

EXPLORING EFFECTS OF MOBILE APPLICATIONS ON ENGLISH VOCABULARY LEARNING AND ACQUISITION

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ABSTRACT

The current research aims to explore the effects of mobile applications (apps.) on English lexis learning. This paper explored the interests of learners in mobile apps., especially in the English vocabulary learning process, and investigated the efficacy of mobile apps in their academic environment. It also observes that Interactive use of technology is showing effectiveness in the performances of the learners. This study adopted a quantitative approach, using a questionnaire that consists of 20 items. 150 students from the English department of National University of Modern Languages (NUML) contributed to this study who were regular users of mobile phones and apps. The data was analyzed by the SPSS program through frequency and mean deviation. The study concludes that it becomes easier for the students to learn vocabulary proficiently when vocabulary is accessible in numerous ways such as Pictures, Definition, Sound, etc. Findings also showed that it is easier for the participants, to learn vocabulary by apps, because it provides them visuals which leave a long lasting impact on their memory. Investigation also proved that the majority of the participants considered learning vocabulary through mobile app an enjoyable experience.

Keywords: Mobile Applications, English Vocabulary Learning and Acquisition, Interactive use of Technology.

INTRODUCTION

Mobile technologies, which offer usability, portability, and mobility, perform crucial tasks in the majority of areas of our daily lives. Users prefer portable touch-screen devices to desktop personal computers (PCs) (Persson & Nouri, 2018). Numerous sectors of society are positively affected by this choice, most notably the education sector. The remarkable advancement in mobile technology during the past ten years (Zou & Li, 2015) has made daily tasks much easier in numerous ways. Technology has become an important part of teaching and learning and language teaching is no exception.

Mobile devices have had a big impact on education, both in terms of usage and research. Because of the remarkable advancement in the Computer Sciences, many research studies in collaboration with language learning teaching methodologies are investing in ICT-enhanced educational projects. Recent years has seen a great increase in the use of Mobile technology in the development of English language learners' (ELL) skills (Chang & Hsu, 2011). Because of the size and weight, smartphones have many advantages over PCs which is the major reason for its popularity (Persson & Nouri, 2018). Including technology as a pedagogical strategy enables teachers to play the role of facilitator, increasing both teacher and student participation in a learning environment (Clarke & Svanaes, 2015). Effective foreign language learning greatly depends on the learning approaches used by the learner. Language-learning approaches are used as a tool to develop the desired language skills in English language learners (Meschyan et. al., 2002).

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Numerous research studies have shown that mobile apps may offer language learning and training opportunities (Zou & Li, 2015; Chang & Hsu, 2011; Stockwell, 2010; Sadiq et al., 2019; Hoven & Palalas, 2011). Majority of such studies aim to identify the benefits of utilizing smart phones technology in education, e.g. providing options for individual and group learning, communication, and digital content (Clarke & Svanaes, 2015; Nouri & Pargman, 2016). Since, in current technological era, young learners having mobile phones outnumber learners of the same age possessing personal computers (Prensky, 2005). Other studies examined the effects of mobile apps on learning a second language (Keyes et al., 2016; Rezaei et al., 2014). Rezaei et al. (2014) discovered that using mobile apps enhances vocabulary learning, motivate students to participate in the class activities which in turn helps them to gain confidence. Smith et al. (2013) created a game-based English vocabulary-learning arrangement on e-books and experimentally established that their collaborating e-book game strategy improved the motivation of language learners. Mobile apps offer real time learning by connecting associate functions and efficiently encouraging students' English-reading skills.

Research shows that learning and teaching activities in class do not provide effective and sufficient practice for language learning, suggesting more informal settings must be encouraged for effective foreign language acquisition and learning. Using informal settings for learning language can also help students to overcome their inhibition and lack of motivation (Keller, 1987). Baker et al., (1995) asserts that use of technology in learning makes learning more effective for two reasons; firstly, these apps need instructors to be less involved than teacher-led instructions. Secondly, mobile apps offer an opportunity to change the instructions, methods and vocabulary goals at any time. WhatsApp is a mobile messenger app that has 1.2 billion monthly active users worldwide. This app is used for calls, free texting, sharing contents like images, audio, contacts, location and videos. It is accessible on changed mobile platforms counting Android, Blackberry and Apple (Bensalem, 2018).

Problem Statement

Vocabulary learning needs a huge collection and combination of words. The learners must recycle and review these words in different scenarios. This research paper explores the extent of technology learning being effective. It also examines how technology, in general and mobile apps, in particular, affects the performances, confidence, class participation, and opinions of the graduate students during their language learning process.

