

Vocabulary Learning Through Mobile Apps: A Phenomenological Inquiry of Student Acceptance and Desired Apps Features

<https://doi.org/10.3991/ijim.v13i07.10845>

Farhana Diana Deris (✉), Nor Seha A Shukor
Universiti Teknologi Malaysia, Sukadi Johor, Malaysia
diana@utm.my

Abstract—Vocabulary plays a great role in language learning as learners would face difficulties in language learning if they have insufficient vocabulary knowledge. The advent of new technologies has encouraged the development of mobile assisted language learning (MALL) and the increase in mobile apps for vocabulary learning. Nonetheless, it would seem that there is a dearth in research on the use of mobile apps for vocabulary learning especially in our local contexts. Capitalising on the strength of phenomenological inquiry and a model for technology acceptance, this study investigated several existing mobile apps for language learning. In particular, it looked into students' acceptance and the features of mobile apps conducive for vocabulary learning. This study employed in-depth interviews and surveys as instruments. Using purposive sampling technique, thirty-three students were selected as participants to experience using mobile apps to learn vocabulary on self-directed basis for a specified duration. At the end of the trial stage, all participants responded to the surveys, and three were interviewed. The accounts given by participants indicated positive acceptance and several desired features. Interestingly, this study also revealed several challenges in learning vocabulary through mobile apps which should be the concern of both apps developers and language teachers.

Keywords—Vocabulary learning; Mobile Assisted Language Learning; English as a Second Language; Apps features

1 Introduction

Many studies conducted regarding the implementation of mobile learning in language learning also reported positive acceptance by learners [40][7][5]. Learners are willing to download educational materials and finding information when required through their mobile phones. They also believed that the use of mobile phones helps in facilitating and increasing their effectiveness in communication for learning. Mobile learning is also convenient and practical. Several studies conducted on the use of mobile phones for vocabulary learning also leaning towards positive as far as learners' acceptance and experience are concerned [9][23]. Despite the positive acceptance by learners, there are still challenges faced by them in adopting mobile phones for

language learning. The use of mobile phones in classroom is still limited even the learners like to use them due to the discouragement by teachers. Learners also faced difficulty in storing large files in mobile phones and some of the learning apps make their mobile phone's battery low continuously. Some of the learners also stated that they are not comfortable in reading and writing in small screen on mobile phones as compared to laptop. Learners are also tempted to chat with their friends or playing games instead of learning [1][24][15].

2 Literature Review

Review of literature as follows shows the general acceptance of students in Malaysia in MALL and the indicated findings leaning towards the positive as far as learner acceptance is concerned. As cited in [40] reported positive perceptions of postgraduate ESL students in Universiti Kebangsaan Malaysia towards the use of mobile phones in learning. The students believed that MALL helps enhance learners' proficiency of English due to several features, i.e. accessibility to various learning materials and activities, increased opportunities to interact with their peers and lecturers. Meanwhile, a lack of acceptance among students in two local universities, University of Technology MARA and Universiti Kebangsaan Malaysia, due to low level of readiness; overall, the respondents welcomed the integration of M-learning but currently preferred the use of blended learning [22].

The students' acceptance in using mobile app in language learning could be influenced by the mobile application being used and the features of them. A study conducted by [2] on learners' readiness for mobile learning reported that there are several preferable mobile learning features chosen by the learners such as reminder for important events, helpful tips for their study and audio learning modules which can ease the learners especially learners who are working adults. Meanwhile, in a study conducted found that most ESL mobile app were targeted for adults and young adults' use which seems closely related to population of mobile phone owners [25]. The major focus of ESL mobile apps are on words where most of the applications have activities on learning vocabulary followed by spelling and pronunciation. The other language skills highlighted in ESL mobile apps are reading, grammar, listening, speaking and writing in order. The findings shows that the current ESL mobile apps focus more on receptive language skills as compared to productive language skills.

3 Theoretical Framework

The Technology Acceptance Model proposed by [18] evaluated the influence of four internal variables upon the use of technology in learning. The internal variables used in the original model are perceived ease of use, perceived usefulness, attitudes towards use and intention to use as shown in Figure 1.0.

