in the Malaysian higher education, it is essential to investigate students' readiness towards mobile technologies as well as their readiness to adopt M-Learning.

Scholars argued it is imperative to investigate students' behaviour towards the use of technology and must be first understood because 'positive attitudes toward mobile technology lead to the behavioural intention to use m-learning' (Almutairy, Davies & Dimitriadi, 2015, p. 1506). Besides, another readiness issue that needs to be addressed is the awareness of students about the benefits of M-Learning (Ismail, Azizan, & Gunasegran, 2016). The definition of readiness is the state or quality of being ready and willing to do something (Oxford Advanced Learner's Dictionary, n.d.). According to Schreurs, Ehler and Moreau (2008), readiness refers to a learner's ability to adapt to technological challenges, thus technology readiness indicates 'people's propensity to embrace and use new technologies for accomplishing goals in home life and at work' (Parasuraman, 2000, cited in Almutairy, Davies, & Dimitriadi, 2015). Another definition of readiness is 'the state or quality of being ready; preparation; promptness; aptitude; willingness. Prepared for what one is about to do or experience; equipped or supplied with what is needed for some act or event; prepared for immediate movement or action' (Turnbull et al., 2010, cited in Rahamat et al., 2012, p. 79).

In the Malaysian context, although M-Learning is still in its infancy, the rapid growth of mobile technologies and its penetration into the education environment, has intensified the great potential of M-Learning as an effective learning tool (Hussin, Manap, Amir, & Krish, 2012). The authors conducted a preliminary study on M-Learning readiness among students of two public universities in Malaysia. The findings from 91 survey responses indicated that the students 'are highly familiar with computing and communicating activities using their mobile phone. However, half of the sample population expressed that they were not ready for M-Learning at the time when this small scale study was conducted but would be ready to adopt M-Learning after two years (Hussin, Manap, Amir, & Krish, 2012, p. 282). The authors concluded that 'the respondents welcomed the idea of integrating M-Learning into future courses as they were already familiar with computing and communication activities that M-Learning may require. However, they were quite reserved when it comes to financial issues' (Hussin, Manap, Amir, & Krish, 2012, p. 282).

Rahamat et al. (2012) investigated the perception and readiness of secondary school students towards using mobile technologies for learning. Through a questionnaire survey with 235 students of six secondary schools in Seremban, findings showed that the students are technologically, economically and competently prepared for the use of mobile technologies in learning. The students were (1) technologically ready with regards to the devices they owned and the way they are being used; (2) economically ready with their willingness to use the learning package designed for them involving the use of their mobile devices; and 3) competently ready with regards to their knowledge and skills in using their mobile devices (Rahamat et al., 2012).

Lastly, Ismail, Azizan and Gunasegran (2016) explored Malaysian university students' readiness for M-Learning by investigating the following two issues: (1) Are students in Malaysian universities ready for M-Learning and technology in education?, and (2) what are the influencing factors of their readiness for M-Learning? A questionnaire survey was carried out with 551 respondents from 11 public universities in Malaysia. The findings are manifold: (1) the students were still moderately ready for M-Learning because many of them were not quite familiar with such new learning approach, (2) there is an interest among the students to

learn more about M-Learning, (3) a moderate level of awareness among the students on the educational benefits of mobile technologies because they did not really understand the benefit that they could gain through mobile learning, and (4) cost is a concern among the students if M-Learning is implemented at their university (Ismail, Azizan, & Gunasegran, 2016).

Methodology

This study employs an online questionnaire survey, which is a quantitative research method used to collect a large amount of data with relative ease at a reasonable cost (Wimmer & Dominick, 2014) and it allows respondents to give anonymous responses. However, this method requires consistent follow-up due to low response rate and may take a longer time to collect sufficient responses (Sukamolson, 2010).

The questionnaire survey is set up using Qualtrics, a subscription software for collecting and analysing data. The survey consists of 15 questions in three sections which are categorised as Section A: Mobile technologies usage, Section B: Students' readiness for mobile learning, and Section C: Demographic profile. Section A comprises of seven questions: the types of mobile devices used, students' level of comfort for using mobile devices, the usage of mobile devices for learning purposes, frequency of usage, purpose of usage, average time spent on mobile devices daily and motivation of using mobile devices; Section B has two questions of likert-scale with 22 items on students' readiness towards technology and M-Learning in higher education, and Section C contains six questions of demographic information: age range, gender, ethnicity, programme, year of study and study field. The questions are adopted from studies of Said (2015) for Section A, as well as of Ismail, Azizan and Gunasegaran (2016) for Section B which consist of multiple choice questions, dichotomous questions and a five-point likert scale which range from Strongly Disagree, Disagree, Neutral, Agree and Strongly Agree (refer to Appendix 2 for the questionnaire).