Aims

To explore English language learners' perception of mobile apps impact on their vocabulary learning and acquisition.

Research Questions

Q: How do learners evaluate the role that Mobile Applications play in their English Vocabulary Learning and Acquisition?

Theoretical framework

Theoretical framework for this research paper was taken from two theories of Krashan's (1982); Social interactionist theory and affective filter hypothesis. Social interactionist theory helps the learners to evaluate the apps coherence and pedagogy, focusing on quality of content and use of the application. This theory also helps the learners to assess the cognitive development and relevance of Language learning procedure. Krashen's affective filter hypothesis assists L2 learners to decide, whether the app is able to grasp the user's attention and understand their psychological requirements. Affective filter theory evaluates the apps by interpreting it to the theories of language acquisition.

REVIEW OF LITERATURE

Literature review of this study discusses the usage of technology, especially mobile phones in vocabulary learning and how mobile devices are helping students in their English vocabulary building. The following areas are discussed in this study: Second Language Acquisition and vocabulary Learning, Vocabulary Teaching/Learning main Approaches, Smartphones used as learning tools, Language learning platform; WhatsApp and Learning vocabulary through WhatsApp.

Second Language Acquisition and vocabulary Learning

In Second Language learning L2, vocabulary learning is viewed as a significant component by investigators (Coady, 1997; Laufer, 1997). According to McCarthy (1990) "No matter how well a student learns grammar, how successfully they become masters in second language acquisition,

without words to express a broader variety of meanings, it is difficult for a student to communicate in L2 in any meaningful way” (p.140). Allen (1983) specified that L2 learner communication is frequently prohibited by insufficient or incorrect usage of vocabulary which indicates that acceptable vocabulary is actually significant at entire stages of L2 learning. Bada et al. (2000) asserts that learning new vocabulary is the result of intentional efforts and it is much more than just learning its meaning; which implies that knowing a word comprises of accepting its stress, spelling, semantic category, pronunciation, grammatical class, and its existence in various contexts.

It is crucial for second language learners to know the meaning of words. To use a language in an effective way, learners should know the order and size of the vocabulary. It helps them to use the language effectively and to communicate in it well. It is necessary for the students of L2 to increase their size of vocabulary to comprehend a text.

Vocabulary Teaching/Learning main Approaches

Vocabulary can be learned in formal settings intentionally or in informal settings unintentionally. It is supported that the word is best acquired and remembered when it is learned in a meaningful context (McCarthy, 1990). Nagy and Herman (1987) suggest that the role of instructors in vocabulary learning is very important as they can inspire the students to read which later helps the students to improve their vocabulary. Krashen (1989) states that by extensive reading students can learn vocabulary context, which is important for language learners. There is no need to approach students for direct vocabulary instructions.

Smartphones used as learning tools

The fast growth of mobile phones, hand-held computers shows that mobile technologies have facilitated Mobile-assisted language learning (MALL) spread to novel altitudes (George, 2014). Smart phones are the most regularly employed expedients in MALL research studies that are supported by European Union 2001 (Pęcherzewska & Knot, 2007). In language learning smartphones being easily accessible have replaced desktops and laptops (Sharpley, Taylor, & Vavoula, 2007).

Mobile phones have twisted into active tools for bringing study material to learners (Thornton & Houser, 2005). Hayati et. al. (2013) explain that initially mobile phones were not accepted in teaching; they were not successful because of some major drawbacks such as drain on the battery, screen size of mobile phone, and limited storage volume (Zhang, Song, & Burston, 2011). Kim et. al. (2013)'s work proves that with the arrival of smartphones that have mostly substituted mobile phones, problems have been resolved. Smartphones are having fast dispensation capability, bigger screens, equipped with onscreen keyboards which make navigation smooth and easy. Smartphones have gained popularity as learning tools among educators they believed that smartphones had showed them variability as it can be accessed anywhere anytime (Demouy & Kukulska-Hulme, 2010; Kukulska-Hulme, 2012) and smartphones allowed learners to appreciate a modified learning atmosphere (Harley, Winn, Pemberton, & Wilcox, 2007; Hayati, et al., 2013).

Learners like using their smartphones; it helps them in learning materials. They can access target language anywhere and anytime (Chen, Hsieh, & Kinshuk, 2008) which can help them to carry on their learning once the school time is finished (Laurillard, 2007). White and Mills (2011) observe learners' language learning progressive attitudes towards utilizing smartphones. In Second Language Learning (L2) and to develop language skills in L2 such as reading comprehension, researchers around the globe are advocating the use of mobile apps.