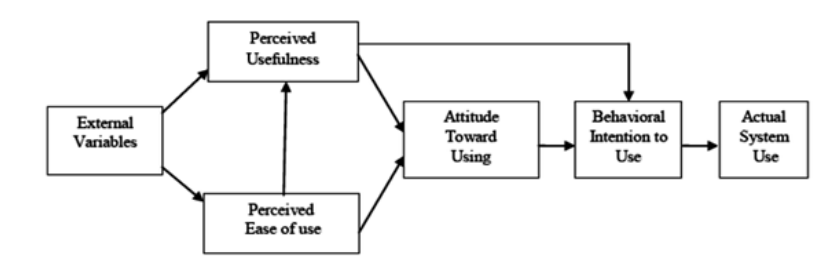


Fig. 1. Technology Acceptance Model (Davis et al., 1989)

This model assumed that the intention of students is a result from the cognitive processes. In this context of study, the students' intention to use mobile apps in the future is influenced by the acceptance in using the apps. This model is used to be applied in this study because it reflects the environment of using mobile apps in learning vocabulary. There are two other internal variables added to this study which are self-efficacy and compatibility. Thus, based from this model which has been adapted in this study, it is proposed that the acceptance of students in using mobile apps to learn vocabulary is influenced by the students' perceived in the usefulness, ease of use, self-efficacy, compatibility and intention to use. It is also proposed that the students' intention to use mobile apps in vocabulary learning in the future is influenced by their acceptance in the use of mobile apps in vocabulary learning. Hence, they are assumed to use the apps in the future if their acceptance towards the use of the apps in vocabulary learning is positive.

4 Methods

In order to gather the data of the students' acceptance and experience in the use of mobile apps in vocabulary learning as well as the preferable features of language learning mobile apps for vocabulary learning, phenomenological research design was used in this study. This study aims to

- To identify students' acceptance towards the use of mobile apps in learning vocabulary
- To determine the preferred features for vocabulary learning mobile apps
- To identify students' experience in using mobile apps to learn vocabulary

5 Methodology

In quantitative approach, a set of questionnaire was used in which some of the items were adapted from previous research to elicit information about the acceptance of students. The adapted items comprised of closed-ended items which consists of Likert-scale items range from Strongly Disagree to Strongly Agree. Meanwhile for the qualitative approach, phenomenological research approach was used because this

study involved exploring a phenomenon and a group of individuals who have experience the phenomenon as cited in [16]. Interview session was conducted with three participants to gain an in-depth understanding on the students’ experience. The participants involved in the questionnaire survey study have the same MUET band 3. Meanwhile, the participants involved in the semi-structured interview are TESL students since they have pedagogical background related to this study. They were interviewed regarding the use of mobile apps in helping learners to learn vocabulary. As for the survey, 30 postgraduate students with MUET band 3 were involved.

6 Data Analysis

For the analysis of data, a total of three variables were taken into consideration namely the acceptance of students towards the use of mobile apps in vocabulary learning, the features for a vocabulary learning mobile app and the experience of students in using mobile apps to learn vocabulary. Some of the data from the questionnaires were analyzed through the use of Statistical Packages for Social Sciences (SPSS Window Version 16.0) by using descriptive statistic, to organize, display, describe and explain a set of data with the use of tables, graphs and summary measures [28]. The frequency, percentage and mean value of the data were also determined by using SPSS 16.0. From the Likert Scale in Section B, the acceptance level of the students was determined. The levels were divided into three levels which are high, moderate and low. The high level was determined from the value of 1.00 to 2.33 while the moderate level was determined from the value of 2.34 to 3.66. Meanwhile, low level was determined from the range of value between 3.67 and 5.00. As for the open-ended items in Section C and Section D, the students’ views were categorized into emerging domains themes and were analyzed accordingly.

Meanwhile, the qualitative data from the interview session were used to support and give meaning to the quantitative data analysis.

