

Mobile Learning Readiness among English Language Learners in a Public University in Malaysia

Munir Shuib^{1*}, Siti Norbaya Azizan¹ and Malini Ganapathy^{1,2}

*Institut Penyelidikan Pendidikan Tinggi Negara, Universiti Sains Malaysia (USM), 11800 Penang, Malaysia
School of Languages, Literacies and Translation, Universiti Sains Malaysia (USM), 11800 Penang, Malaysia*

ABSTRACT

A critical factor for English language researchers and practitioners to consider when designing and implementing mobile-based learning solutions is students' readiness to embrace the educational use of mobile technology. Despite the increasing popularity of mobile technology in Malaysia, little is known about whether students are ready if such technology is to be integrated in their lessons. This paper aims to investigate mobile learning readiness among English language learners in a Malaysian university. The quantitative survey approach was used in this study, and Parasuraman's Technology Readiness Index (TRI) was adapted for use. Questionnaires were distributed to 68 undergraduates from various study fields who were undertaking English language courses in the university. The study reveals that the respondents are moderately ready for mobile technology. Although they are highly optimistic, their perception pertaining to innovativeness towards the technology is relatively moderate. They also have moderate discomfort and feeling of insecurity in using mobile technology. There are significant positive correlations between positive constructs (optimism and innovativeness) and overall TRI. However, there are no significant correlations between negative constructs (discomfort and insecurity) and overall TRI. This study highlights the importance for English language learning providers to consider students' beliefs and predispositions in adopting a technological learning approach

in their teaching. A deeper understanding of students' readiness for mobile learning may facilitate efforts to enhance the teaching and learning of English language through the use of mobile technology.

Keywords: Mobile learning, English language, higher education, Malaysia, technology readiness, Technology Readiness Index, teaching and learning

ARTICLE INFO

Article history:

Received: 30 July 2016

Accepted: 25 June 2018

Published: 28 September 2018

E-mail addresses:

munir@usm.my / munirshuib08@gmail.com (Munir Shuib)

sitinorbaya49@gmail.com (Siti Norbaya Azizan)

malinik@usm.my (Malini Ganapathy)

* Corresponding author

INTRODUCTION

Mobile learning refers to the mobile use of wireless digital devices in education (Traxler, 2007). Examples of devices commonly used in mobile learning include personal electronic devices such as palmtops and smartphones (Keegan, 2005). Through these devices information can be acquired and disseminated anywhere and at any time, allowing learning and teaching to occur at the users' convenience. Due to the mobility and portability of the devices used and their ability to fit easily in a pocket or purse, mobile learning is also popularly regarded as a form of pocket education.

Today, mobile learning has been implemented in educational institutions in many countries around the world, including Asian nations, be it developed countries like Bahrain, Japan and Saudi Arabia or developing ones like China, India and several Southeast Asian countries. In Bahrain, for instance, Mohammad and Anil Job (2013) showed that mobile learning is being used as a blended learning tool. In Saudi Arabia, King Saud University has implemented facilities to support mobile learning. According to Almutairy, Davies and Dimitriadi (2015), the university has launched a service that allows users to send text messages to the mobile phones of individuals or groups of students directly from their PCs. As for Southeast Asia, studies have indicated that mobile learning has been adopted to a varying extent across this region, and member countries are increasingly relying on information and communication technology (ICT), including

mobile devices, in order to address various issues related to the development of the education field for the sustainability of their economic and social growth (Farley & Song, 2015; Hong & Songan, 2011).

In Malaysia, mobile learning is currently gaining momentum and being explored by many educators and researchers (Hussin et al., 2012). Although earlier studies claimed that mobile learning is still in its infancy in Malaysia (Ismail & Idrus, 2009; Ismail & Azizan, 2012), several scholars also agreed that there has been significant growth in the number of research focused on mobile learning in this country since the last decade (Masrom et al., 2016; Song et al., 2013). In fact, mobile technologies are seen as a great potential to address the growing need for educational access due to the benefits offered by the widespread ownership and usage of mobile devices in Malaysia (Arokiasamy, 2017). This is supported by the statistics given by the Malaysian Communications and Multimedia Commission (MCMC, 2017) showing that smartphones continue to be the most popular means for Internet accessibility among Malaysians, making the country a mobile-orientated society. These points further suggest the potential of mobile technologies as the future means for increasing educational opportunities among communities at all levels in this nation.

