The Effects of Practicing Vocabulary via Plickers on the 4th Year Turkish Students' Vocabulary Acquisition in EFL Classes

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Abstract

Although the role of mobile assisted language learning tools in vocabulary teaching in language classrooms has attracted a lot of interest from the researchers in last few decades, the studies focus on higher education and there is no research on the impact of MALL in K12 language learning context, which we address by using specifically Plickers in a primary school in Türkiye. A quasi-experimental study design which involved four intact classes, two of which were administered into the experimental group and the other two were used as the control group was adopted in the study. The study was carried out with the participation of 85 Turkish 4th grade students whose age range is 9-10. The experimental group consisted of 44 students who used Plickers in the vocabulary class while there were 41 students who received traditional handouts in the control group. The data was collected via a vocabulary test relevant to the lesson content. Paired samples t-test to analyse pre-test and post-test results and independent samples t-test to see if there is a statistically significant difference between the groups were used in the analysis of the data. The results showed that there was a significant difference between the experimental group's pre-test and post-test scores, and the experimental group got slightly higher scores than the control group did in the post-test.

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Introduction

There is no doubt that using technology in ESL or EFL classrooms have been of great interest in the field of education. With advancements in current technology, it has become an indispensable part of language classrooms. Ball (2011) explains that technology use in ESL teaching promotes learner motivation, autonomy, and engagement gives instant feedback and eases the tracking progress. Accordingly, Larsen-Freeman and Anderson (2011) suggest that ESL teachers integrate technology into their teaching.

Computers and mobile devices are among the most popular tools to incorporate technology in language classrooms. Stockwell and Hubbard also (as cited in Bozdogan, 2015) claim that the particular features of MALL (Mobile Assisted Language Learning) make it a junction point of CALL (Computer Assisted Language Learning) and m-learning.

Teaching vocabulary has always been one of the most critical and challenging phases of ESL/EFL and it has become one of the trending topics to be investigated in the MALL context recently. Researchers such as Wu (2014), Cabrera, Castillo, González, Quiñónez, and Ochoa (2018) and Wang and Chen (2015) have conducted studies which focus on the vocabulary acquisition of adolescents. There have also been several studies related to the use of technology in vocabulary teaching in the Turkish context such as Başoğlu and Akdemir (2010), Kılıçkaya and Krajka (2010), Ağca and Özdemir (2013) and Bozdogan (2015). However, these studies were implemented only in universities. Plickers has specifically been used in studies as well; the disciplines of they have investigated are not relevant to EFL context, though.

Use of Technology in Teaching and Learning Vocabulary

Teachers use technology very often to visualize words or concepts, especially during vocabulary teaching since studies like Lu's (2008), which points out that technology integration leads to more efficient vocabulary learning compared to traditional methods, have recently increased. As Anderson and Freebody (1981) stated that the vocabulary range of learners is a key factor in comprehending texts in broad terms, researchers have conducted some studies that support using MALL in the classroom. For instance, Wu (2014) conducted a study on the impact of using smartphones in an ESL classroom during vocabulary teaching and the results demonstrated that students who received treatment with a JAVA application (Word Learning) outperformed those in the control group. The previous study concurs with Cabrera et al. (2018) who conducted research on the use of Pixton in a high school in Ecuador. They found out that the experimental group who used Plickers while acquiring vocabulary outperformed the control group regarding their grammar and vocabulary scores. A similar study conducted by Ağca and Özdemir (2013) examined the effectiveness of mobile learning on vocabulary acquisition and reported that students scored significantly higher on the post-test after the treatment. In parallel with their research, Kılıçkaya and Krajka (2010) also claimed that the use of an online tool, WordCamp, in the experimental group benefited learners acquiring vocabulary better compared to the control group and the learners in the experimental group were superior in retaining the vocabulary in the long term according to the results of delayed post-test. Wang and Chen (2015) carried out similar research on university students in Taiwan, and it was revealed that the experimental group that practised vocabulary through iPad App, Learn British English WordPower, significantly outperformed the control group in the post-test results and students' attitude was observed to be constructive

regarding the survey conducted after the implementation. Likewise, Başoğlu and Akdemir (2010) suggested that using vocabulary learning applications via mobile phones benefitted learners' vocabulary acquisition and these applications promote learners' vocabulary acquisition better than paper-based flashcards do.