The population of this research is students of a private university in the Klang Valley. The survey questionnaire link was distributed to the students through social media platforms such as Facebook and WhatsApp. The period of data collection was from 23rd April 2018 to 17th June 2018. Throughout the research period, three reminders were sent to the respondents. Due to a low response rate through Qualtrics, the survey was randomly distributed to the students at the compound of the university using smartphones and tablets for the respondents to complete the survey. At the end of the data collection period, a total of 234 responses was garnered. Data were exported from Qualtrics to SPSS version 25 for screening and analysis. The score of reliability test of Cronbach's Alpha for the 57 likert-scale items of this questionnaire is highly reliable ($\alpha = 0.902$), which is an acceptable value of alpha, ranging from 0.70 to 0.95 (Tavakol, & Dennick, 2011).

The respondents' demographic profile is shown in Table 4.1. A total of 126 male (53.8%) and 106 female respondents (46.2%) participated in the survey. Majority of the respondents were in the 20-30 age range (90.2%). There were 17 respondents below 20 years old (7.3%), five respondents were in the age range of 31-40 (2.1%) and only one respondent was in 41-50 age range (0.4%). In terms of ethnicity, majority of the respondents were Chinese (83.8%), followed by Malay (10.3%), Indian (5.1%), Bengali (0.4%) and Sinhalese (0.4%). Next, most of the respondents were undergraduate students studying bachelor degree (N=194), followed by 31 students studying diploma, four students undertaking foundation courses, three students undertaking professional courses, and only two students were studying for a master's degree. In terms of years of study, half of the respondents were in Year Three (50%), followed by 32.2% of them are in Year Two, 15.8% of them in Year One, and 3% of them in Year Four.

Respondents were mostly from the study field of Arts (31.2%), Management (29.1%), Sciences (23%) and the remaining students were from Social Sciences (6.4%), Culinary (4.3%), Information Technology (3%), others (1.7%), and Engineering (1.3%).

Items		N (respondents)	Percentage (%)
Gender	Male	126	53.8
	Female	108	46.2
Age range	20 - 30	211	90.2
	Below 20 years	17	7.3
	31-40	5	2.1
	41-50	1	0.4
Ethnicity	Chinese	196	83.8
	Malay	24	10.3
	Indian	12	5.1
	Bengali	1	0.4
	Sinhalese	1	0.4
Programme	Degree (undergraduate)	194	82.9
	Diploma	31	13.2
	Foundation	4	1.7
	Professional	3	1.3
	Master	2	0.9
Year of study	Year 3	117	50
	Year 2	73	32.2
	Year 1	37	15.8
	Year 4	7	3.0
Study field	Art	73	31.2
	Management	68	29.1
	Sciences	54	23.0
	Social Sciences	15	6.4
	Culinary	10	4.3
	Information Technology	7	3.0
	Others	4	1.7
	Engineering	3	1.3

Table 4.1 Respondents' demographic profile

Findings

In addressing the two research questions, RQ1: What is the use of mobile technologies by students for university learning?, and RQ2: What is the readiness of students towards M-Learning?, a descriptive analysis was used to provide its frequency, mean, standard deviation and percentage. Table 4.2 shows the frequencies of usage of students for different types of mobile devices. Firstly, smartphones and laptops were the two categories of mobile devices that were heavily used by the students; 231 students used smartphones (98.7%) and 220 students used laptops (94.0%). This is followed by 113 students who used tablets (48.3%) and 76 students who used MP3 players (32.5%). PDAs and E-book readers were the least used among the respondents, with only 11 students using PDA (4.7%) and three students using E-book reader (3.3%).

Table 4.2 Types of mobile devices used by respondents

Mobile Devices	N (respondents)	Percentage (%)
Smartphone	231	98.7
Laptop	220	94.0
iPad/Tablet	113	48.3
iTouch/MP3 player	76	32.5
Personal digital assistant (PDA)	11	4.7
E-book reader	3	1.3

The next question addressed whether or not the mobile devices were used for learning purposes. Table 4.3 shows that majority of the students have used mobile devices for learning purposes (N=230, 98.3) and only four students did not use mobile devices for learning (1.7%). Though almost all of the students in this study were using mobile technologies for learning purposes, there is a difference on the time spent. As shown in Table 4.4, slightly more than half of the respondents sometimes use mobile technologies for learning which is equivalent to spending 1 to 3 hours per week (N=135, 57.7%), while 82 students always use mobile technologies for learning which is spending 1 to 3 hours daily (35%). 13 students seldom use them for learning (5.6%) and four students never use mobile technologies for learning (1.7%).