Language learning platform WhatsApp

It is investigated that WhatsApp has become the most widely used social-networking platform on computers and mobile phones (Yeboah & Ewur, 2014). These apps can be installed on smartphones such as Blackberry, iPhone, Nokia and Android. These devices help learners share free messages, audio files, and videos through the internet. Through WhatsApp, learners create class room groups where they can communicate easily with each other. The group creator is a manager having options to delete someone or to add someone. Participants receive different alerts of messages from other users. Today most of the instructors give preferences to the usage of WhatsApp in their vocabulary learning assignments to save their time, where students easily submit and receive their assignments (Lauricella & Kay, 2013) by keeping the learners up-to-date in classroom activities (Awada, 2016).

WhatsApp helps the learners to encourage themselves to develop high communicative expectations and to take an active part in learning competencies. (Desai & Graves, 2006; Farmer, 2003; Rambe & Bere, 2013). Other facilitations of WhatsApp is it helps the peers to communicate

with each other (Bouhnik & Deshen, 2014); promotes collaboration between instructors and students (Cifuentes & Lents, 2011). It gives students autonomy and a sense of belonging in the learning community (Doering, Lewis, Veletsianos, & Nichols-Besel, 2008; Sweeny, 2010). Students take their assignments in a more serious way because they know their work in a WhatsApp group is publicly seen (Sweeny, 2010). Undoubtedly, WhatsApp made possibilities for learning improvements (Smit, 2012) and has become an influential tool in vocabulary learning (Andújar-Vaca & Cruz-Martínez, 2017).

Learning Vocabulary through WhatsApp

Most of the studies have explored the use of traditional methods in vocabulary learning and stated positive results (e.g. Alemi & Lari, 2012; Cavus & Ibrahim, 2009; Lu, 2008; Song, 2008; Thornton & Houser, 2001; Zhang, et al., 2011). With the advent of WhatsApp, our social networking behaviours have been revolutionized (Motallebzadeh, Beh-Afarin & Daliry Rad, 2011).

SMS might be moderately costly which is replaced by WhatsApp as it is a free app, and it is quite easy to use (Barhoumi, 2015). A study conducted by Fageeh (2013) investigated the growing influence of WhatsApp on vocabulary acquisition amongst ESL students who completed the progress of first semester at a Saudi university. It was experimental research consisting of an experimental group where the learners established a list of words 3 times in a week by using an app after each class. The Contributors were instructed to use these received words in sentences and define them by using Online Dictionary apps, they were also instructed to share these sentences to their peers for corrections.

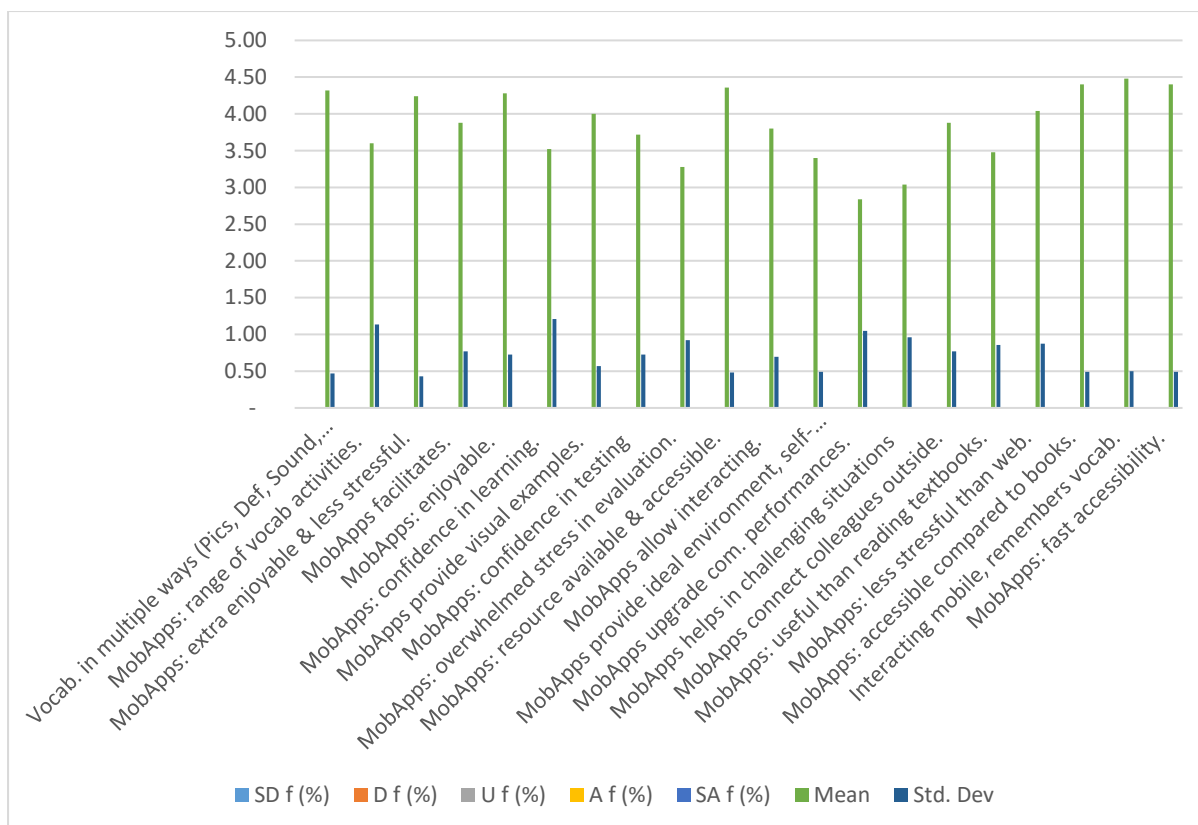
The same word list was handed to the Contributors of the device group. They were qualified to complete the same assignment as a homework assignment to make sentences of those words on a piece of paper. Findings showed an important difference between the control groups and experimental groups. The results showed that students who practiced vocabulary on WhatsApp groups achieved higher scores in vocabulary.

