FOSTERING AUTONOMOUS LEARNERS OF VOCABULARY ACQUISITION USING CONTENT-BASED ICT METHODS

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ABSTRACT

Purpose: This paper investigated that (1) the effective use of content-based ICT methods of vocabulary acquisition through reading activities, and (2) the encouragement of learner's vocabulary building up autonomous learning. A considerable number of studies have been conducted on vocabulary acquisition in the EFL field in Japan, and researchers advocate vocabulary knowledge is the most important factor contributing to reading comprehension, yet, a firm effective pedagogy has not been established. In fact, university students encounter difficulties in reading comprehension because of their deficiencies in vocabulary knowledge during English reading class.

Methodology: The free applications, Quizlet and Kahoot!, were adopted to incorporate language-focused learning while adding some gamification aspects to aid in vocabulary acquisition. The experiment was conducted in a Japanese undergraduate first-year reading class over an 11-week period. Quizlet was used for vocabulary learning prior to the reading class. Students were given multiple-choice vocabulary Cloze tests of new words from the textbook using Kahoot!, a free game-based educational platform.

Main Findings: The results of this study indicated that content-based vocabulary instruction using ICT is effective and improves learner's academic performance in vocabulary acquisition. Moreover, questionnaires were thoroughly reviewed and uncovered that students felt they developed more autonomy and this enhanced their motivation for vocabulary learning.

Implications: In view of this study, ICT methods closely related to reading contexts and a variety of applications for vocabulary acquisition and improvement of reading performance should be introduced in EFL classrooms.

Originality: This study was conducted in a Japanese undergraduate first-year reading class by author researcher.

Keywords: vocabulary acquisition; autonomous learners; content-based; APPs; ICT.

INTRODUCTION

Vocabulary is a base of language knowledge and plays an important role in the development of the four skills of reading, writing, listening, and speaking (Nation, 2001, SULVA, 2015). Increasing the number of vocabulary known and further developing the knowledge of each word is one of the significant skills EFL students need (Yoshida, 2002). Albeit, vocabulary had been neglected recently as an aspect of language teaching and learning (Meara, 1980).

With the rapid development of ICT, a variety of vocabulary learning programs are available nowadays (SULVA, 2015).Also, in Japan, the ownership rate of mobile phones of students expected to graduate in 2017 exceeds 97.4% (Mynavi, 2016) and mobile phones have also become one of their learning tools (Zengning, 2011).What helps is applications, called APPs, that can be easily downloaded to mobile phones, tablets, or personal computers. Both the iPhone and the android user can freely download attractive educational applications.

In this research, the authors clarify how content-based vocabulary learning using applications accessible from mobile phones increases reading performance, motivation and autonomous learning effects.

LITERATURE REVIEW

1. Vocabulary learning

In teaching and learning L2 vocabulary there are two types of vocabulary learning: incidental learning and intentional learning. Incidental learning is the process of learning something without the intention of doing so (Brown, Waring, &Donkaewbua, 2008). Krashen (1989) highlighted that incidental vocabulary learning, or "acquisition," achieves better results than intentional vocabulary learning because intentional vocabulary study is not affected by the acquisition of linguistic knowledge. On the other hand, Nation (2001) presents intentional learning, such as learning from vocabulary notebooks, word lists, word cards as an effective way to acquire second language vocabulary. Elgort (2010) concluded that deliberate decontextualized learning is not only efficient and convenient but also a very effective method of L2 vocabulary acquisition.

Vocabulary development from reading activities follows complicated procedures. First, there are individual differences of meta-linguistic knowledge and noticing of particular word forms. Also, the learner has to pay attention to the connections between new lexical forms and their meanings and incorporate the new lexical information into their developing L2

knowledge. In a way, these processes are inefficient and time-consuming in enriching vocabulary acquisition. In reading comprehension, previous research estimated that learners need to know 3,000-word families to get about the 95% coverage of words to read texts (Laufer, 1992). Recently, Nation (2006) mentioned that vocabulary required to read authentic texts is more than has been previously thought, i.e., 8,000–9,000-word families to get the 98-99% coverage of the words necessary for comprehensible input in reading comprehension.