As seen in the studies, mobile-assisted language learning tools mostly tend to have positive effects on language learning. However, a few studies in the literature have sceptical views on using MALL in the classroom. For instance, Bozdogan (2015) refers to the existing research by saying students are reluctant to use their mobile devices which are considered as their personal belongings for educational goals. Likewise, Stockwell (2008) stated that learner preparedness might vary across learners and while some learners approach the use of technology with excitement, others might not accept it as a learning tool, and they may be reluctant to use it in the learning environment.

However, studies in literature generally focused on university students or other disciplines such as Mathematics or Engineering. In the EFL context, especially at the K12 level, there are no studies examining the effectiveness of MALL or specifically Plickers. In order to fill the gap this study aimed to investigate whether practising vocabulary via Plickers, a MALL tool has a greater impact on 4th graders' vocabulary test scores than practising by using traditional methods does. In line with the aim of the study, this study sought an answer to the following research question:

1. Does practising vocabulary via Plickers, a MALL tool, have a greater impact on 4th graders' vocabulary test scores than practising by using traditional methods?

Methodology

Design

Pre-test – Post-test control group design as a Quasi-Experimental Design was utilized in the study (Creswell, 2014). Campbell and Stanley (1963) state that quasi-experimental designs can be considered as almost a true experiment when the researcher can adapt his data collection procedures to experimental design in a genuine social setting although he cannot be in full control of the time and the participants in terms of randomization and exposure. In this study, there were four intact classes involved in sampling. Two of them were administered to the experimental group and exactly received the same treatment. The other two were presented with the same traditional methods and materials as the control group. The treatment lasted for three weeks (6 hours in total). As the participants of the study were accessible to the researchers, convenience sampling was used regarding Castillo's (2009) definition which states that "convenience sampling is a non-probability sampling technique where subjects are selected because of their convenient accessibility and proximity to the researcher".

Participants

In total, 85 4th-grade students studying in a private primary school in Turkey took part in the study carried out by the researchers. The students were at the age of 9-10. The sample consisted of 48 female and 37 male students. They had been learning English for at least 5 years. Although their experience range was close, the proficiency level of the students varied

slightly based on the compulsory language tests they took throughout the year. 44 of the students were in the experimental group in which the treatment was using Plickers in teaching vocabulary and there were 41 students in the control group in which hard copies of the activities were used as a treatment.

Setting / Context

This study was held with students who were studying at a private primary school in the academic year 2018-2019. There are 42 teachers and 447 students at the school. The sample of this study consists of the 4th graders. They have 10 hours of English lessons a week. Those are regular face-to-face language classes, and none of the students is bilingual. The school aims to prepare students for secondary school which has an intense curriculum which requires students to get involved in challenging pre-lesson activities as well as post-lesson duties that combine hard skills such as reading and writing with soft skills such as collaboration and critical thinking.

Data Collection Tools

The Vocabulary Test

The vocabulary taught in the lessons were the ones that were included in the curriculum of the school related to the grade. Therefore, the vocabulary test prepared by the researchers which consists of fifteen multiple-choice items with gaps in the sentences was in line with the curriculum.

Data Analysis Procedure

The data gathered was analysed via SPSS 25. Before the analysis of the data, a test of normality was conducted in order to determine whether to use parametric or non-parametric tests in the analysis of the data gathered in the study.

Table 1. Test of Normality

		Kolmogorov-Smirnov[a]			Shapiro-Wilk		
	Group	Statistic	Df	Sig.	Statistic	df	Sig.
PRETEST	Experimental	.136	44	.039	.951	44	.059
	Control	.142	41	.036	.969	41	.331
POSTTEST	Experimental	.177	44	.001	.938	44	.020
	Control	.115	41	.197	.965	41	.240

As is seen in Table 1, Kolmogorov-Smirnov and Shapiro-Wilk tests show that post-test results for the experimental group (p (44)<.05) were not distributed normally. However, Field (2009) claimed that parametric tests can still be used even if the data is not normally distributed. Therefore, it was concluded that paired samples t-test and independent samples t-test was used in the analysis of the data. To answer the research question, paired samples t-test was

used to analyse the pre-test and post-test results of experimental and control groups. In addition, independent samples t-test was used to see whether there was a statistically significant difference between the scores of students in the experimental and control groups in the pre-test and post-test.