Lawrence conducted a seven-week study in 2014 involving 5 South African students who used WhatsApp. Before reading a text, participants were sent the list of vocabulary items used in the text. While presenting them a target word, the word was explained with the help of translations and various kinds of media such as images or sounds. The findings explored that WhatsApp is an active instrument; as it provided students an opportunity to exercise the vocabulary outside the classroom particularly for weak students. Vocabulary learning through WhatsApp is not a thoroughly explored area. While, a number of researches (Fageeh, 2013; Barhoumi, 2015; Motallebzadeh, Beh-Afarin & Daliry Rad, 2011) address the impact of technology in learning vocabulary, there is still paucity of research where students share their perception of vocabulary learning through technology. The present study filled this gap by providing students an opportunity to narrate their experiences of learning / acquiring vocabulary through mobile apps.

RESEARCH METHODOLOGY

The Quantitative Research paradigm is adopted in this study to explore effects of mobile apps on English vocabulary learning and acquisition. This study also traces the impact of different apps on the confidence, learning performance and class participation of language learners. The population size for this study was 150 students who were enrolled in different programs of English at National University of Modern Languages (NUML), Karachi. The sample was taken non-randomly from the Department of English; BS English Students and Masters English Students. 150 participants were chosen based on the availability of students. All the participants had enough experience of using mobile technology especially mobile apps used for vocabulary learning such as web vocabulary.com.

A questionnaire was adopted to explore the views of participants that consisted of 20 closed items to find out the opinions of the students about using mobile apps. Questionnaire based on Likert five-point scaling system. Data was analyzed through SPSS Program, by checking the frequency of each item and later on the mean deviation of each item was checked.



Graph 1: To find out that how effective are Mobile Applications for learners to enhance their English Vocabulary Learning and Acquisition.

ANALYSIS

Findings of the above graph explored that, there were a total of 150 participants who contributed in this study. To find out the results, frequency test and mean deviation was implemented on each item of the questionnaire. 60-76% Participants agreed that it becomes easier to them to learn vocabulary, when vocabulary is accessible in multiple ways. Pictures, Definition, Sound, Examples, etc (MS=4.3200, SD=.46804). The mobile app helps them in English test/games to build their confidence and overcome stress in the evaluation of the class tests (MS=3.2800, SD=.92046). Instead of carrying books around, the mobile apps are more accessible, thus making their study materials and other resources readily available at all times making them more confident language learners (MS=4.4000, SD=.49154). It is easier for them to learn vocabulary by apps, because of better visual examples (MS=4.0000, SD=.56758). Using a mobile app to test their vocabulary awareness was more enjoyable and less stressful (MS=4.2400, SD=.42851). 30-60 % participants agreed that using an English mobile app enabled them to have a broader range of vocabulary (MS=3.6000, SD=1.1351) it also facilitates them to access extra information about their textbooks (MS=3.8800, SD=.76781). English mobile apps make them more confident in their learning (MS=3.5200, SD=1.2080). By using the mobile apps, it helps them to connect with their colleagues inside and outside of the classroom making it very useful. (MS=3.8800, SD=.76781). Mobile apps are more relaxed and enjoyable as compared to browsing the web (MS=4.0400, SD=.87378). Participants also agreed that while interacting with mobile, it helps them to remember their English vocabulary in a better way (MS=4.4800, SD=.50127).