2. Gamification and autonomous learners

2.1. ICT in classrooms

Computer-assisted vocabulary learning has many remarkable advantages compared with other kinds of learning (Nation, 2013). In addition, mobile phones are considered as one of the new promising gadgets for helping learners in effectively acquiring knowledge. The advent of Mobile Assisted Language Learning (MALL) has drastically changed instruction in the ESL/EFL field (Chickering and Ehrmann,1996; Chinnery, 2006). Using MALL, language learning is free from time and place constraints, and mobile phones offer opportunities where students can learn a language anywhere and anytime. The mobile phones released recently are as good as a mini PC, and some even surpass laptop computers in their specifications. Suwantarathip and Orawiwatnakul (2015) conducted experiments to examine the effects of mobile-assisted vocabulary exercises on vocabulary acquisition of first-year students. These researchers underline mobile assisted vocabulary exercises had a significant effect on the vocabulary ability of the students (Suwantarathip, & Orawiwatnakul, 2015).

2.2. Gamification and motivation

Gamification as named by Werbach and Hunter (2012) means the use of game elements, such as rewards, points, or leader boards in non-game activities in education, health, or business fields (Kapp, 2012). Kahoot! Would be categorized as a game-like application where each question can have an associated picture or video, and two to four multiple choice answers for it (Kahoot!, 2017). Quizlet, a very popular free flashcard application, can be categorized as a gamification application for its several study modes; Learn, Flashcards, Write, Spell, Test, Match, and Gravity many of which offer games that students can play by themselves. Game-based learning improves motivation, engagement, enjoyment, and concentration, but it does not seem to significantly improve learning (Alf Inge, Meng, and Rune, 2015).

Self-determination Theory (SDT) developed by Edward L. Deci and Richard M. Ryan is the empirically derived theory of motivation and is based on the presumption that human behavior is motivated by three core psychological aspects; autonomy, competence, and relatedness. Intrinsic motivation is defined as performing an action or behavior that learners feel is enjoyable and satisfying (Ryan&Deci, 2000). Yoshida (2002) states, there is a deep relationship between intrinsic motivation and autonomous learning. In addition, activities which do not need interaction between teachers and learners, such as a repetitive practice or memorizing vocabulary are well suited for autonomous learning. An effective English vocabulary acquisition process is created by considering the contextual, phonetic, syntactic and semantic aspects of the vocabulary, then, making the best use of the advantages of ICT. In other words, ICT is quite compatible and useful for improving autonomous learning (Yoshida, 2002).

Game-based vocabulary learning makes students become motivated, self- directed learners who seemed to enjoy receiving immediate and relevant feedback, earning points and status levels, and engaging independent learning (Abrams, & Walsh, 2014). Although research results show game-based vocabulary learning is highly effective, unfortunately, there are few studies that have specifically questioned what kind of application combination is effective. Also, how does vocabulary learning using multiple applications affect learners? The authors focused on these points.

RESEARCH QUESTIONS

This study was conducted in order to describe the effective use of content-based and game-based methods of vocabulary acquisition through reading activities and clarify how a gamified learning approach combined with a language learner's motivations and engagement influence achievement in the EFL class, in addition, how it helps establish autonomous learning.

The research questions for this study were:

1. Are the content-based and game-based methods of vocabulary acquisition through reading activities effective? Furthermore, do these methods, improve language learner's vocabulary knowledge?

2. Do these game-based methods of vocabulary acquisition promote learner autonomy?

3. What are university freshmen's perceptions and attitudes towards game-based English learning software?

4. What are university freshmen's perceptions and attitudes towards game-based English learning MALL?

5. What implications do these methods have in EFL classrooms?

METHODOLOGY

This study used the App, Quizlet to pre-teach important vocabulary in the lesson before class and to review the vocabulary outside of class and used the App, Kahoot!, to assess the student's understanding of the vocabulary in the class.