To date, many studies have been carried out in Malaysia on the use of mobile learning. Some look at the feasibility of mobile learning as a learning tool (Hashim, Wan Ahmad, & Ahmad, 2010; Siraj, 2004; Shuib, Abdullah, Ismail, &

Zahari, 2012), whereas a few others look at the readiness of mobile learning among students (Andaleeb et al., 2010; Ismail et al., 2016; Rashidah et al., 2011). In terms of language learning, Mohamad and Muniandy (2014) report an increasing trend in the research area of mobile-assisted language learning in Malaysia, specifically in terms of communication skills. In a recent study, Darmi and Albion (2017) explored the use of basic mobile phone functions for an oral communication skills course in a Malaysian higher education institution. Other studies explored the development of mobile-based applications and a conceptual framework for language teaching-learning purposes (Leow, Wan Yahaya, & Samsudin, 2014; Shuib et al., 2015).

However, despite the significant level of interest among educators and researchers, thus far there has not been much documented evidence that indicates the actual use of mobile learning from the perspective of Malaysian higher education. Specifically, only a few studies on mobile-assisted language learning has been done so far involving students in Malaysian universities and little is known about their readiness to embrace such approach in learning the English language. As noted by Mohamad and Muniandy, most existing studies on mobile-assisted language learning in Malaysia are skewed to the similar context of school education and thus, there is a gap in the possibility of embracing mobile-assisted language learning in other areas. Despite various perceived advantages, it is also unclear the extent to which university

English language learners are ready for this method of learning. Furthermore, not many mobile learning studies have been done involving students and teachers of non-science /non-technical courses including the English language (Shuib et al., 2015).

Language learning involves the development of a language system and language use in which learners and teachers are active participants (Kukulska-Hulme, Norris, & Donohue, 2015). Mobile technologies enable active participation in ways that were previously impossible in language learning. According to Kukulska-Hulme, Norris and Donohue (2015), students now “carry with them powerful devices with which they can:

- Create and share multimodal texts
- Communicate spontaneously with people anywhere in the world
- Capture language use outside the classroom
- Analyse their own language production and learning needs
- Construct artefacts and share them with others
- Provide evidence of progress gathered across a range of setting, in a variety of media”

(p.7)

Clearly, using the various applications available in smartphones, English teachers can make their lessons more authentic, interactive and interesting. However, there are many factors that need to be considered before teachers and learners can embark on mobile learning. Two major factors

identified by Kukulska-Hulme, Norris and Donohue (2015) are firstly, the availability of mobile devices among all learners and secondly, learners' willingness to use their personal mobile devices as part of language learning in and out of class. It is important that for mobile-assisted lessons to be effective, all learners have access to a smartphone. This is because even though they can share and work together, listening and viewing may sometimes require the use of one device per person. The second factor i.e. learners' willingness to use their personal mobile devices takes into consideration various elements including the cost for Internet use and data downloading, Wi-Fi connection and data storage.

Users' readiness for change involves their acceptance towards a new intervention and is an essential aspect when it comes to investigating whether such change is supported when it is being implemented (Abas et al., 2009). For Parasuraman (2000), there are four considerations for mobile technology readiness: optimism, innovativeness, discomfort and insecurity. According to Parasuraman, optimism relates to a positive view about technology and a belief that technology offers increased control, flexibility and efficiency in life. Innovativeness concerns users' tendency to try out new things. Discomfort consists of a perception of lack of control over technology and a feeling of being overwhelmed by the technology, while insecurity involves the distrust of technology for security and privacy reasons. Optimism and innovativeness are considered positive

drivers as they encourage users to use technology and hold positive attitudes towards technology. On the other hand, discomfort and insecurity are negative drivers as they inhibit users' adoption of technology.

The present study was motivated by these important considerations. It sought to find out the extent to which Malaysian university English language learners are ready for mobile-assisted learning and to identify the factors contributing to their readiness. The implication of learners' technology readiness towards the implementation of mobile-assisted language learning in Malaysian higher education institutions are further discussed based on the findings of this study.