7 Results

Table 1. Students’ Acceptance towards the Use of Mobile Apps in Learning Vocabulary

| | Statements | Likert Scale | | | | Mean |
|--------------------|--|--------------|-------|---------|---------|------|
| | | SD | D | A | SA | |
| <i>Ease of Use</i> | | | | | | |
| 1 | Learning vocabulary through mobile apps is easy for me. | | | 18.60 % | 12.40 % | 1.60 |
| 2 | Learning vocabulary through mobile apps saves time. | | | 17.57 % | 13.43 % | 1.57 |
| 3 | Learning vocabulary through mobile apps is convenient. | | | 15.50 % | 15.50 % | 1.50 |
| 4 | The mobile apps for vocabulary learning are easy to use. | | 3 % | 18.60 % | 11.37 % | 1.67 |
| <i>Usefulness</i> | | | | | | |
| 5 | Learning vocabulary through mobile apps is not restricted by time and place. | | 13 % | 16.54 % | 13.43 % | 1.60 |
| 6 | Learning vocabulary through mobile apps can help me access the information I needed. | | 2.7 % | 13.43 % | 15.50 % | 1.57 |
| 7 | Learning vocabulary through mobile apps enhance my | | | 20.67 % | 10.33 % | 1.67 |

| | | | | | | |
|-------------------------|---|------|--------|---------|---------|------|
| | effectiveness on my learning. | | | | | |
| 8 | Learning vocabulary through mobile apps provides helpful guidance in performing tasks. | | | 21.70 % | 9.30 % | 1.70 |
| Efficacy | | | | | | |
| 9 | I could complete learning vocabulary tasks through mobile apps if there is no one around to tell me what to do. | | 2.7 % | 18.60 % | 10.33 % | 1.73 |
| 10 | I could complete learning vocabulary tasks through mobile apps if someone had helped me to get started. | | 6.20 % | 18.60 % | 6.20 % | 2.00 |
| 11 | I could overcome the difficulties encountered when I used mobile apps to learn vocabulary. | | 2.7 % | 23.76 % | 5.17 % | 1.90 |
| 12 | I could complete vocabulary tasks through mobile apps no matter how difficult it is. | | 6.20 % | 20.67 % | 4.13 % | 2.07 |
| Compatibility | | | | | | |
| 13 | By learning vocabulary through mobile apps, I do not have to change anything I currently do. | | 5.17 % | 17.56 % | 8.27 % | 1.90 |
| 14 | Learning vocabulary through mobile apps does not require significant changes in my existing work routine. | 13 % | 27 % | 22.73 % | 5.17 % | 1.97 |
| 15 | Learning vocabulary through mobile apps is same as using other software I have used in the past. | | 517 % | 2273 % | 310 % | 2.07 |
| 16 | Learning vocabulary through mobile apps can reinforce from computer. | | 3.10 % | 23.77 % | 4.13 % | 1.97 |
| Intention of use | | | | | | |
| 17 | I am willing to use mobile apps to learn vocabulary. | | 1.3 % | 22.73 % | 7.24 % | 1.80 |
| 18 | I will continue using mobile apps to learn vocabulary in the future. | | 1.3 % | 23.77 % | 6.20 % | 1.83 |
| 19 | Overall, I will learn vocabulary through mobile apps. | | 1.3 % | 24.80 % | 5.17 % | 1.87 |
| 20 | I will recommend others learning vocabulary through mobile apps. | | | 21.70 % | 9.30 % | 1.70 |

Table 2. Preferred Features for Vocabulary Learning Mobile Apps

| Features | Frequen- cy (f) | Percent- age (%) | Examples of students' responses in open-ended questionnaire |
|-------------|--------------------|---------------------|--|
| Games | 23 | 77 | "It is fun and it triggers me to learn more on vocabulary each day" |
| Test / quiz | 1 | 3 | "It helps me to learn new word" |
| Media | 1 | 3 | "I can know the pronunciation of a word" |
| Word list | 5 | 17 | "I learned best by looking at examples and how it is being used in a sentence" |