Participants and Material

28 freshmen studying at a national university of education whose major is not English, participated in this study. This class was aimed at acquiring reading skills. Longman Academic Reading Series 2 was used as the textbook which features readings based on academic sources and with particular attention to acquiring vocabulary. Various strategies are introduced, such as "Guessing from Context," "Word Forms,"" Synonyms," and" Suffixes." One unit is divided into three reading sections where each section introduces about 10 new words.

Quizlet, an online vocabulary study tool, was introduced to encourage vocabulary acquisition. Quizlet incorporates many study modes, such as Learn, Flashcards, Write, Spell, Test, Match, and Gravity. Students must prepare before class by at least doing Flashcards. The students were instructed to finish all the remaining study modes on Quizlet as homework if they had not already. The teacher monitored the progress of their learning.

Kahoot! is a very popular free game-based educational platform that was used for multiple-choice vocabulary Cloze tests of new words from the textbook. The multiple-choice questions consisted of new vocabulary in the section or important words from the reading content in that section. In addition, the questions were created without referring to the reading content, but by referring to example sentences from an English to English dictionary (Cambridge Advanced Learner's dictionary, 4th edition), an English learning site "Weblio," or some English to Japanese dictionaries. The quiz results were downloaded as an Excel file which included personal achievements, the correct answer rate for each question, and the response time to answer the question. The data was also analyzed to discern how much students understood the different parts of speech, and which parts they had lots of trouble with.

At the end of the semester, a questionnaire was conducted using the five-point Likert scale to investigate students' motivations on studying with Quizlet and Kahoot!.

This experiment was carried out from April to July in 2017. During the semester, mid-term tests and a final test were conducted to compare student performance. These tests consisted of reading comprehension quizzes (60%) and vocabulary quizzes (40%). The collected data was analyzed with IBM SPSS software including conducting a t-test.

DATA ANALYSIS

1. Tests results

The result shows that a statistically significant difference was seen on the t-test between the mid-term test and the final test for vocabulary (t=6.60, df=26, p<.05) (see table 1). The vocabulary section accounted for 40% of the test while the other 60% was a reading section. The total score also showed a significant difference in the overall test performance (t=2.97, df=26, p<.05) (see Table 2). These t-test results suggest that vocabulary learning using gamification such as Kahoot! And Quizlet helps one to acquire vocabulary knowledge more effectively. These applications were excellent tools programmed and designed to aid vocabulary acquisition. These two applications exerted direct influence on vocabulary learning and some influence on reading skills.

Table 1

Descriptive statistics for the results of vocabulary section

	N	Minumum(score)	Maximum (score)	Mean	Std. Deviation
Mid-Term Test (v)	27	13	39	24.11	5.879
Final Test (v)	27	22	39	32.26	5.035

Note. (v) vocabulary

Table 2

Descriptive statistics for the results of total test score

	N	Minumum(score)	Maximum (score)	Mean	Std. Deviation
Mid-Term Test (t)	27	52	97	72.15	10.056
Final Test (t)	27	58	92	79.56	8.855

Note. (t) total score

The CEFR level of the vocabulary that was tested in the word tests using Kahoot! had the following proportion of words from the following CEFR levels. Level A1 = 1%, A2 = 1%, B1 = 19%, B2 = 23%, C1 = 19%, C2 = 12%, vocabulary not in the CEFR was 25%. The proportion of words by part of speech, with adjectives 44%, adverbs 2%, nouns 27%, verbs 22%, phrasal verbs 4% and phrases 1%. Figure 1 summarizes the correct answer rate for each part of speech with nouns 82.4%, verbs 76.8%, adjectives 75.8%, but since the tested number of adverbs (2 words), phrasal verbs (5 words), and phrases (1 word) were quite small, these parts of speech are excluded from the results.