METHODS

The study employed a quantitative method involving distribution of questionnaire to English language learners undertaking various undergraduate study programmes in a public university in Malaysia. Seventy sets of questionnaires were distributed based on convenience sampling technique with a 97.1% return rate. The total number of respondents who participated in the study was 68.

This questionnaire was adopted from the Technology Readiness Index (TRI) developed by Parasuraman (2000). It consisted of a 36-item scale involving four constructs: optimism (10 items), innovativeness (7 items), discomfort (10 items) and insecurity (9 items). Each item was measured using a 5-point Likert scale

(Strongly Disagree = 1 to Strongly Agree = 5). Despite being developed way back in the year 2000, this version of TRI has been the object of research by various scholars in a variety of contexts (Parasuraman & Colby, 2014).

The present study was motivated by these important considerations. It sought to find out the extent to which Malaysian university English language learners are ready for mobile-assisted learning. Specifically, the aims of the study are:

1. to determine the level of readiness of mobile learning among English language learners in a public university in Malaysia
2. to examine the factors that contribute to mobile learning readiness among English language learners in a public university in Malaysia.

In this study, the level of readiness is determined by the overall mean score for each construct as follows: (0-2.4 = low, 2.5-3.4 = moderate, 3.5-5 = high).

RESULTS

Demographic Profile

Table 1 displays the demographic profile of the respondents.

As indicated in Table 1, the majority were female (73.5%), 21-25 years old (51.5%), Malay (79.4%), Year 2 students (54.4%) and studying Arts (58.8%) subjects with a CGPA ranging from 2.50 to 2.99 (30.9%). In terms of mobile-phone ownership, the majority of the respondents

had at least one mobile phone (63.2%), while only 1.2% did not own one.

Table 1
Respondents' demographic profile

	Frequency	Percentage (%)
Gender		
Male	18	26.5
Female	50	73.5
Age		
20 years and below	32	47.1
21-25 years old	35	51.5
No answer	1	1.5
Ethnicity		
Malay	54	79.4
Chinese	11	16.2
Others	3	4.4
Year of Study		
Year 1	15	22.1
Year 2	37	54.4
Year 3	11	16.2
Year 4 and above	5	7.4
Study Programme		
Art	40	58.8
Science	25	36.8
No answer	3	4.4
Current CGPA		
2.00 to 2.49	2	2.9
2.50 to 2.99	21	30.9
3.00 to 3.49	20	29.4
3.50 to 4.00	5	7.4
No CGPA yet	19	27.9
No answer	1	1.5
Mobile Device Ownership		
I do not own any mobile device.	1	1.5
One mobile phone only	43	63.2
More than one mobile phone	24	35.3

Level of Mobile Technology Readiness

Table 2 displays the descriptive analysis of respondents' optimism towards mobile technology.

The table indicates that the level of optimism towards mobile technology among the respondents was considerably high. All the items for this factor received a

mean score of 3.50 or above. Respondents generally agreed that they liked the idea of using mobile devices for the purpose of learning due to the flexibility of time and ability to tailor things to fit their own needs. They also agreed that mobile products and services were much more convenient to use and made their learning more efficient.

Table 2
Optimism towards mobile technology

#	Item (Overall mean = 3.78)	Mean	Std Dev.
1	Mobile technology gives people more control over their daily lives.	3.78	0.735
2	Products and services that use mobile technology are much more convenient to use.	3.90	0.694
3	You like the idea of using mobile devices for the purpose of learning because you are not limited to regular working hours.	3.97	0.753
4	You prefer to use the most advanced mobile learning technology available.	3.79	0.783
5	You like mobile devices that allow you to tailor things to fit your own needs.	3.91	0.685
6	Mobile technology makes you more efficient in your learning.	3.87	0.827
7	You find mobile technology to be mentally stimulating.	3.64	0.847
8	Mobile technology gives you more freedom of mobility.	3.72	0.813
9	Learning about mobile technology can be as rewarding as the technology itself.	3.66	0.745
10	You feel confident that mobile devices will follow through with what you instructed them to do.	3.50	0.838

Table 3 displays the descriptive analysis of respondents' perception pertaining to innovativeness towards mobile technology.

The table indicates that the level of innovativeness towards mobile learning among respondents was moderate.