Table 4.3 Purpose of Using Mobile Technologies

Items	N (respondents)	Percentage (%)
Yes, for learning purposes	230	98.3
No, not for learning purposes	4	1.7

Table 4.4 Time Spent on Using Mobile Technologies for Learning

Items	N (respondents)	Percentage (%)
Sometimes (1-3 hours a week)	135	57.7
Always (1-3 hours a day)	82	35.0
Seldom (1-3 hours a month)	13	5.6
Never	4	1.7

When asked about how the mobile technologies were used for learning purposes, Table 4.5 shows that 193 students used the mobile devices to access online journals (82.5%), 192 students used them to search for information (82.1%), 177 students used them to write assignments (75.6%), 175 students used them to access learning management system (74.8%) and for sharing knowledge with other students (N=167, 71.4%). Less students favoured using mobile devices to participate in online educational discussion forums, with only 72 students and 103 students who communicated and networked through social networks respectively by using mobile devices (44%). This finding shows that mobile technologies used by students of this study mainly focused on accessing online journals, information, learning management system and for writing assignments.

Table 4.5 Uses of Mobile Technologies for Learning Purposes

Items	N (respondents)	Percentage (%)
Accessing and downloading online journals	193	82.5
Searching for information	192	82.1
Writing assignments	177	75.6
Accessing learning management system (Blackboard, Moodle)	175	74.8
Sharing knowledge with other students	167	71.4
Accessing related sites and online sources	155	66.2
Discussing about assignments	149	63.7
Communicating through email	139	59.4
Taking notes	137	58.5
Downloading reading materials	129	55.1
Networking and communicating through social networks	103	44.0
Participating in online educational discussion forums	72	30.8

The next question is about the average time spent on a daily basis using mobile technologies for the following six activities and was set using a five-point likert-scale, in which 1 represents None, 2 represents less than 1 hour, 3 represents 1-3 hours, 4 represents 4-6 hours and 5 represents more than 6 hours (see the questionnaire in Appendix 2). Table 4.6 shows that students spent on average one to three hours daily for all the six activities: browsing the Internet (M=3.79), messaging (M=3.56), engaging in conversation (M=3.43), playing games (M=3.38), for learning or educational purposes (M=3.34) and the least being listening to music with the mean score of 3.18.

Table 4.6 Average Time Spent Daily for Using Mobile Technologies in Performing the Activities

Items	Mean	Std Dev
Internet (Web/Mail)	3.79	0.813
Messaging	3.56	0.883
Conversation	3.43	0.911
Games	3.38	1.144
Learning/Educational	3.34	0.914
Music	3.18	1.056

The last question in Section A measures the respondents' level of agreement on statements about the motivations of using mobile devices using a five-point likert-scale in which 1 represents strongly disagree, 2 represents disagree, 3 represents neutral, 4 represents agree, 5 represents strongly agree and N/A represents not applicable (Refer to Appendix 2)

Drawing from the descriptive analysis (shown in Table 4.7 in Appendix 1), the students agreed that the motivation to use mobile devices is for communicating with distant friends (M=4.06) and mobile devices gave them something to do to occupy their time (M=4.06). Other motivations for using mobile devices are: to keep in touch with their friends and family members (M=3.98), it is entertaining (M=3.97), when they have nothing better to do (M=3.96), when they are bored (M=3.96), allows them to unwind (M=3.94), it is a pleasant rest (M=3.94), for providing information (M=3.92), it is enjoyable (M=3.91), and it relaxes them (3.90). The

respondents somehow agreed that the motivation is to play around on mobile devices (M=3.86), when there is no one else to talk or be with (M=3.85), to present information about their special interest (M=3.82), it makes them feel less lonely (M=3.79), it is a habit that they do (M=3.79), so they do not have to be alone (M=3.75), and to share information that may be of use or interest to others (M=3.71).

In answering RQ2, three questions (one question in Section A and two questions in Section B) were analysed and findings are shown in Table 4.8, 4.9 and 4.10. Firstly, students were asked to provide their perceived level of comfortability in using mobile technologies for learning purposes. As shown in Table 4.8, 61.1% of the respondents claimed that they were fairly comfortable, 27.8% of them were very comfortable and 11.1% were a little comfortable. This finding shows that students of this private university were considered technology savvy as no students have indicated that they were not comfortable when using mobile technologies.