Table 3. Challenges in Using Mobile Apps in Learning Vocabulary

| Category | Examples of students' responses in open-ended questionnaire |
|----------------------------|---|
| Vocabulary are challenging | "Even though the level setup is easy, the words seem difficult" |
| Not interesting | "It does not consists of any games, it focuses on quiz and learning" |
| Instruction is not clear | "I could not understand the instructions at the beginning of using this app" |
| Needs internet connection | "If the internet connection is slow, the features are also slow" |
| Game is demotivating | "Fly High game ends too soon when I answered wrongly. It demotivated me to try again" |
| Features need to be bought | "Some app functions needed to be bought with real money" |
| Design is dull | "The interface is quite boring and unattractive" |
| Too many ads | "There are many advertisements in this application. Waste of time and concentration" |

| | |
|-----------------------|--|
| Input is not given | “It does not introduce the vocabs first, it goes straight to the quiz” |
| Too many notification | “It has too many notification” |
| Not working properly | “Not working properly with me” |
| Time and credit based | “Time and credit based so I can’t just play freely whenever I want” |
| Internet connection | “I hope to learn vocab without using my internet data” |

8 Discussions

The findings show that the students have a positive acceptance towards the use of mobile apps in learning vocabulary. The major factor that influence the positive acceptance of the students on the use of mobile apps in learning is due to the ease of use offered by the tools with $m= 1.59$. The students agreed that it is convenient to learn vocabulary through mobile apps since it is accessible anywhere and at any time. Hence, they are able to access to the apps according to their preferred time and place which makes it easy for them to learn and are able to saves their time. This is also supported by the data from the interview as learners are able to save their time and energy in using mobile apps to learn vocabulary. It is also easy to use since the mobile apps can just be downloaded in their mobile phones which is easy to carry everywhere. This finding is in line with another study by [40] which also reported positive responses from UKM students towards mobile technology as convenient and practical to be used. A study reported positive acceptance by students in using mobile devices for language learning because of the portability and convenience offered by the tools [24]. Other than that, it was also found that the students are willing to use mobile apps to learn vocabulary in the future with $m= 1.80$. They also are willing to recommend learning vocabulary through mobile apps to the others. This finding shows that students have interest to learn language through the use of mobile apps in the future. Hence, the implementation of mobile apps in language learning, especially for vocabulary learning is welcomed by the students.

The most preferred feature in vocabulary learning mobile apps is the feature of games. They also chose this feature as the most useful feature among the others. Possible explanation to this is because this feature helps them to learn in a fun and enjoyable way. The feature also triggers them to learn more and motivates them in learning. This is also supported by the data from the interview which stated that learners are able to learn vocabulary in a stress-free environment through games. The exciting and fun element in the games also could motivate learners to learn better. This is also supported by [6] which stated that the feature of game is helpful to promote excitement to learners as they are more excited in learning.[15] added that learners preferred to learn vocabulary through meaningful context such as online game since it is more appealing to them. It is also found that the other preferred feature for vocabulary learning mobile apps is the feature of word list with definitions and examples. This feature is also selected as the most used feature by the students. Possible explanation to this is because students learn vocabulary better when they know the definition of a word and how the word is being used in a sentence. The data from the interview also supported this finding as this feature is beneficial in helping learners to understand better. In addition, the students also preferred the feature of media to be included in

vocabulary learning mobile apps. The feature of media such as audio pronunciation is useful in helping them to learn new words. This is also supported by the data from the interview in which stated that the use of audio pronunciation is able to help learners to pronounce a word correctly. According to [13], audio recording feature is helpful as pronunciation guide for learners who are not familiar with a new word. Besides that, the use of images is also useful in helping learners to understand the meaning of a word better. Sometimes, students still have difficulty in understanding the meaning of a word even though the definition is provided. The use of images is able to help them to get the clear picture of the meaning of a word and helps them to remember the word.

The most challenging problem faced by the students in using mobile apps to learn vocabulary is due to the complicated vocabulary. The students claimed that the vocabulary provided in the apps are too hard for them and they were having difficult time to understand the vocabulary in the apps. They also claimed that they are unfamiliar with the vocabulary provided as the words are usually used by them in their daily basis. This is supported by the data from the interview which stated that even students with high English proficiency level were having difficulties in understanding the vocabulary. This situation could makes learners to feel demotivated to continue learning and it also might makes the students to lose confidence in using the apps to learn vocabulary. Possible explanation to this is because most of the existing vocabulary learning mobile apps were designed to prepare students for international preparation exams such as IELTS, TOEFL and GRE. Hence, the words provided might be a little bit difficult especially for students with low or medium English proficiency level.