Table 3
Innovativeness towards mobile technology

#	Item (Overall mean = 3.11)	Mean	Std Dev.
1	Other people come to you for advice on new mobile technologies.	3.47	0.938
2	It seems your friends are learning more about the newest mobile technologies than you are.	3.84	0.828
3	In general, you are among the first in your circle of friends to acquire new mobile technology when it appears.	2.79	1.114
4	You can usually figure out new high-tech mobile products and services without help from others.	3.19	1.149
5	You keep up with the latest mobile technological developments in your areas of interest.	3.24	0.994
6	You enjoy the challenge of figuring out high-tech mobile gadgets.	3.57	0.886
7	You find you have fewer problems than other people in making mobile technology work for you.	3.29	0.811

Nevertheless, they enjoyed the challenge of figuring out high-tech mobile gadgets (mean: 3.57).

Table 4 displays the descriptive analysis of respondents' discomfort towards mobile technology.

The table indicates that the level of respondents' discomfort was above moderate. The respondents mostly perceived that new mobile technology made it too

easy for governments and organisations to spy on people (mean: 4.01), and they were worried about health and the safety risks linked to using mobile technology (mean: 3.74) and believed that there should be caution in replacing important people-tasks with mobile technology because new mobile technology can break down or get disconnected (mean: 3.74).

Table 4
Discomfort towards mobile technology

#	Item (Overall mean = 3.54)	Mean	Std Dev.
1	Technical support lines about mobile technology are not helpful because they don't explain things in terms you understand.	3.46	0.745
2	Sometimes, you think that mobile technology systems are not designed for use by ordinary people.	3.41	0.996
3	There is no such thing as a manual for a high-tech mobile product or service that's written in plain language.	3.44	0.780
4	When you get technical support from a provider of a high-tech mobile product or service, you sometimes feel as if you are being taken advantage of by someone who knows more than you do.	3.34	0.924
5	If you use a high-tech mobile product or service, you prefer to have the basic model over one with a lot of extra features.	3.31	0.868
6	It is embarrassing when you have trouble with a high-tech mobile gadget while people are watching.	3.43	0.967
7	There should be caution in replacing important people-tasks with mobile technology because new mobile technology can break down or get disconnected.	3.74	0.765
8	Many new mobile technologies have health or safety risks that are not discovered until after people have used them.	3.74	0.638
9	New mobile technology makes it too easy for governments and organisations to spy on people.	4.01	0.635
10	Mobile technology always seems to fail at the worst possible time.	3.56	0.678

Table 5 displays the descriptive analysis of the respondents' level of insecurity towards mobile technology.

Table 5 indicates that the level of insecurity towards mobile learning among respondents was above moderate. The respondents were generally worried that the information they send using mobile

devices would be seen by other people (mean: 3.91). They also felt that all learning transactions via mobile devices should be confirmed later with something in writing and they also needed to check carefully that the mobile device was not making mistakes (mean: 3.70).

Table 5
Insecurity towards mobile technology

#	Item (Overall mean = 3.65)	Mean	Std Dev.
1	You do not consider it safe giving out a credit card number over a mobile device.	3.48	0.959
2	You do not consider it safe to do any kind of financial business via mobile devices.	3.69	0.846
3	You worry that information you send using mobile devices will be seen by other people.	3.91	0.733
4	You do not feel confident doing learning with a place that can only be reached via mobile devices.	3.58	0.742
5	All learning transactions you do via mobile devices should be confirmed later with something in writing.	3.70	0.759
6	Whenever something gets automated, you need to check carefully that the mobile device is not making mistakes.	3.70	0.798
7	Involvement of lecturers is very important when using a learning service via mobile devices.	3.57	0.783
8	You prefer to talk to a person rather than a mobile device.	3.69	1.003
9	If you provide information using a mobile device, you can never be sure if it really gets to the right place.	3.54	0.859

Contributing Factors

In order to determine the contributing factors that may influence mobile technology

readiness among the respondents, the TRI components were correlated, as displayed in Figure 1 below.

Components	Optimism	Innovativeness	Discomfort	Insecurity	Overall TRI
Optimism	1				
Innovativeness	0.421**	1			
Discomfort	0.406**	0.412**	1		
Insecurity	0.291*	0.372**	0.355*	1	
Overall TRI	0.574**	0.564**	-0.152	-0.286	1

Figure 1. Correlations between TRI constructs and overall TRI

The figure shows that there were significant positive correlations between positive constructs (optimism and innovativeness) and overall TRI. On the other hand, there were no significant

correlations between negative constructs (discomfort and insecurity) and overall TRI. These results imply that respondents who were optimistic and innovative about mobile technology would most probably be

ready for the technology. On the other hand, respondents' discomfort and insecurity towards mobile technology did not seem to influence their overall readiness for the technology.