Table 4.8 Respondents' Level of Comfortability when Using Mobile Technologies

Items	N (respondents)	Percentage (%)
Fairly comfortable	143	61.1
Very comfortable	65	27.8
A little comfortable	26	11.1

Next, students were asked to provide their level of agreement on statements about the readiness for technology (Question 8, Section B, see Appendix 2). Table 4.9 shows that the respondents somehow agreed on the 12 statements about the readiness towards using technology with the mean score of 3.26 to 3.80. The students preferred mobile phone programmes that allow them to tailor things to fit their needs (M=3.80). They also favoured the idea of using the most advanced learning technologies available (M=3.76), preferred products and services that use technologies (M=3.75), always open to the idea of learning new and different technologies (M=3.71), as well as agreed that technology gives people more control over their daily lives (M=3.70). It is interesting to note, the students claimed that technology was designed to make life easier and usually has disappointing results (M=3.26) and they were not the first to acquire new technologies among their circle of friends (M=3.28).

Table 4.9 Students' Level of Agreement on Statements about the Readiness for Technology

Statements	Mean	Std Dev
You like mobile phone programmes that allow you to tailor things to fit your own needs.	3.80	0.702
You prefer to use the most advanced learning technology available.	3.76	0.701
Products and services that use the technologies are much more convenient to use.	3.75	0.728
You are always open to learning about new and different technologies.	3.71	0.809
Technology gives people more control over their daily lives.	3.70	0.768
You like the idea of using mobile phone for the purposes of learning because you are not limited to regular working hours.	3.57	0.721
Society should not depend heavily on technology to solve its problems.	3.53	0.860
You keep up with the latest technological developments in your areas of interest.	3.44	0.878

In general, you are among the first in your circle of friends to acquire new technology when it appears.	3.41	0.905
You enjoy the challenge of figuring out high-tech gadgets.	3.33	0.912
In general, you are among the first in your circle of friends to acquire new technology when it appears.	3.28	0.974
You find that technology designed to make life easier usually has disappointing results.	3.26	0.977

Lastly, the respondents provided their level of agreement on statements about the readiness for M-Learning in higher education as shown in Table 4.10. The findings show that students were keen to find out more about M-Learning (M=3.75) and they thought M-Learning was good for them (M=3.72). Besides, the students would like their lecturer to integrate M-Learning into their courses (M=3.72) and classes in addition to the face-to-face meetings (M=3.58). However, some students preferred the conventional learning rather than M-Learning (M=3.51) and they were afraid that they will spend more money on mobile phone bills because of M-Learning (M=3.50). Other findings show that some students were unsure of what M-Learning is about (M=3.42) and some were moderately ready for M-Learning if it is to be implemented by their university now (M=3.32). Finally, some students were unsure whether they would be willing to spend extra money for M-Learning (M=3.19) and whether M-Learning will make their life difficult (M=3.00).

Table 4.10 Respondents' Readiness towards M-Learning in Higher Education

Statements	Mean	Std Dev
I want to know more about mobile learning.	3.75	0.770
I think mobile learning is good for me.	3.72	0.696
I would like my lecturer to integrate mobile learning in my course.	3.72	0.795
I would like my lecturer to integrate mobile learning in my class in addition to face-to-face meeting in the class	3.58	0.738
I prefer conventional learning than mobile learning.	3.51	0.748
I am afraid I will spend more money on my handphone bill because of mobile learning.	3.50	0.771
I know what mobile learning is all about.	3.41	0.969
I am not ready for mobile learning if the university implement it now.	3.32	0.919
I don't mind paying extra money for mobile learning.	3.19	1.035
Mobile learning will make my life difficult.	3.00	0.974

Discussion and Conclusion

This paper aims to investigate students' usage of mobile technologies for learning and their readiness for technology and M-Learning in Sunway University. Firstly, findings show that smartphone and laptop are the two mobile devices heavily used by the students for learning. This finding is consistent with the studies by Djamasbi, Siegel and Tullis (2010), Alzaza and Yaakub (2011), Rahamat et al. (2012) and Said (2015), in which students are surrounded with technological gadgets and have been exposed to technology and Internet since young (Djamasbi, Siegel, & Tullis, 2010; Rahamat et al., 2012). Thus, mobile technology is common among the students to write assignments (Said, 2015) and enable them to use mobile devices for learning at anywhere, anytime (Alzaza, & Yaakub, 2011). In addition, the students of this study have used mobile technologies for learning purposes as they spent at least one to three

hours per week on mobile devices to access online journals, search for information, writeassignments and access the university's learning management system; while the students in Said's (2015) study tend to use mobile technologies to network and communicate through social networks.