In addition, it is also found from the findings which stated that the apps are not interesting to be used due to several reasons. One of the reasons is the requirement of internet connection in using the apps. Internet connection is needed for the students to access to the apps and they also found problems in accessing the apps when their internet connection is slow. This is also supported by the data from the interview which stated that it would be challenging for learners to access to the apps if there is no internet connection or when there is poor internet connection. [24] supported that students show frustration in using mobile technology in language learning since not all of the, have consistent access to mobile technology.

9 Conclusion

In this study, the findings indicated that students have positive acceptance towards the use of mobile apps in learning vocabulary. The reason on the positive acceptance by the students is influenced by ease of use and usefulness of mobile phones in learning. Apart from that, it is also found that games feature is the most preferred feature to be used in vocabulary learning. The use of games which is fun and enjoyable managed to motivate and trigger the students to learn more. There are few suggestions of improvement proposed by the students to overcome the challenges in using mobile apps for vocabulary learning. They suggested to lower down the difficulty of the vo-

cabulary and varies the definition of the vocabulary. More interactive games also should be added to the apps as well as media elements such as video and images. The advertisements in the apps should also be lessened and the design of the apps should be using more graphic and colourful icons and pictures. Other than that, clearer instruction should be used and a guide should be provided for new users of the apps.

Lastly, the students managed to list out some of the benefits of using mobile apps in learning vocabulary such as it is convenient to be used in learning. They are able to learn vocabulary anywhere at any time by accessing through the mobile apps instead of dictionary or books. This will save their time and energy to learn. Other than that, the use of mobile apps also helps in promoting new vocabulary to them which is helpful for academic purposes. Varieties of words learned by the students help to improve their writing task. The use of mobile apps also is able to motivate them to learn as it is more enjoyable and interesting than the usual lecture based lesson.

The implications of this study are separated into two categories which are level of difficulties of vocabulary and games feature. It is found from this study that the students have positive acceptance towards the use of mobile apps in learning vocabulary. Nevertheless, there are still challenges faced by them in using the apps for vocabulary learning. The main problem is the challenging vocabulary provided in the apps which are too difficult for them. They claimed that the words are unfamiliar for them even in the easiest level. Since the students involved in this study are students with medium and low level of English proficiency, it could be assumed that the vocabulary provided in the apps are not suitable for their level. The continuous challenge faced by the students may hinder them from using mobile apps for learning in the future. Thus, the list of vocabulary should be revised so that it can cater the needs of students with low or medium level of English proficiency.

It is also found from this study that the most preferred feature to be implemented in vocabulary learning mobile apps is games feature. Majority of the students preferred to learn vocabulary through games. Possible explanation to this is because games offer meaningful learning, in which students are able to learn in a context. They are able to learn a word implicitly, without them knowing that they are actually learning the words. Numerous exposure to the words through games will implicitly exposed the students to the use of the words. They might not be able to state the exact definition of the word but they are able to use the word in an appropriate context. Therefore, this feature should be embedded in more language learning mobile apps, specifically for vocabulary learning. This feature does not only provide interesting and fun learning, but it can also motivate the students to learn more through mobile apps in the future.

10 Limitations and Future Studies

There are several limitations that have been identified in this study. The limitations have been divided into several categories, which are participants involved in the study, the period of study and the tools used in the study. Based on the study that has been conducted, several recommendations have been made. The number of partici-

pants for future study should be increased in order to obtain more accurate results. Since the number of the participants involved in this study is very limited, it hinders the researcher to explore more on the topic and set more objectives. However, when the number of participants is increased, it would widen the scope of research hence producing better outcomes and results.