There were also significant positive correlations between both contributors or positive constructs and inhibitors or negative constructs. This suggests that respondents who were technology optimists and innovators also experience technology-related anxieties when it comes to mobile-related technology. In other words, although the respondents were considerably optimistic about mobile technology, they also felt quite insecure and uncomfortable about the technology for personal reasons.

DISCUSSION

In general, the study revealed that the respondents were moderately ready for mobile technology. Although they were highly optimistic about using mobile technology for learning, their perception pertaining to innovativeness towards the technology was relatively moderate. They also had moderate discomfort and feeling of insecurity in using mobile technology.

The respondents' optimism and moderate level of innovativeness were consistent with findings reported in several previous studies on mobile-learning readiness. For instance, Mahat et al. (2012) found that respondents in their study had a moderate level of confidence in using mobile technologies for educational purposes. A reasonable level of confidence is important for mobile learning to be

implemented successfully. This is because effective learning can happen only when the learner decides to engage himself/herself actively and cognitively in learning activities (Hussin et al., 2012).

In terms of innovativeness, as with the present study, the study by Mahat et al. (2012) found that even though their respondents were willing to use mobile technology, they were reluctant to be the first one to try. Abu Al-Aish and Love (2013) found that students' personal innovativeness had a significant influence on their behavioural intention to use mobile learning. Teachers should then consider this factor when implementing mobile technology as lack of innovativeness may hold students back from effectively using the technology. In other words, while learners may have a positive perception of mobile learning, they may also be somewhat resistant towards it. This suggests the need for learners' support and assistance in order to assist them to adapt well to this new teaching and learning approach.

Regardless of the possible negative implications, the findings of the present study suggest that implementing mobile learning for English language lessons may be feasible. The findings indicated that mobile technology can form an integral element for English language teachers and learners, complementing face-to-face teaching. Hence, mobile technology can act as a supplementary tool for English language learning in today's 4.0 Industrial Revolution era, which emphasises this key aspect in promoting effective pedagogy.

The benefits of using mobile learning for English language teachers and learners are immense. Aamri and Suleiman (2011) demonstrated that mobile learning helped English language learners to improve their literacy and numeracy skills. Cavus and Ibrahim (2008) demonstrated that the use of mobile technology improved students' acquisition of new words. Kukulska-Hulme, Norris and Donohue (2015) listed a number of ways in which mobile pedagogy can enhance English language teaching. These include incorporating tasks relating to learners' communicative needs, exposing learners to language as a dynamic system, integrating the four skills and allowing learners choices in what and how to learn.

However, the findings also suggest that teachers should be cautious in implementing mobile technology. The data demonstrated that there may be concerns among English language learners pertaining to certain elements of security and comfort as the mean score of the two factors were very low (2.35 for insecurity and 2.45 for discomfort). It is therefore important that teachers consider such technology-related anxieties to ensure that the implementation of technology during language learning in the classroom is effective and the negative implications are minimized.

One major implication of the findings is that there should be a conducive eco-system for mobile learning in higher education institutions. English language teachers and higher education institution policy-makers should take heed of the policy guidelines for mobile learning recommended in

UNESCO (2013). Some of the guidelines are training teachers for advance learning through mobile technologies, creating and optimizing educational content for use on mobile devices, expanding and improving connectivity options while ensuring equity and developing strategies to provide equal access for all.

Considering that mobile learning is still gaining momentum in this country, it may not be unreasonable to assume that many English language teachers in higher education institutions may still be unaccustomed to this mobile pedagogy. Thus, while students may be optimistic about the use of mobile devices for English language learning, their teachers may not have the appropriate skills to use the devices as teaching tools. Callum, Jeffrey and Kinshuk (2014), based on their study on teachers' adoption of mobile learning, notes that support is needed in terms of supporting general literacy. One possible solution is incorporating mobile technology in teacher education as shown by many scholars, since the use of mobile technology has the potential to significantly change practice in classrooms by reshaping learning. The incorporation of mobile technology in teacher education can play a major role in the integration of this technology in the classroom.