Secondly, to assess students' readiness towards technology and M-Learning, findings show that majority of students were comfortable with using mobile devices and they were keen to know more about M-Learning. This finding concurs with Said's (2015) studies, in which the students are comfortable with using mobile devices for learning although there were some students who were unsure about whether they are ready if M-Learning is to be integrated immediately. When comparing with the study done by Ismail, Azizan and Gunasegaran (2016), both share similarities. In this present study, the respondents preferred to use the most advanced technologies that can tailor to their own needs, and similarly, the respondents of Ismail, Azizan and Gunasegaran's (2016) study welcomed new types of learning technologies. Additionally, respondents from both studies agreed that they would want to find out more about M-Learning because they thought that M-Learning will be beneficial to them, as well as the concerns raised on the extra cost needed of using mobile devices for M-Learning.

In conclusion, this study shows that students of a private university in Klang Valley are ready towards technology as they are fairly and very comfortable with the use of mobile technologies. Furthermore, they have access to personal mobile devices for learning. The students were also moderately ready to adopt M-Learning though they welcomed the idea of new learning technologies and thought that M-Learning is simple and perceived to be beneficial.

The limitation of this study is that it is based on a single university, therefore it is not able to be generalised to the overall student population of private universities. Another limitation is the use of a single methodology approach – quantitative research – therefore, in-depth insights about respondents' perceptions are not able to be gathered. It is recommended for future studies to expand the sample respondents to other private universities in the Klang Valley and consider employing a combination of both qualitative and quantitative research methods with a larger sample of students and/or lecturers and more evenly distributed from across Malaysian universities. This could enable further generalisation of the findings to the population of students and/or lecturers of Malaysian higher education institutions.

Acknowledgements

This work was supported by Sunway University Internal Research Grant 2018 [INT-2018-SOA-DCLA-03]

References

Abuhassna, H.M., & Amin, I.M.H. (2014). Students feedback and perception regarding mobile phone applications at the Faculty of Eduation in UPM. *International Journal of Research in Engineering and Technology*, *2*(9), 73-80.

Adegbija, M.V., & Bola, O.O. (2015). Perception of undergraduates on the adoption of mobile technologies for learning in selected universities in Kwara State, Nigeria. *Procedia-Social and Behavioral Sciences 176 (2015)*, 352-356.

Alexander, B. (2004). Going nomadic: Mobile learning in higher education. *EDUCAUSE Review*, *39*(5), 28-35.

Al-Hunaiyyan, A., Alhajri, R.A., & Al-Sharhan, S. (2016). Perceptions and challenges of mobile learning in Kuwait. *Journal of King Saud University Computer and Information Sciences*, 1-11.

Almutairy, S., Davies, T., & Dimitriadi, Y. (2015). Students' perception of their M-Learning readiness. *International Journal of Electronics and Communication Engineering, 9*(5), 1505-1508.

Alzaza, N.S., & Yaakub, A.R. (2011). Students' awareness and requirements of mobile learning services in the higher education environment. *American Journal of Econnomics and Business Administrations*, *3*(1), 95-100

Briz-Ponce, L., Pereira, A., Carvalho, L., Juanes-Mendez, J.A., & Garcia-Penalvo, F.J. (2016). Learning with mobile technologies – Students' behavior. *Computers in Human Behavior*, 1-9. http://dx.doi.org/10.1016/j.chb2016.05.027

Cobcroft, R., Towers, S., Smith, J., & Axel, B. (2006). Mobile learning in review: Opportunities and challenges for learners, teachers, and institutions. *Proceedings for Online Learning and Teaching (OLT) Conference 2006, Queensland University of Technology, Brisbane, Australia,* 21-30.

Djamasbi, S., Siegel, M., & Tullis, T. (2010). Generation Y, web design, and eye tracking. *International Journal of Human-Computer Studies*, *68*(5), 307-323.

Evans, C. (2008). The effectiveness of m-learning in the form of podcast revision lectures in higher education. *Computers & Education*, *50*, 491-498.

Figaro-Henry, S., & James, F. (2015). Mobile learning in the 21st Century higher education classroom: Readiness experience and challenges. *Caribbean Curriculum*, *23*, 99-120.

Georgiev, T., Georgieva, E., & Smrikarov, A. (2004). M-Learning - a new stage of E-Learning. *Proceedings of the International Conference on Computer Systems and Technologies CompSysTech 2004*, 1-5.

Hoppe, H.U., Joiner, R., Milrad, M., & Sharples, M. (2003). Guest editorial: Wireless and mobile technologies in education. *Journal of Computer Assisted Learning*, *19*, 255-259

Hussin, S., Manap, M.R., Amir, Z., & Krish, P. (2012). Mobile learning readiness among Malaysian students at higher learning institutes. *Asian Social Science*, *8*(12), 276-283.