Besides that, the scope of study can also be widened through the involvement of participants from various range. As a suggestion, future research should involve a wide range of participants consists of students from different range of age, English proficiency level and experience in using mobile apps in language learning. By involving a wider range of participants, the study could be more significant since it involves a lot of variables to work with. The acceptance of students could be viewed in different perspectives such as the age of students, their English proficiency level and their experience in using mobile apps in language learning. Other than that, it is also suggested that future research could employ more learning mobile tools to be used in future study. In this way, a more variety and in-depth information regarding the preferred features could be collected and researcher could recognize more on the challenges faced by students in using mobile apps in learning vocabulary. Future study could also employ experimental research to see whether the use of mobile apps in learning vocabulary is effective to the students or the otherwise.

11 Acknowledgement

The authors would like to thank the Universiti Teknologi Malaysia.

12 References

- [1] 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.
- [2] Abas, Z. W., Peng, C. L., & Mansor, N. (2009). A Study on Learner Readiness for Mobile Learning at Open University Malaysia. *IADIS International Conference Mobile Learning*. 151-15.
- [3] Abdul Gafoor, K., & Remia, K. R. (2013). Influence of Phonological Awareness, Morphological Awareness and Non-Verbal Ability on Reading Comprehension in Malayalam. *Guru Journal of Behavioral and Social Sciences*. 1, 128-158.
- [4] Abozandah, T. (2015). University Students' Perceptions of English Language Learning through Mobile Technology. *Journal of Emerging Trends in Computing and Information Sciences*. 6(12), 647-654.
- [5] Al-Emran, M., Elsherif, H. M., & Shaalan, K. (2015). Investigating Attitudes towards the Use of Mobile Learning in Higher Education. *Computers in Human Behavior*. 56, 93-102. <https://doi.org/10.1016/j.chb.2015.11.033>
- [6] Ali, Z., & Ghazali, M. A. I. M. (2015). Learning Technical Vocabulary through a Mobile App: English Language Teachers' Perspectives. *International Journal of Language Education and Applied Linguistics (IJLEAL)*. 4, 81-91.

- [7] Al-Said, K. M. (2015). Students' Perceptions of Edmodo and Mobile Learning and Their Real Barriers towards Them. *TOJET: The Turkish Online Journal of Educational Technology*. 4(2), 167-180.
- [8] Asgari, A., & Mustapha, A. B. (2011). The Type of Vocabulary Learning Strategies Used by ESL Students in University Putra Malaysia. *English Language Teaching*. 4(2), 84-90.
- [9] Basal, A., Yilmaz, S., Tanriverdi, A., & Sari, L. (2016). Effectiveness of Mobile Applications in Vocabulary Teaching. *Contemporary Educational Technology*. 7(1), 47-59.
- [10] Basoglu, E. B., & Akdemir, O. (2010). A Comparison of Undergraduate Students' English Vocabulary Learning: Using Mobile Phones and Flash Cards. *TOJET: The Turkish Online Journal of Educational Technology*. 9(3), 1-7.
- [11] Budi, R. (2013). *Mobile: Native Apps, Web Apps, and Hybrid Apps*. Retrieved from <http://www.nngroup.com/articles/mobile-native-apps/>. <https://doi.org/10.3139/9783446435438.002>
- [12] Cavus, N., & Ibrahim, D. (2009). M-Learning: An Experiment in Using SMS to Support Learning New English Language Words. *British Journal of Educational Technology*. 40(1), 78-91. <https://doi.org/10.1111/j.1467-8535.2007.00801.x>
- [13] Chachil, K., Engkamat, A., Sarkawi, A., & Shuib, A. R. A. (2014). Interactive Multimedia-based Mobile Application for Learning Iban Language (I-MMAPS for Learning Iban Language). *Procedia – Social and Behavioral Sciences*. 167, 267-273. <https://doi.org/10.1016/j.sbspro.2014.12.673>
- [14] Chung, H., Chen, S., & Kuo, M. (2015). A Study of EFL College Students' Acceptance of Mobile Learning. *Procedia Social and Behavioral Sciences*. 176, 333-339. <https://doi.org/10.1016/j.sbspro.2015.01.479>
- [15] Cojocnean, D. (2016). *Factors Determining Students' Low Usage of Mobile Tools in Their English Vocabulary Learning*. University of Exeter, UK. 31-43.
- [16] Creswell, J. W. (2013). *Qualitative Inquiry and Research Design: Choosing Among Five Approaches*. Thousand Oaks, CA: Sage.
- [17] Creswell, J. & Plano Clark, V. (2007). *Designing and Conducting Mixed Methods Research*. California: Sage.
- [18] Davis, F. D., Bagozzi, R. P., & Warshaw, P. R. (1989). User Acceptance of Computer Technology: A Comparison of Two Theoretical Model. *Management Science*. 35(8), 982-1003. <https://doi.org/10.1287/mnsc.35.8.982>
- [19] Embi, M. A., & Mohd Amin, M. Z. (2010). *Strategies for Successful English Language Learning (SELL)*. Shah Alam: Karisma Publications Sdn. Bhd.
- [20] Gikas, J., & Grant, M. M. (2013). Mobile Computing Devices in Higher Education: Student Perspectives on Learning with Cellphones, Smartphones & Social Media. *The Internet and Higher Education*. 19, 18-26. <https://doi.org/10.1016/j.iheduc.2013.06.002>
- [21] Hu, Z. (2013). Vocabulary Learning Assisted by Mobile Phones: Perceptions of Chinese Adult Learners. *Journal of Cambridge Studies*. 8(1), 139-154.
- [22] 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. <https://doi.org/10.5539/ass.v8n12p276>
- [23] Khaoula, R. (2016). The Importance of Using Mobile Technology in Improving Students' Vocabulary. *Branch of English Language*.
- [24] Kim, D., Rueckert, D., Kim, D., & Seo, D. (2013). Students' Perceptions and Experiences of Mobile Learning. *Language Learning & Technology*. 17(3), 52-73.
- [25] Kim, H., & Kwon, Y. (2012). Exploring Smartphone Applications for Effective Mobile-Assisted Language Learning. *Multimedia-Assisted Language Learning*. 15(1), 31-57.