Whereas, 30-68% of the participants were uncertain whether mobile apps contributed in everyday non-threatening and challenging situations (MS=3.0400, SD=.96154). They were also uncertain whether using mobile apps made them more confident in testing and evaluating the classroom (MS=3.7200, SD=.72464). They were also uncertain whether using mobile apps were more useful rather than reading textbooks (MS=3.4800, SD=.85703). Learners were uncertain whether apps helped them to be extra self-confident throughout their English class. (MS=3.4000, SD=.49154).

However, some participants disagreed that utilizing the English mobile apps upgraded their communication performances (MS=2.8400, SD=1.0496).

DISCUSSION AND CONCLUSION

Exploring the effects of mobile apps on English vocabulary Learning and Acquisition showed that participants were mostly in favour of using mobile apps for their English vocabulary learning. The findings also examined that the majority of the participants agreed that learning vocabulary was easier and better when vocabulary was accessible in multiple ways. Findings also showed that it is easier for the participants to learn vocabulary using apps because apps lend learning additional support by providing visual support. It was also concluded that the majority of the participants agreed that using a mobile app to test their knowledge in vocabulary was extra enjoyable and less stressful. Overall, it was concluded that usage of mobile applications such as WhatsApp, online dictionary apps, vocabulary web, twitter apps for learning process are effective for the learners of English.

REFERENCES

- Alemi, M., & Lari, Z. (2012). The effects of SMS on university students, vocabulary learning. In *The First Conference on Language Learning and Teaching: An Interdisciplinary Approach*, ILT-IA.
- Mashad, Iran. Allen, J. E. (1983). *Techniques in teaching vocabulary*. Oxford: Oxford Press
- Allagui, B. (2014). Writing through WhatsApp: an evaluation of students writing performance. *International Journal of Mobile Learning and Organisation*, 8(3-4), 216- 231. doi:10.1504/IJMLO.2014.067022
- Andujar, A. (2016). Benefits of mobile instant messaging to develop ESL writing. *System*, 62, 63-76. doi.org/10.1016/j.system.2016.07.004
- Andújar-Vaca, A., & Cruz-Martínez, M. (2017). Mobile Instant Messaging: WhatsApp and its Potential to develop oral skills. *Comunicar*, 50(25), 43-52. doi.org/10.3916/C50-2017- 04.
- Awada, G. (2016). Effect of WhatsApp on critique writing proficiency and perceptions toward learning. *Journal of Cogent Education*, 3, 1-25.
- Bada, E., & Okan, Z. (2000). Students' learning preferences. *TESL-EJ*, 4(3). <http://www-writing.berkeley.edu/TESL-EJ/ej15/a1.html>
- Baffour-Awuah, E. (2015). Institutional case-based study on the effect of research methods on project work in the curriculum of mechanical engineering programmes in Ghanaian polytechnics. *Journal of Education and Practice*, 6, 20-32.
- Baker, S. K., Simmons, D. C., & Kameenui, E. J. (1995). *Vocabulary Acquisition: Synthesis of the Research: National Center to Improve the Tools of Educators*, College of Education, University of Oregon.
- Baleghizadeh, S., & Oladrostam, E. (2010). The effect of Mobile Assisted Language Learning (MALL) on grammatical accuracy of EFL students. *MEXTESOL*, 34 (2), pp. 1-10
- Barhoumi, C. (2015). The effectiveness of WhatsApp mobile learning activities guided by activity theory on students' knowledge management. *Contemporary Educational Technology*, 6(3): 221-238.
- Bensalem, E. (2018). The Impact of WhatsApp on EFL Students' Vocabulary Learning (2018). *Arab World English Journal*. 9 (1). Available at SSRN: <https://ssrn.com/abstract=3150707> or <http://dx.doi.org/10.2139/ssrn.3150707>
- Bouhnik, D., & Deshen, M. (2014). WhatsApp goes to School: Mobile instant Messaging between teachers and students. *Journal of Information Technology Education Research*, 13, 217-231.
- Cavus, C., & 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.
- Chat, Lee A., Luan, Ng Lee., & Eng, Ngeh Hoong (2017). Investigating the usage of vocabulary learning strategies among high and low proficiency Malay undergraduates / Lee Ai Chat, Ng Lee Luan and Ngeh Hoong Eng. *International Journal of Modern Languages and Applied Linguistics (IJMAL)*, 1 (1). 86-102. ISSN 2600-7266
- Chen, C. M., & Chung, C. J. (2008). Personalized mobile English vocabulary learning system based on item response theory and learning memory cycle. *Computers & Education*, 51(2), 624-645.