Ismail, I.B., Gunasegran, T., & Azizan, S. (2016). Mobile learning in Malaysian universities: Are students ready? *International Journal of Interactive Mobile Technologies (iJIM)*, *10*(3), 17-23.

Joorabchi, T.N., Hj Hassan, M.S., & Osman, M.N. (2013). Relationship between Internet usage and positive youth development in Malaysia. *SEARCH: The Journal of the South East Asia Research centre for Communication and Humanities*, *5*(2), 37-64.

Kengwe, J., & Bhargava, M. (2014). Mobile learning and integration of mobile technologies in education. *Education and Information Technologies*, *19*(4), 737-746.

Klassen, A., Eibrink-Lunzenauer, M., & Gloggler, T. (2013). Requirements for mobile learning applications in higher education. *IEEE International Symposium on Multimedia (ISM)*, 492-497.

Kutluk, F.A., Donmez, A., Gulmez, M., & Terzioglu, M. (2015). A re-research about usage of mobile devices in Accounting lessons. *Procedia - Social and Behavioral Sciences 197*, 57-66.

Masrek, M.N. (2015). Predictors of mobile learing adoption: The case of Universiti Teknologi MARA. *Proceedings of ICIT 2015 The 7th International Conference on Information Technology*, 317-324.

MCMC (2017). *Communications and Multimedia Pocket Book of Statistics*. Retrieved from https://www.mcmc.gov.my/skmmgovmy/media/General/pdf/2017-Pocket-Book-110618.pdf

Montrieux H., Vanderlinde, R., Schellens, T., & De Merez, L. (2015). Teaching and learning with mobile technology: A qualitative explorative study about the introduction of tablet devices in decondary education. *PLoS ONE 10*(12), 1-17, http://doi.org/10.1371/journal.pone.0144008.

Naismith, L., Lonsdale, P., Vavoula, G., & Sharples, M. (2004). *Literature review in mobile technologies and learning.* Birmingham: Futurelab.

Nassuora, A.B. (2013). Students acceptance of mobile learning for higher education in Saudi Arabia. *International Journal of Learning Management Systems*, *1*(1), 1-9.

Oxford Advanced Learner's Dictionary (n.d.). *Readiness*. Retrieved from https://www.oxfordlearnersdictionaries.com/definition/english/readiness

Ozdamli, F., & Cavus, N. (2011). Basic elements and characteristics of mobile learning. *Procedia - Social and Behavioral Sciences 28*, 937-942.

Quinn, C. (2000). mLearning: Mobile, wireless, in-your-pocket learning. *Line Zine*. Retrieved from http://www.linezine.com/2.1/features/cqmmwiyp.htm

Rahamat, R.B., Shah, P.M., Din, R.B., & Abd Aziz, J.B. (2012). Students' readiness and perceptions towards using mobile technologies for learning the English language literature component. *The English Teacher, XL*, 69-84.

Said, U. M. (2015). The prevalence and students' perception on mobile learning: The case for UPM's Faculty of Education. *Proceedings of the 3rd Global Summit on Education, GSE 2015*, 515-525.

Sarrab, M., Al Shibli, I., & Badursha, N. (2016). An empirical study of factors driving the adoption of mobile learning in Omani higher education. *International Review of Research in Open and Distributed Learning*, *17*(4), 331-349.

Schreurs, J., Ehler U., & Moreau, R. (2008). *Measuring e-learning readiness*. Retrieved from http://www.academia.edu/674090/Measuring_e-learning_readiness

Sukamolson, S. (2010). *Fundamentals of quantitative research*. Language Institute, Chulalongkorn University. http://www.culi.chula.ac.th/Research/e-Journal/bod/Suphat%20Sukamolson.pdf

Tavakol, M., & Dennick, R. (2011). Making sense of Cronbach's alpha. *International Journal of Medical Education*, *2*, 53-55.

Traxler, J. (2007). Current state of mobile learning. *International Review on Research in Open and Distance Learning (IRRODL)*, *8*(2), 9-24.

Wiebrands, M. (2012). The coming paradigm shift in computing interfaces and how academic libraries need to adapt. *Proceedings of the IATUL Conferences, Paper 9*. http://docs.lib.purdue.edu/iatul/2012/papers/9

Wimmer, R. D., & Dominick, J. R. (2014). *Mass media research: An introduction (10th Ed.).* USA: Wadsworth Cengage Learning.

Yeap, J.A.L., Ramayah, T., & Soto-Acosta, P. (2016). Factors propelling the adoption of m-learning among students in higher education. *Electronic Markets*, 26(4), 323-338.