Ellis & Beaton (1993) summarize the linguistic, psychological factors affecting foreign language vocabulary learning. Their experiment revealed that learning is slow for words that are hard to pronounce and learning nouns is easier than learning verbs since it is easier to make an image of nouns. In addition to Ellis & Beaton's (1993) points, Laufer (1997) also says that "orthography", "length ", "morpheme", "synformy-similarity of lexical forms", "semantic features of the word, such as abstractness, specificity and register restriction and idiomaticity" also influence learning difficulty. Nouns seem to be the easiest; adverbs, the most difficult; verbs and adjectives are somewhere in between (Laufer, 1997). Our data supports Laufer, but the sample size is small, so more research still needs to be conducted.
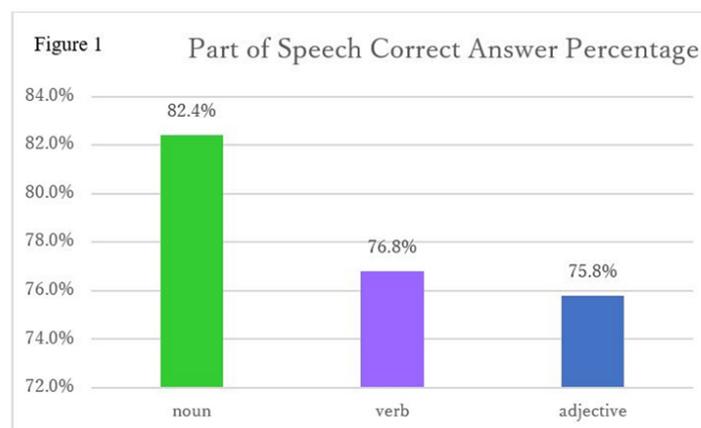

Fig 1. *Part of Speech Correct Answer Percentage.*

2. Questionnaire results

2.1 Quizlet

The questionnaire was administered at the end of the term to investigate EFL learners' attitudes toward Quizlet and Kahoot!, how students' motivation developed, and how much students were autonomous. The authors-designed questionnaire consisted of five Likert-scale items (1. strongly agree, 2. agree, 3. neutral, 4. disagree, 5. strongly disagree) and two questions asking the order of enjoyment of their Quizlet learning activity, and four items to be written in free form.

Question 1 asked, what they did Quizlet on, 70% of the 28 students answered from a personal computer and 30% from a mobile phone. This seems to be caused by the fact that "gravity" cannot be accessed from a mobile phone and can only be accessed from a personal computer.

Question 2 asked, where you mainly worked on Quizlet, with 35% saying in their house, 42% at university, and 23% answered on the train (while commuting). At a university is attributable to the free use of computers in the library available for students.

Figure 2 shows the result of question 3, how much Quizlet motivated them to study vocabulary. 30% said they strongly agree it does, 63% said they agree it does, and only 7% were neutral about it. No students gave any negative evaluation (disagree or strongly disagree).
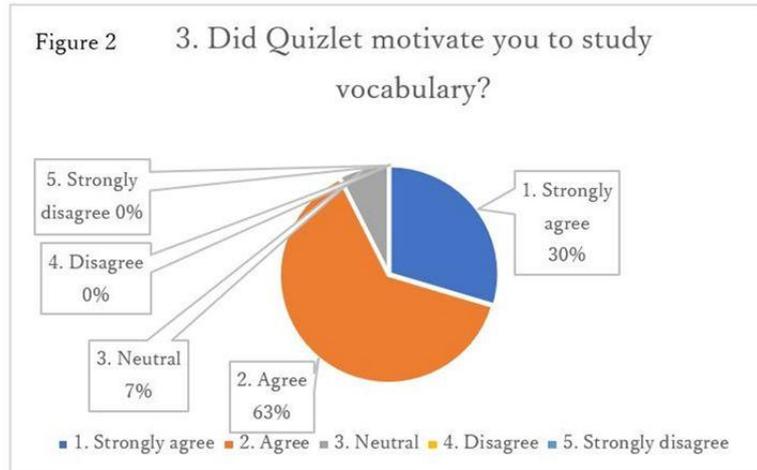
Fig 2. *The results of question 3: How much Quizlet motivated them to study vocabulary.*