- [26] Kukulska-Hulme, A. (2006). *Mobile Language Learning Now and in the Future*. Sweden: Swedish Net University, 295-310.
- [27] Lawrence, D. (2014). *Students' Experience of Using SMS for Vocabulary Development – A Case Study*. International Conference ICT for Language Learning 7th Edition.
- [28] Lay, Y. F., & Khoo, C. H. (2009). *Introduction to Statistical Analysis in Social Sciences Research (Series 1)*. Venton Publishing (M) Sdn. Bhd.
- [29] Mayer, R.E. (2005). *Introduction to Multimedia Learning*. New York: Cambridge University Press.
- [30] Mayer, R.E. and Sims, V.K. (1994). For Whom is a Picture Worth a Thousand Words? Extensions of a Dual-coding Theory of Multimedia Learning. *Journal of Educational Psychology*. 86, 389-401. <https://doi.org/10.1037//0022-0663.86.3.389>
- [31] McNeal, T., & Hooft, M. (2006). Anywhere, Anytime: Using Mobile Phones for Learning. *Journal of the Research Center for Educational Technology*. 2(2) 24-31.
- [32] Miangah, T. M., & Nezarat, A. (2012). Mobile-Assisted Language Learning. *International Journal of Distributed and Parallel Systems (IJDPS)*. 3(1), 309-319. <https://doi.org/10.5121/ijdps.2012.3126>
- [33] Misbah, N. H., Mohamad, M., Md Yunus, M., & Ya'acob, A. (2017). Identifying the Factors Contributing to Students' Difficulties in the English Language Learning. *Creative Education*. 8, 1999-2008. <https://doi.org/10.4236/ce.2017.813136>
- [34] Mohamad Nor, F., Mazlan, M. H., & Rajab, A. (2015). English Language Teachers' Perceived Difficulty of English Skills Faced by ESL Learners. *Journal of Advanced Research in Social and Behavioural Sciences*. 1, 12-18.
- [35] Nation, I. S. P. (1990). *Teaching and Learning Vocabulary*. New York: Newbury House.
- [36] Pilar, R., Jorge, A., & Cristina, C. (2013). The Use of Current Mobile Learning Applications in EFL. *Procedia – Social and Behavioral Sciences*. 103, 1189-1196. <https://doi.org/10.1016/j.sbspro.2013.10.446>
- [37] Rahamat, R., M.Shah, P., Din, R., & Abd Aziz, J. (2005). Students' Readiness and Perceptions towards Using Mobile Technologies for Learning the English Language Literature Component. *The English Teacher*. 40, 69-84.
- [38] Sharples, M., Taylor, J., & Vavoula, G. (2005). Towards A Theory of Mobile Learning. *Proceedings of MLearn*. 1(1), 1-9.
- [39] Shield, L., & Kukulska-Hulme, A. (2008). *Special Issue of ReCALL on Mobile Assisted Language Learning*. Cambridge University Press.
- [40] Soleimani, E., Ismail, K., & Mustafa, R. (2014). The Acceptance of Mobile Assisted Language Learning (MALL) among Post Graduate ESL Students in UKM. *Procedia Social and Behavioural Sciences*. 118, 457-462. <https://doi.org/10.1016/j.sbspro.2014.02.062>
- [41] Stapa, S. T., Abu Bakar, N., & Abdul Latiff, R. (2007). Literacy on English Written Texts among Rural Students: Implications towards Teaching and Learning. *Jurnal e – Bangi*. 2.
- [42] Sung, Y., Chang, K., & Yang, J. (2015). How Effective are Mobile Devices for Language Learning? A Meta-analysis. *Educational Research Review*. 16, 68-84. <https://doi.org/10.1016/j.edurev.2015.09.001>
- [43] Suwantarathip, O., & Orawiwatnakul, W. (2015). Using Mobile-Assisted Exercises to Support Students' Vocabulary Skill Development. *TOJET: The Turkish Online Journal of Educational Technology*. 14 (1), 163-171.
- [44] Sweller, J. (2005). *Implications of Cognitive Load Theory for Multimedia Learning*. New York: Cambridge University Press.
- [45] Turner, J. (1993). Using Likert-Scales in L2 Research. *TESOL Quarterly*. 27(4), 736- 739. <https://doi.org/10.2307/3587409>