- Chen, N.-S., Hsieh, Sh.-W., & Kinshuk, W. (2008). The effects of short-term memory and content representation type on mobile language learning. *Journal of Learning and Technology*, 12, 93-113.
- Chen, C. M., & Hsu, S. H. (2008). Personalized intelligent m-learning system for supporting effective English learning. *Educational Technology & Society*, 11(3), 153-180.
- Clarke, B., & Svanaes, S. (2015). Updated review of the global use of mobile technology in education. Techknowledge for Schools. Retrieved from <https://www.kidsand youth.com/pdf/T4S%20FK%26Y%20Literature%20Review%202011.12.15.pdf>
- Coady, J. (1997). L2 vocabulary acquisition through extensive reading. In J. Coady, and T. Huckin (Eds.), *Second Language Vocabulary Acquisition: A Rationale Pedagogy*, 225-237. Cambridge: Cambridge University Press.
- Cifuentes, O. E., & Lents, N. H. (2011). Increasing student-teacher interactions at an urban commuter campus through instant messaging and online office hours. *Electronic Journal of Science Education*, 14(1), 1-13.
- Church, K., & de Oliveira, R. (2013). What's up with WhatsApp? Comparing mobile instant messaging behaviors with traditional SMS. In *Proceedings of the 15th international conference on Human-computer interaction with mobile devices and services*, (pp. 352- 361).
- Demouy, V., & Kukulska-Hulme, A. (2010). On the spot: using mobile devices for listening and speaking practice on a French language programme. *Open Learning*, 25(3), 217- 232.
- Desai, C.M., & Graves, S.J. (2006). Instruction via instant messaging reference: What's happening? *The Electronic Library*, 24(2), 174-189. doi.org/10.1108/02640470610660369
- Doering, A., Lewis, C., Veletsianos, G., & Nichols-Besel, K. (2008). Preservice teachers perceptions of instant messaging in two educational contexts. *Journal of Computing in Teacher Education*, 25, 45-52.
- Ducate, L., Lomicka, L. (2009). Podcasting: an effective tool for honing language students' pronunciation? *Language Learning & Technology*, 13, 66-86.
- Edirisingha, P., Rizzi, C., Nie, M., & Rothwell, L. (2007). Podcasting to provide teaching and learning support for an undergraduate module on English language and communication. *Turkish Online Journal of Distance Education*, 8(3), 87-107.
- Entwistle, N. J., & Ramsden, P. (1983). *Understanding Student Learning*. London: Croom Helm.
- Fageeh, A. (2013). Effects of MALL applications on vocabulary acquisition and motivation. *Arab World English Journal*, 4(4), 420-447.
- Farmer, R. (2003). Instant messaging: collaborative tool or educator's nightmare? In *Proceedings of the North Atlantic Web Learning Conference, NAWeb-2003*, Fredericton, New Brunswick.
- George, G. (2014). Incidental vocabulary learning in reading contexts aided by mobile phones. In *Emerging modes and approaches in open and flexible education*, Li, K.C., & Yuen, K.S. (Eds). Hong Kong : Open University of Hong Kong Press, 224-232.
- Gu, P. Y. (2003). Vocabulary learning in a second language: person, task, context and strategies. *TESL-EJ*, 7(2). <http://www.writing.berkeley.edu/TESL-EJ/ej26/a4.html1>
- Han, T., & Keskin, F. (2016). Using a mobile application (WhatsApp) to reduce EFL speaking anxiety. *GIST Education and Learning Research Journal*, 12, 29-50.
- Harley, D., Winn, S., Pemberton, S., & Wilcox, P. (2007). Using texting to support students' transition to university. *Innovations in Education and Teaching International*, 44(3), 229-241.
- Hayati, A., Jalilifar, A., & Mashhadi, A. (2013). Using Short Message Service (SMS) to teach English idioms to EFL students. *British Journal of Educational Technology*, 44, 66-81.
- Hoven, D. & Palalas, A. (2011). (Re) Conceptualizing Design Approaches for Mobile Language Learning. *CALICO Journal*, 28(3), 699-720.
- Huang, C., & P. Sun. (2010). Using mobile technologies to support mobile multimedia English listening exercises in daily life. In: *The International Conference on Computer and Network Technologies in Education (CNTE 2010)*.
- Karpisek, F., Baggili, I., & Breitinger, F. (2015). WhatsApp network forensics: decrypting and Understanding the WhatsApp call signaling messages. *Digital Invest*, 15,110-118