The EFL learners were asked what they enjoyed the most and the second most of the 6 activities. The most popular activity was Gravity (as first choice 12 students, as second choice 6 students) and the second most popular was Scatter (as first choice 9 students, as second choice 7 students). On the other hand, the most useful for test preparation was Flash Cards in the first place (as first choice 10 students, as second choice 8 students) with Learn in second place (as first choice 10 students, as second choice 8 students). The results indicate that gaming activities such as gravity and scatter are popular among Japanese EFL university students.

Question 5 about study time using Quizlet had 11% with about 30 minutes, 57% with an hour, 3% with an hour and 30 minutes and 29% with 2 hours.

The last question about Quizlet was how much Quizlet encouraged autonomous learning where 29% of respondents said that they strongly agree, 53% said that they agree, 18% were neutral, and none disagreed or strongly disagreed (Figure 3).

The results show that the EFL students in this class think that Quizlet encourages autonomous learning of vocabulary.
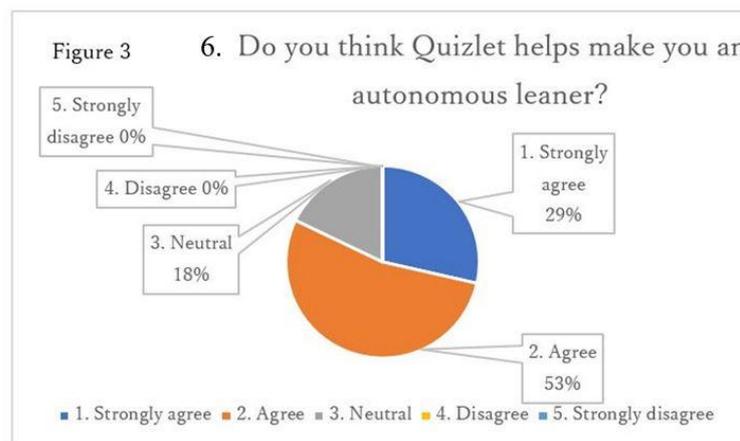

Fig 3. *The results of question 6: How much Quizlet encouraged autonomous learning.*

2.2 Kahoot!

From the questionnaire on Kahoot!, the first question was, how fun the Kahoot! Vocabulary tests were. 60% of the learners answered it was very enjoyable, 30% said enjoyable, 10% said it was so-so, and none said it was not enjoyable or no fun at all.

Kahoot! Provides students who participated in the activity awards or points bringing competition among the students. Question 2 asked whether you wanted to be number one in Kahoot!. 50% responded they strongly agree, 36% agreed, 11% were neutral, 3% disagreed, and no one strongly disagreed. (Figure 4)
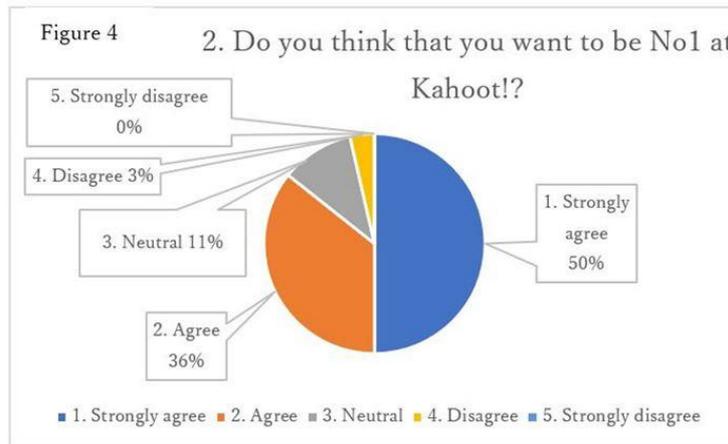
Fig 4. *The results of question 2: Whether you wanted to be number one in Kahoot!.*