Connectivity is another important aspect in the mobile technology ecosystem. In order for any mobile technology to be used, Internet connectivity must be available to both students and lecturers all the time and at a reasonable speed. Connectivity

is a major challenge in Malaysia. A recent report by Akamai Technologies indicated that Malaysia ranks 73 in average Internet connection speed (The Star, 2015). It is therefore not surprising that discomfort received a relatively low mean score compared to innovativeness and optimism. The problem of connectivity may also be attributed to irregular power supply, a common problem in many rural areas in Malaysia. Irregular power supply leads to denial of service and can be a barrier to mobile learning. Learners' discomfort may significantly be reduced if the problem of connectivity can be addressed.

Learners' anxiety about security should also be addressed. According to Kambourakis (2013, p. 68), security concerns can "hamper the penetration of mobile technologies into the education realm, and hence prevent stakeholders from capitalizing on the benefits that these technologies bring along." Similar to the present study, a study by Shonola and Joy (2014) found that the majority of the respondents in their study agreed that privacy issues and exploitation of security breaches were concerns to them when it came to educational use of mobile devices. They cited several reasons for such concerns, including loss or theft of mobile devices, threat of virus and malware attacks and loss of private and confidential information. Their findings on security concerns were consistent with those of many previous studies. For example, Zamzuri et al. (2013) found that concerns about loss of confidential information contributed to students' rejection of online systems.

Obodoeze et al. (2013) found various forms of threats including virus/malware attack and hacking were the biggest security challenges faced by users of mobile devices in Nigeria.

CONCLUSION

The present study found that the English language learners who participated as respondents were moderately ready for mobile learning. In addition, they were considerably optimistic about mobile technology adoption. However, they also indicated a certain degree of technology-related anxieties that encompassed their discomfort and insecurity towards the phenomenon of mobile learning. Nevertheless these two factors did not significantly influence their mobile learning readiness. It may, therefore, be concluded that generally, Malaysian university English language students are moderately ready for mobile learning and that implementing mobile learning for English language lessons may be feasible.

Despite the positive findings, the issues of discomfort and insecurity must not be ignored. Various studies, as cited above, have demonstrated that these factors can hamper the implementation of mobile learning. A closer look at the findings reveals that concerns related to data security received the highest mean. Many mobile-phone applications for English language learning are readily available online. Teachers who wish to implement mobile learning must exercise caution in selecting the applications especially those that require

the users to share personal data. Issues such as connectivity, access, appropriateness of content and expertise among teachers to handle mobile learning will also need to be properly addressed before mobile learning can be a reality in Malaysian universities.

Teachers who choose to adopt mobile technology must also seek to create and optimise the content. According to UNESCO (2013), currently most educational content often lack relevance to local student populations. It is, therefore, imperative that interested teachers not just digitally transform their English language teaching content into mobile-orientated form, but also produce content that suits their learners' needs.

The present study considered mobile learning from English language students' perspectives. Future research work should focus on mobile learning based on other stakeholders in higher education institutions, including English language teachers and policy-makers. Even though learners can influence the way teaching and learning should take place, lecturers are the ones who have to carry out the implementation. Thus, it is imperative that future research examine lecturers' readiness in adopting mobile learning. Readiness among policy-makers is equally important. Technologically-related problems such as on-campus Internet connectivity can potentially be addressed if teachers gain the support of institutional policy-makers. Clear mobile learning policies should also be in place to ensure successful implementation. It would,

therefore, be worthwhile to carry out a study looking at the adoption of mobile learning from the policy-makers' perspective, too.

ACKNOWLEDGEMENT

This paper is based on a wider study funded by the Ministry of Higher Education Malaysia entitled "Intelligent Mobile Learning for Grammar" led by the first author with co-researchers Malini Ganapathy, Issham Ismail and Amelia Abdullah and Siti Norbaya Azizan as research officer.