- Keller, J. M. (1987). The systematic process of motivational design. *Performance & Instruction*, November/December, 1–8.
- Keyes, C., Shroff, R. H., & Chow, E. (2016). Pedagogical foundations of a mobile application for language acquisition. *Ubiquitous Learning: An International Journal*, 9 (2), 1. Retrieved from https://repository.hkbu.edu.hk/ulip_ja/3/
- Kim, D. Rueckert, D, Kim, D.J, & Seo, D. (2013). Students' perceptions and experiences of mobile learning. *Language Learning & Technology*, 17(3), 52-73
- Koren, S. (1999). Vocabulary instruction through hypertext: are there advantages over conventional methods of teaching? *Teaching English as a Second or Foreign Language*, 4(1), 1–18.
- Krashen, S. (1982). Principles and practice in second language acquisition. Oxford, NY: Pergamon.
- Krashen, S. D. (1989). We acquire vocabulary and spelling by reading: additional evidence for the input hypothesis. *Modern Language Journal*, 73(4), 440–462.
- Lauricella, S., & Kay, R. (2013). Exploring the use of text and instant messaging in higher education classrooms. *Research in Learning Technology*, 21
- Laurillard, D. (2007). Pedagogical forms for mobile learning: Framing research questions. In N. Pachler (Ed.), *Mobile learning: Towards a research agenda*, 1, 153-175. London: WLE Centre for Excellence, Institute of Education.
- Lawrence, D. (2014). Students' experiences of using SMS for vocabulary development: A case study. *Conference proceedings of ICT for language learning*, (pp.310-314).
- Levy, M., & Kennedy, C. (2005). Learning Italian via mobile SMS. In A. Kukulska-Hulme & J. Traxler (Eds.), *Mobile Learning: A Handbook for Educators and Trainers*. London: Taylor and Francis.
- Liu, D. 2004. EFL Proficiency, Gender And Language Learning Strategy Use Among A Group of Chinese Technological Institute English Majors. *ARECLS e-Journal*. 1.
- Liu, 2004, Uso- Juan, 2006 Usó-Juan, E. & Martínez-Flor, A. (2006). Approaches to language learning and teaching: Towards acquiring communicative competence through the four skills. In E. Usó-Juan & A. Martínez-Flor (Ed.), *Current Trends in the Development and Teaching of the four Language Skills* (pp. 3-28). Berlin, New York: De Gruyter Mouton.
- Lu, M. (2008). Effectiveness of vocabulary learning via mobile phone. *Journal of Computer Assisted Learning*, 24 (6), 515-525.
- Magno, C. 2010. Korean Students' Language Learning Strategies and Years of Studying English as Predictors of Proficiency in English. *TESOL Journal*. 2: 39–61.
- Mahmoud, S. (2013). The effect of using English SMS on KAU foundation year students' speaking and writing performance. *American International Journal of Social Science*, 2(2), 13-22.
- Melka, F. (1997). Receptive versus productive vocabulary: a survey. In N. Schmitt and M. McCarthy (Eds.), *Vocabulary: description, acquisition and pedagogy*, 2–34. Cambridge: Cambridge University Press.
- Meschyan, G., & Hernandez., A. 2002. Is Native-Language Decoding Skill Related To Second-Language Learning? *Journal of Educational Psychology*. 94 (1): 14.
- McCarthy, M. (1990). *Vocabulary*. Oxford: Oxford University Press. Motalebzadeh, K., Beh-Afarin, R., & Daliry Rad, S. (2011). The Effect of Short Message Service on the Retention of Collocations among Iranian Lower Intermediate EFL Learners. *Theory and Practice in Language Studies*, 1 (11), 1514-1520.
- Nagy, W. E., & Herman, P. A. (1987). Breath and depth of vocabulary knowledge: implications for acquisition and instruction. In M. McKeown and M. Curtis (Eds.), *The Nature of Vocabulary Acquisition*, 19–35.
- Hillsdale, N J: Erlbaum. Nouri, J., & Pargman, T. C. (2016, September). When teaching practices meet tablets' affordances. Insights on the materiality of learning. In *European Conference on Technology Enhanced Learning* (pp. 179-192). Springer, Cham.
- Paivio, A. (1991). Dual coding theory: Retrospect and current status. *Canadian Journal of Psychology*, 45(3), 255–287.
- Pęcherzewska, A., & Knot, S. (2007) Review of existing EU projects dedicated to dyslexia, gaming in education and m-learning. *WR08 Report to CallDysc project*. June 2007. Retrieved from <http://www.docstoc.com/docs/40115316/WR08-Existing-EU-Projectsreview>.