Zainol, Z., Yahaya, N., Mohamat Yahaya, N.A., & Md Zain, N.N.b. (2017). Factors influencing mobile learning among higher education students in Malaysia. *International Journal of Advanced Scientific Research and Management*, *2*(8), 86-91.

Zhang, M-Y. (2015). Investigation into the use of mobile technology in English teaching and learning in Institutes of Higher Vocational Education in Hubei Province in China. *Proceedings of the 2015 Ist International Conference on Futuristic Trend in Computational Analysis and Knowledge Management (ABLAZE)*, 505-509.

Appendix 1
Table 4.7 Respondents' level of agreement on statements about the motivation of using mobile devices

Statements	Mean	Std Dev
1. I use mobile device to communicate with distanced friends.	4.06	0.770
2. I use mobile device because it gives me something to do to occupy my time.	4.06	0.773
3. I use mobile device to keep in touch with friends and family.	3.98	0.769
4. I use mobile device because it's entertaining.	3.97	0.661
5. I use mobile device when I have nothing better to do.	3.96	0.799
6. I use mobile device because it passes the time away, particularly when I'm bored.	3.96	0.751
7. I use mobile device because it allows me to unwind.	3.94	0.767
8. I use mobile device because it is a pleasant rest	3.94	0.767
9. I use mobile device to provide information.	3.92	0.757
10. I use mobile device because it's enjoyable.	3.91	0.770
11. I use mobile device because it relaxes me.	3.90	0.755
12. I use mobile device because I just like to play around on mobile devices.	3.86	0.850
13. I use mobile device when there's no one else to talk or be with.	3.85	0.921
14. I use mobile device to present information about a special interest of mine.	3.82	0.869
15. I use mobile device because it makes me feel less lonely.	3.79	0.871
16. I use mobile device because it is a habit, just something I do.	3.79	0.745
17. I use mobile device so I won't have to be alone.	3.75	0.854
18. I use mobile device to share information that may be of use or interest to others.	3.71	0.833
19. I use mobile device to post my resume and/or other work online.	3.57	0.901
20. I use mobile device to help me network with professional contacts.	3.57	0.887
21. I use mobile device so I can get away from what I'm doing.	3.56	0.962
22. I use mobile device because it is helpful for my professional future.	3.56	0.873
23. I use mobile device to provide personal information about myself.	3.54	0.927
24. I use mobile device so I can forget about school, work, or other things.	3.50	1.024
25. I use mobile device because it is the thing to do.	3.50	0.950
26. I use mobile device to tell others a little bit about myself.	3.47	0.959
27. I use mobile device because everyone is doing it.	3.43	1.013

28. I use mobile device so I can get away from the rest of my family or others.	3.39	1.149
29. I use mobile device because it is cool.	3.39	1.035

Appendix 2
Section A:

1. What are the types of mobile devices that you use? (You can tick more than one)
   - Laptop computer / Notebook
   - Smartphone (iOS, Android)
   - iPad / Tablet (Android)
   - iTouch / MP3 player / iPod touch
   - Personal digital assistant (PDA)
   - E-book reader
   - Others: _____

2. How comfortable are you in using mobile devices?
   - Not comfortable
   - A little comfortable
   - Fairly comfortable
   - Very comfortable

3. Do you use mobile devices for learning and/or for educational purposes?
   - Yes
   - No

4. What is the frequency of using mobile devices for learning purposes?
   - Always (1-3 hours a day)
   - Sometimes (1-3 hours a week)
   - Seldom (1-3 hours a month)
   - Never

5. How do you use mobile devices (mobile technologies) for learning (m-learning)? (You can tick more than one)
   - Accessing and downloading online journals
   - Sharing knowledge with other students
   - Communicating through email
   - Accessing related sites and online sources
   - Accessing learning management system (Blackboard, Moodle)
   - Downloading reading materials
   - Taking notes
   - Writing assignments
   - Networking and communicating through social networks
   - Participating in online educational discussion forums
   - Discussing about assignments
   - Searching for information
   - Others: _____

6. What is the average time spend on mobile devices on a daily basis for the following activities?
   1. None
   2. Less than 1 hour
   3. 1 - 3 hours
   4. 4 - 6 hours
   5. More than 6 hours

Activities	**1**	**2**	**3**	**4**	**5**
Conversation					
Messaging					
Internet (Web/Mail)					
Games					
Music					
Learning / Educational					

7. Using the 5-point Likert scale of 1=strongly disagree, 2=disagree, 3=neutral, 4=agree, 5=strongly agree and N/A=not applicable, what is your level of agreement for the following statements on the motivations of using mobile device?