REFERENCES

- Aamri, A., & Suleiman, K. (2011). The use of mobile phones in learning English language by Sultan Qaboos University students: Practices, attitudes and challenges. *Canadian Journal on Scientific & Industrial Research*, 2(3), 143–152.
- Abas, Z. W., Peng, C. L., & Mansor, N. (2009). *A study on learner readiness for mobile learning at Open University Malaysia*. In *IADIS International Conference Mobile Learning 2009*. Barcelona, Spain.
- Abu-Al-Aish, A., & Love, S. (2013). Factors influencing students' acceptance of m-learning: An investigation in higher education. *The International Review of Research in Open and Distributed Learning*, 14(5), 82-107.
- Almutairy, S., Davies, T., & Dimitriadi, Y. (2015). Students' perception of their m-learning readiness. *World Academy of Science, Engineering and Technology, International Journal of Social, Behavioral, Educational, Economic, Business and Industrial Engineering*, 9(5), 1468–1471. Retrieved from <http://scholar.waset.org/1999.10/10001323>
- Andaleeb, A. A., Idrus, M. R., Ismail, I., & Mokaram, A. K. (2010). Technology readiness index

- (TRI) among USM distance education students according to age. *International Journal of Social, Behavioral, Educational, Economic, Business and Industrial Engineering*, 4(3), 229–232. Retrieved from <http://waset.org/Publication/technology-readiness-index-tri-among-usm-distance-education-students-according-to-age/12771>
- Arokiasamy, A. R. A. (2017). A qualitative study on the impact of mobile technology among students in private higher education institutions (PHEIs) in Peninsular Malaysia. *Journal of Entrepreneurship and Business*, 5(2), 25–36.
- Cavus, N., & Ibrahim, D. (2008). MOLT: A mobile learning tool that makes learning new technical English language words enjoyable. *International Journal of Interactive Mobile Technologies*, 2(4), 38–42.
- Darmi, R., & Albion, P. (2017). Enhancing oral communication skills using mobile phones among undergraduate English language learners in Malaysia. In *Mobile Learning in Higher Education in the Asia-Pacific Region* (pp. 297–314). Singapore: Springer.
- Farley, H., & Song, H. (2015). Mobile learning in Southeast Asia: Opportunities and challenges. In Y. Zhang (Ed), *Handbook of mobile teaching and learning* (pp. 403-419). Berlin, Germany: Springer-Verlag.
- Hashim, A., Wan Ahmad, W., & Ahmad, R. Wan Ahmad (2010). Mobile learning implementation: students' perceptions in UTP. *World Academy of Science, Engineering and Technology*, 4, 2-25.
- Hong, K. S., & Songan, P. (2011). ICT in the changing landscape of higher education in Southeast Asia. *Australasian Journal of Educational Technology*, 27(8), 1276-1290
- Hoong, T. K. (2015, December 18). Malaysia ranks 73 in average internet connection speeds. *The Star*. Retrieved from <http://www.thestar.com.my/>
- 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. Retrieved from <http://dx.doi.org/10.5539/ass.v8n12p276>
- Ismail, I., & Azizan, S. N. (2012). Tailoring SMS-based m-learning system to Malaysian students' preferences. *WSEAS Transactions on Information Science & Applications*, 9(3), 80–92. Retrieved from <http://www.wseas.org/multimedia/journals/information/2012/54-714.pdf>
- Ismail, I., Azizan, S. N., & Gunasegaran, T. (2016). Mobile learning in Malaysian universities: Are students ready? *International Journal of Interactive Mobile Technologies (iJIM)*, 10(3), 17–23.
- Ismail, I., & Idrus, R. M. (2009). Development of SMS mobile technology for m-learning for distance learners. *International Journal of Interactive Mobile Technologies*, 3(2), 55–57. Retrieved March 3, 2016, from <http://dx.doi.org/10.3991/ijim.v3i2.724>
- Kambourakis, G. (2013). Security and privacy in m-learning and beyond: Challenges and state-of-the-art. *International Journal of u-and e-Service, Science and Technology*, 6(3), 67–84.
- Keegan, D. (2005). *The incorporation of mobile learning into mainstream education and training*. Retrieved March 3, 2016, from <http://www.mlearn.org.za/CD/papers/keegan1.pdf>
- Kraut, R. (2013). *UNESCO policy guidelines for mobile learning*. France: UNESCO.
- Kukulska-Hulme, A., Norris, L., & Donohue, J. (2015). Mobile pedagogy for English language teaching: A guide for teachers. Retrieved March 3, 2016, from http://oro.open.ac.uk/43605/1/_userdata_documents3_lemn3_Desktop_E485%20Mobile%20pedagogy%20for%20ELT_FINAL_v2.pdf