Question 3 asked the students, whether Kahoot! Motivated them to study vocabulary. Figure 5 shows that those who strongly agreed were 53%, agree were 36%, neutral was 7%, disagree 4%, and strongly disagree were none. Kahoot!'s Team Mode was designed for collaboration, teamwork, acquiring leadership skills and good communication (Kahoot! 2017). Question 4 asked which mode students liked the best, individual mode or team mode. These results were 79% liked classic (individual) mode while on the other hand, 21% preferred team mode.

During Kahoot!'s activity, light and the enjoyable music were playing, so the students were asked how they feel this music raised their motivation for learning. The results of question 5 were strongly agree14%, agree 50%, neutral29%, disagree 3%, and strongly disagree was 4%. Nearly 60% of the students answered that their motivation rose with the music.
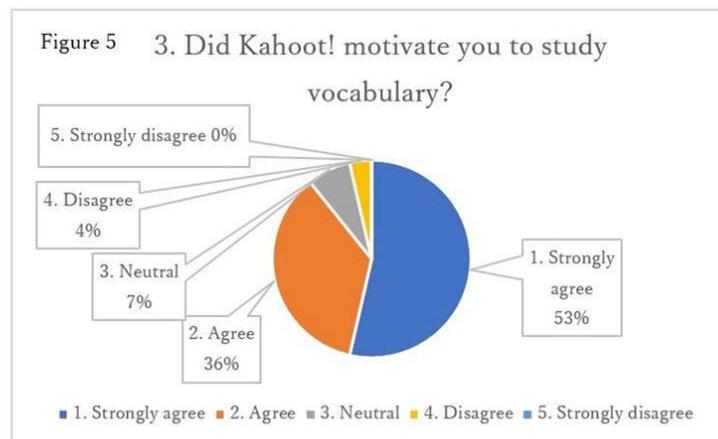

Fig 5. *The results of question 3: Whether Kahoot! motivated them to study vocabulary.*

Finally, students were asked which they prefer the Kahoot! Based vocabulary tests or traditional paper-based ones, 86% responded that the word tests on Kahoot! were the best. (Figure 6).

DISCUSSION

The authors presented four research questions. Firstly, whether content-based and game-based methods of vocabulary acquisition through reading activities are effective or not. Nation (2001) and Elgort (2010) say deliberate decontextualized vocabulary learning is effective. The results of our experiments also confirmed that their argument was correct. Alf Inge, Meng, and Rune (2015) reported that game-based learning does not seem to significantly improve learning, however, our study indicated a very high learning effect. Secondly, this research tried to find out if these game-based methods of vocabulary acquisition promoted learner autonomy. Yoshida (2002) stressed that vocabulary learning using ICT fostered autonomous learning, the authors clearly proved it by tracking learner's progress on Quizlet. Third and fourthly, the authors carried out a questionnaire survey to research what are university freshmen's perceptions and attitudes towards game-based English learning software and MALL. The questionnaire results brought to light that students favorably felt vocabulary learning using Quizlet and Kahoot, two applications, or software, was beneficial rather than tedious. Also, as is clear from the questionnaire results, in Kahoot, the students's desire to become the best student has led to a further motivation rise. Finally, the authors mentioned the implications using these methods in EFL classrooms. The