- Persson, V., & Nouri, J. (2018). A Systematic Review of Second Language Learning with Mobile Technologies. *International Journal of Emerging Technologies In Learning (Ijet)*, 13(02), 188.
- Plana, M. G.-C., Gimeno, A., & Appel, C. (2013). Improving learners' reading skills through instant short messages: A sample study using WhatsApp. *Paper presented at the Global perspectives on Computer-Assisted Language Learning, Glasgow*.
- Prensky, M. (2005). What can you learn from a cell phone? Almost anything! *Innovate* 1(5). <http://www.innovateonline.info/index.php?view=article&id=83>
- Rambe, P., & Chipunza, C. (2013). Using mobile devices to leverage student access to collaboratively-generated resources: A case of WhatsApp instant messaging at a South African University. In *International Conference on Advanced Information and Communication Technology for Education*. Amsterdam: Atlantis Press.
- Rezaei, A., Mai, N., & Pesaranghader, A. (2014). The effect of mobile applications on English vocabulary acquisition. *Journal Teknologi*, 68 (2), 73-83.
- Sadiq, R. B., Cavus, N., & Ibrahim, D. (2019). Mobile application based on CCI standards to help children learn English as a foreign language. *Interactive Learning Environments*, 1-16. <https://doi.org/10.1080/10494820.2019.1579239>
- Sharples, M., Taylor, J., & Vavoula, G. (2007). A theory for the mobile age. In R. Andrews & C. Haythronwaite (Eds.), *The Sage handbook of E-learning research* (pp. 221-247). London, England: Sage.
- Smit, I. (2012). WhatsApp with BlackBerry; Can Messengers (BBM) be MXit? In *Proceedings of the 14th Annual Conference on World Wide Web Applications*. Cape Peninsula University of Technology, Cape Town, South Africa.
- Smith, G. G., Li, M., Drobisz, J., Park, H. R., Kim, D., & Smith, S. D. (2013). Play games or study? Computer games in eBooks to learn English vocabulary. *Computers & Education*, 69, 274-286.
- Stockwell, G. (2010). Using mobile phones for vocabulary activities: Examining the effect of the platform. *Language Learning & Technology*, 14(2), 95-110. <http://llt.msu.edu/vol14num2/stockwell.pdf>
- Sweeny, S. M. (2010). Writing for the instant messaging and text messaging generation: Using new literacies to support writing instruction. *Journal of Adolescent & Adult Literacy*, 54(2), 121-130.
- Thornton, P., & Houser, C. (2001). Learning on the Move: Vocabulary Study via Email and Mobile Phone SMS. In C. Montgomerie & J. Viteli (Eds.), *Proceedings of World Conference on Educational Multimedia, Hypermedia and Telecommunications, 2001* (pp. 1896-1897). Chesapeake, VA: AACE.
- Thornton, P., & Houser, C. (2005). Using mobile phones in English education in Japan. *Journal of Computer Assisted Learning*, 21, 217-228.
- White, J., & Mills, D. J. (2011). Get Smart! Smartphones in the Japanese classroom. *JALT Conference Proceedings - JALT2011*, (pp.328-337).
- Yeboah, J., & Ewur, G. (2014). The Impact of WhatsApp Messenger Usage on Students Performance in Tertiary Institutions in Ghana. *Journal of Education and Practice*, 5(6), 157-164.
- Zhang, H., Song, W., Burston, J. (2011). Reexamining the effectiveness of vocabulary learning via mobile phones. *TOJET: The Turkish Online Journal of Educational Technology*, 10 (3), 203-214.
- Zou, B., & Li, J. (2015). Exploring mobile apps for English language teaching and learning. In F. Helm, L. Bradley, M. Guarda, & S. Thouësny (Eds.), *Critical CALL – Proceedings of the 2015 EUROCALL Conference*, Padova, Italy (pp. 564-568).
- Zull, J. E. (1998). The brain, the body, learning, and teaching. *National Teaching and Learning Forum*, 7(3), 1-5.