- Leow, C. K., Yahaya, W. A. J. W., & Samsudin, Z. (2014). Mobile-assisted second language learning: Developing a learner-centered framework. Paper presented at *International Conferences on Education Technologies (ICeduTech) and Sustainability, Technology and Education (STE) 2014*. Retrieved March 3, 2016 from <https://www.learntechlib.org/p/158354/>.
- Mahat, J., Ayub, A. F. M., & Luan, S. (2012). An assessment of students' mobile self-efficacy, readiness and personal innovativeness towards mobile learning in higher education in Malaysia. *Procedia-Social and Behavioral Sciences*, 64, 284–290. Retrieved March 3, 2016, from <http://www.sciencedirect.com/science/article/pii/S1877042812050100>
- Malaysian Communications and Multimedia Commission (MCMC). (2017). *Internet users survey 2017: Statistical brief number twenty-one*. Retrieved March 3, 2016, from <https://www.mcmc.gov.my/skmmgovmy/media/General/pdf/MCMC-Internet-Users-Survey-2017.pdf>
- Masrom, M., Nadzari, A. S., Mahmood, N. H. N., Zakaria, W. N. W., & Ali, N. R. M. (2016). Mobile learning in Malaysia education institutions. *Issues in Information Systems*, 17(4), 152–157.
- Mohamad, M., & Muniandy, B. (2014). Mobile-assisted language learning in Malaysia: Where are we now? *Practice*, 47, 55–62.
- Mohammad, S., & Job, M. A. (2013). Adaption of M-Learning as a Tool in Blended Learning-A Case Study in AOU Bahrain. *International Journal of Science and Technology*, 3(1), 14-20.
- Obodoeze, F. C., Okoye, F. A., Mba, C. N., Asogwa, S. C., & Ozioko, F. E. (2013). A holistic mobile security framework for Nigeria. *International Journal of Innovative Technology an Exploring Engineering (IJITEE)*, 2(3), 1–11.
- Parasuraman, A. (2000). Technology readiness index (TRI) a multiple-item scale to measure readiness to embrace new technologies. *Journal of Service Research*, 2(4), 307–320. Retrieved March 3, 2016, from <http://jsr.sagepub.com/content/2/4/307.full.pdf+html>
- Parasuraman, A., & Colby, C. (2014). An updated and streamlined technology readiness index: TRI 2.0. *Journal of Service Research*, 18(1), 1–16.
- Siraj, S., & Saleh, M. (2004). Mobile learning in future curriculum. *Journal of Issues in Education*, 27, 128–142.
- Shonola, S. A., & Joy, M. S. (2014, July). Mobile learning security issues from lecturers' perspectives (Nigerian universities case study). In *6th International Conference on Education and New Learning Technologies, 2014, July, 7-9, Barcelona, Spain* (Vol. 88, p. 7081).
- Shuib, M., Abdullah, A., Azizan, S. N., & Gunasegaran, T. (2015). Designing an intelligent mobile learning tool for grammar learning (i-MoL). *iJIM*, 9(1), 41–46. Retrieved March 3, 2016, from <http://dx.doi.org/10.3991/ijim.v9i1.4238>
- Shuib, M., Abdullah, A., Ismail, I., & Zahari, S. N. A. (2012). The feasibility of teaching English grammar via SMS. *SPECTRUM: NCUE Studies in Language, Literature, Translation*, (9), 133–144.
- Song, H. S., Murphy, A., & Farley, H. (2013). Mobile devices for learning in Malaysia: Then and now. In *Electric Dreams: 30th Ascilite Conference* (pp. 830–834). Macquarie University, Australia.
- Traxler, J. (2007). *International review of research in open and distance learning: Defining, discussing, and evaluating mobile learning: The moving finger writes and having writ...*, 8(2), 1–12. Retrieved March 3, 2016, from <http://www.irrodl.org/index.php/irrodl/article/view/346/882>
- Zamzuri, Z. F., Manaf, M., Yunus, Y., & Ahmad, A. (2013). Student perception on security requirement of e-learning services. *Procedia-Social and Behavioral Sciences*, 90, 923–930.