questionnaire survey showed students preferred Kahoot! vocabulary tests rather than a conventional paper-based test. This means that Millennials will choose their new way of acquiring vocabulary getting rid of old paper-based learning, so facilitators should acquire IT skills.
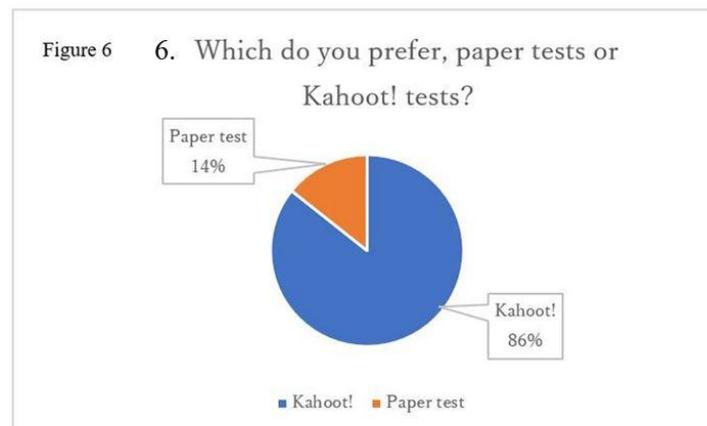

Fig 6. *The results of question 6: Which they prefer the paper tests or Kahoot! test.*

CONCLUSION

This study tried to uncover the effective use of content-based ICT methods of vocabulary acquisition in a reading class and to encourage building up vocabulary autonomously. Compared to the mid-term test results, their vocabulary progress on the final test proved that this game and content-based, de-contextualized vocabulary learning method was successful. Regarding gamification methods, the best game-based learning program is the game which draws on intrinsic motivation and gives rewards and positive feedback. From these points of view, games-based learning, such as Quizlet and Kahoot! was very advantageous.

From the students' progress in Quizlet, we could see that students autonomously learned vocabulary while doing other activities. Facilitators encouraged learners to preview only the flashcards before their class, but surprisingly, most students completed all activities one week before the deadline. The questionnaire clearly showed that the students thought that Quizlet was effective from both a "fun" and "study" aspect.

Based on these findings, the researchers strongly support the use of Quizlet and Kahoot! to learn vocabulary in the EFL classroom. Facilitators should be aware of the advantages of using game-based content and other internet-based learning possibilities.

LIMITATIONS

ICT technology is indispensable in the English classroom for digital natives. Kahoot! Brings some of this wonderful technology into the classroom but it also brings in limitations at the same time. Kahoot! Collecting data via Wi-Fi means the instability of the Wi-Fi environment can hamper the correct measurement of student vocabulary skills and reaction times. Kahoot! Also limits our assessment in that the top five competitors who can answer the quickest get more points, but the mobile phone technology can influence their ranking. In some cases, the latest model mobile phones have better technology that may be the reason for the differences in reaction time. Kahoot! as a multiple-choice vocabulary Cloze test gave the students at least a 25% chance of getting the correct answer without any vocabulary knowledge being tested. Therefore, we cannot say with a lot of surety that the EFL learner is at the top of the list only because of their excellence in vocabulary acquisition.

This experimental action research study was also limited by its small sample size (n=27) and the shortness of the experimental period. As an orientation, midterm, and the final test were conducted during the experimental period, the experimental period was only 11 weeks (one lesson a week), so more research needs to be done to see long-term results. Students' self-efficacy was not assessed, so the mental impacts of gamification on vocabulary learning was not able to be analyzed in this study.

Considering all these aspects, vocabulary learning using MALL should be incorporated into the EFL classroom. Additionally, further research with greater numbers of participants is necessary to confirm the effectiveness of vocabulary learning using MALL.

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REFERENCES

1. Abrams, S. S., & Walsh, S. (2014). Gamified vocabulary. *Journal of Adolescent & Adult Literacy*, *58*(1), 49-58.

2. Alf, I.W, Meng, Z& Rune, S. (2016).The effect of digitizing and gamifying quizzing in classrooms. *Norwegian University of Science and Technology,*729-737. Trondheim, Norway

3. Brown, R., Waring, R., &Donkaewbua, S. (2008). Incidental vocabulary acquisition from reading, reading-while-listening, and listening to stories. *Reading in a foreign language*, *20*(2), 136-163.