- [46] Wilkins, D. A. (1972). *Linguistics in language teaching*. London: EDward Arnold.
- [47] Wu, Q. (2015). Designing a Smartphone App to Teach English (L2) Vocabulary. *Computers & Education*. 85, 170-179. <https://doi.org/10.1016/j.compedu.2015.02.013>
- [48] Wu, Q. (2014). Learning ESL Vocabulary with Smartphones. *Procedia – Social and Behavioral Sciences*. 143, 302-307. <https://doi.org/10.1016/j.sbspro.2014.07.409>
- [49] Yue, C. (1991). An alternative to rote learning in teaching vocabulary. *Teaching English in China: ELT Newsletter*. 23, 60-63.
- [50] Zheng, S. (2012). Studies and Suggestions on English Vocabulary Teaching and Learning. *English Language Teaching*. 5(5), 129-137. <https://doi.org/10.5539/elt.v5n5p129>

13 Authors

Farhana Diana Deris is a Senior Lecturer at the Language Academy, Universiti Teknologi Malaysia. She is currently the Manager of Global Partnerships at UTM International. She was the Head of Microsite Management for MyLinE, the national English language learning portal. Her research interests include online language teaching and learning, and mobile assisted language learning, and online tools for engaging 21st century learners.

Nor Seha A Sukor is a teaching staff at Sekolah Sukan Tunku Mahkota Ismail, Bandar Penawar Johor, a secondary school in Johor, Malaysia. Nor Seha A Shukor is a teaching staff at Sekolah Sukan Tunku Mahkota Ismail, Bandar Penawar, a secondary school in Johor, Malaysia. She currently teaches English language to lower secondary students. Her research interests include Mobile Apps Language Learning (MALL).

Article submitted 2019-05-12. Resubmitted 2019-06-23. Final acceptance 2019-06-24. Final version published as submitted by the authors