Statements	**1**	**2**	**3**	**4**	**5**	**N/A**
I use mobile device because it's enjoyable.						
I use mobile device because it's entertaining.						
I use mobile device because it relaxes me.						
I use mobile device because it allows me to unwind.						
I use mobile device because it is a pleasant rest.						
I use mobile device to provide information.						
I use mobile device to present information about a special interest of mine.						
I use mobile device to share information that may be of use or interest to others.						
I use mobile device to provide personal information about myself.						
I use mobile device to tell others a little bit about myself.						
I use mobile device so I can forget about school, work, or other things.						
I use mobile device so I can get away from the rest of my family or others.						
I use mobile device so I can get away from what I'm doing.						

I use mobile device because everyone is doing it.						
I use mobile device because it is the thing to do.						
I use mobile device because it is cool.						
I use mobile device so I won't have to be alone.						
I use mobile device when there's no one else to talk or be with.						
I use mobile device because it makes me feel less lonely.						
I use mobile device because it is helpful for my professional future.						
I use mobile device to post my resume and/or other work online.						
I use mobile device to help me network with professional contacts.						
I use mobile device to keep in touch with friends and family.						
I use mobile device to communicate with distanced friends.						
I use mobile device because I just like to play around on mobile devices.						
I use mobile device because it is a habit, just something I do.						
I use mobile device when I have nothing better to do.						
I use mobile device because it passes the time away, particularly when I'm bored.						
I use mobile device because it gives me something to do to occupy my time.						

Section B:

8. Using the 5-point Likert scale of 1=strongly disagree, 2=disagree, 3=neutral, 4=agree and 5=strongly agree, what is your level of agreement for the following statements on students' readiness for technology?

Statements	**1**	**2**	**3**	**4**	**5**
Technology gives people more control over their daily lives.					
Products and services that use the technologies are much more convenient to use.					

You like the idea of using mobile phone for the purposes of learning because you are not limited to regular working hours.					
You prefer to use the most advanced learning technology available.					
You like mobile phone programmes that allow you to tailor things to fit your own needs.					
Society should not depend heavily on technology to solve its problems.					
You find that technology designed to make life easier usually has disappointing results.					
In general, you are among the first in your circle of friends to acquire new technology when it appears.					
You can usually figure out new high-tech products and services without help from others.					
You keep up with the latest technological developments in your areas of interest.					
You enjoy the challenge of figuring out high-tech gadgets.					
You are always open to learning about new and different technologies.					

9. Using the 5-point Likert scale of 1=strongly disagree, 2=disagree, 3=neutral, 4=agree and 5=strongly agree, what is your level of agreement for the following statements on students' readiness for mobile learning in higher education?

Statements	**1**	**2**	**3**	**4**	**5**
I know what mobile learning is all about.					
I want to know more about mobile learning.					
I prefer conventional learning than mobile learning.					
I think mobile learning is good for me.					
I don't mind paying extra money for mobile learning.					
Mobile learning will make my life difficult.					
I am not ready for mobile learning if the university implement it now.					
I would like my lecturer to integrate mobile learning in my class in addition to face-to-face meeting in the class.					

I am afraid I will spend more money on my handphone bill because of mobile learning.					
I would like my lecturer to integrate mobile learning in my course.					

Section C:

10. Age range:
    - Below 20 years
    - 20 - 30
    - 31 - 40
    - 41 - 50
    - Above 51 years

11. Gender:
    - Male
    - Female

12. Ethnicity:
    - Malay
    - Chinese
    - Indian
    - Others: _____

13. Programme:
    - Professional
    - PhD
    - Master
    - Degree (undergraduate)
    - Diploma
    - Certificate
    - Others: _____

14. Year of study:
    - Year 1
    - Year 2
    - Year 3
    - Year 4

15. Study field:
    - Sciences
    - Social sciences
    - Art
    - Management
    - Engineering
    - Others: _____

Thank you for your participation!

Authors' Biography:

Cheng Ean (Catherine), Lee
Catherine is a senior lecturer at the Department of Communication and Liberal Arts, School of Arts, Sunway University Malaysia. She has over 18 years of experience in teaching and research. Her research interests include social media, mobile technologies, public relations and technology-enhanced learning.

Serena Wai Yee, Leow
Serena is a lecturer at the Department of Communication and Liberal Arts, School of Arts, Sunway University Malaysia. She has more than five years of industry experience in the areas of international education, consulting and business events management. Her research interests include individuals' psychological and behavioural aspects in the use of computer-mediated communication, social media, and organisational communication.

Xiang Jie, Kong
Xiang Jie is an undergraduate student at the Department of Communication and Liberal Arts, School of Arts, Sunway University Malaysia. His specialisation of study is Public Relations Project Management.