4. Chickering, A. W., &Ehrmann, S. C. (1996). Implementing the seven principles: Technology as lever. *AAHE Bulletin,49*, 3-6.

5. Chinnery, G. M. (2006). Emerging technologies. Going to the mall: mobile assisted language learning. *Language Learning & Technology, 10(1),* 9-16.

6. Elgort, I. (2010). Deliberate Learning and Vocabulary Acquisition in a Second Language. *Language Learning, 61(2),* 367-413. doi:10.1111/j.1467-9922.2010.00613.x

7. Ellis, N. C. & Beaton, A. (1993). Psycholinguistic determinants of foreign language vocabulary learning*, Language Learning 43-4,* 559-617. https://doi.org/10.1111/j.1467-1770.1993.tb00627.x

8. Kahoot! (2017). *Kahoot! Is one of the world's fastest growing learning brands*. Retrieved September 24, 2017, from https://getkahoot.com/

9. Kapp, K. M. (2012). *The gamification of learning and instruction game-based methods and strategies for training and education*. San Francisco: Pfeiffer.

10. Krashen, S. (1989). We Acquire Vocabulary and Spelling by Reading: Additional Evidence for the Input Hypothesis. *The Modern Language Journal, 73(4)*, 440-464. doi:10.1111/j.1540-4781.1989.tb05325.x

11. Laufer, B. (1992). *How much lexis is necessary for reading comprehension?*In P. J. L. Arnaud & H. B´ejoint (Eds.), Vocabulary and applied linguistics (pp. 126–132). London: Macmillan. https://doi.org/10.1007/978-1-349-12396-4_12

12. Laufer, B. (1997).*What's in a word that makes it hard or easy: Some intralexical factors that affect the Learning of words*, In Schmitt, N. & McCarthy, M. (Eds.) Vocabulary: Description, acquisition and pedagogy, Cambridge: Cambridge University Press, 140-155.

13. Mynavi(2016). *News Release.*Retrieved September 24, 2017 from https://www.mynavi.jp/news/2016/02/post_10835.html

14. Meara, P. (1980). Vocabulary Acquisition: A Neglected Aspect of Language Learning. *Language Teaching, 13(3-4),* 221. doi:10.1017/s0261444800008879

15. Nation, I.S.P. (2001). *Learning Vocabulary in Another Language.*Cambridge: Cambridge University Press. https://doi.org/10.1017/CBO9781139524759

16. Nation, I.S.P. (2006). How large a vocabulary is needed for reading and listening? *Canadian Modern Language Review 63, 1*: 59-82. https://doi.org/10.3138/cmlr.63.1.59

17. Nation, I. (2013). *Learning Vocabulary in Another Language (2nd ed.)*. New York: Cambridge University Press. https://doi.org/10.1017/CBO9781139858656

18. Ryan, R. M., &Deci, E. L. (2000). Intrinsic and Extrinsic Motivations: Classic Definitions and New Directions. *Contemporary Educational Psychology, 25(1),* 54-67. doi:10.1006/ceps.1999.1020

19. 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

20. Werbach, K., & Hunter, D. (2012). *For the win: how game thinking can revolutionize your business*. Philadelphia, PA: Wharton Digital Press.

21. SULVA, M. K. (2015). Improving the Academic Word List for EFL Learners in Japan: Research in ICT, Acquisition, and Morphology. Osaka Kyoiku University.

22. Yoshida, H. (2002). Incidental ESL Vocabulary Acquisition. *The Japan Association for Language Education and Technology Vol. 39* (2002) p. 93-103 http://doi.org/10.24539/let.39.0_93

23. Zengning, H. (2011). Vocabulary learning assisted by mobile phones: perceptions of Chinese adult learners. *Journal of Cambridge Studies,* 8(1), 139-154.