Results

This study aimed to investigate whether practising vocabulary via Plickers, a MALL tool has a greater impact on 4th graders' vocabulary test scores than practising by using traditional methods does. In order to analyse the data, paired-sample t-tests and independent samples t-tests were utilized. The results are given in this section.

The Impact of Using Plickers in Practising Vocabulary

The first research question was stated as "Does practising vocabulary via Plickers, a MALL tool, have a greater impact on 4th graders' vocabulary test scores than practising by using traditional methods?

In order to find the impact of using Plickers in practising vocabulary on 4th graders EFL learners' vocabulary scores, pre-test and post-test results of the experimental and control groups were analysed by using paired samples t-test. The results of paired samples t-test are given in Table 2.

Table 2. Paired Samples t-test Results Comparing Pre-test and Post-test Scores

Group	Test	Mean	N	Std. Deviation	Std. Error Mean	t	df	Sig. (2-tailed)
Experimental	Pre-test	3.66	44	1.988	.300	-19.582	43	.000
	Post-test	11.2	44	2.946	.444			
Control	Pre-test	4.71	41	2.04	.319	-12.789	40	.000
	Post-test	10.12	41	3.164	.494			

A paired-sample t-test was conducted to compare pre-test (M= 3.66; SD= 1.988) and post-test (M= 11.20; SD= 2.946) scores on the vocabulary test. The results indicated that there was a significant difference between the two scores regarding the vocabulary test (t (43) = .000. p < .05).

A paired-sample t-test was conducted to compare pre-test (M= 4.71; SD= 2.040) and post-test (M= 10.12, SD= 3.164) scores on the vocabulary test. The results indicated that there was a significant difference between the two scores regarding the vocabulary test (t (40) = .000. p < .05).5

A paired-sample t-test was conducted to compare pre-test (M= 4.71; SD= 2.040) and post-test (M= 10.12, SD= 3.164) scores on the vocabulary test. The results indicated that there was a significant difference between the two scores regarding the vocabulary test (t (40) = .000. p < .05).

In addition effect size of the analysis was calculated. As a result, the effect size for the Pre-test (Cohen's d=.48) and Post-test (Cohen's d=.35) were found both at the medium level.

Furthermore, independent samples t-test was utilized in order to find whether the students' vocabulary test score means differ significantly according to the group they were in. The results of the independent samples t-test are given in Table 3.

Table 3. Independent Samples t-test Results Comparing Experimental and Control Groups

	Group	N	Mean	Std. Dev.	t	df	Sig. (2-tailed)	Sig. Level
Pre-test	Experimental	44	3.66	1.988	-2.399	83	0.019	**p<.05**
	Control	41	4.71	2.04				
Post-test	Experimental	44	11.2	2.946	1.634	83	0.106	p>.05
	Control	41	10.12	3.164				

An independent-samples t-test was conducted to compare two instructional groups' pre-test and post-test scores on vocabulary. The results indicated that there was a significant difference between the two scores regarding pre-test (t (83) = 82.218; p < .05) for Plickers (M= 3.66; SD= 1.988) and traditional groups (M= 4.71; SD= 2.040). The traditional group (M= 4.71; SD= 2.040) outperformed the Plickers group (M= 3.66; SD= 1.988) in the pre-test on vocabulary. However, there was no significant effect of being in the experimental group or control group considering post-test scores on vocabulary (t (83) = 81.348; p > .05) although the Plickers group (M= 11.20, SD= 2.946) had slightly higher scores on the delayed post-test as compared to the online group (M= 10.12; SD= 3.164).

Discussion

The efficiency of Mobile assisted language learning (MALL) tools in learning and teaching has been discussed and investigated by many researchers (Kılıçkaya & Krajka, 2010; Wang & Chen, 2015; Bozdoğan, 2015; Stockwell, 2008) for about two decades. Furthermore, the effects of MALL on learning and teaching vocabulary have been proven in the studies of Başoğlu and Akdemir (2010) in addition to the study of Wang and Chen (2015). In order to investigate the effectiveness of MALL tools in learning and teaching vocabulary, this study adopted Plickers as a treatment for this study since Plickers is claimed to help the teacher in preparing, executing, and examining formative assessment (Masita &Fitri, 2020). Accordingly, this study aimed at investigating the effectiveness of Plickers, a MALL tool, in teaching vocabulary by comparing pre-test and post-test scores of 4th graders that they got in vocabulary and to test whether using Plickers in teaching vocabulary is more effective than traditional ways of teaching vocabulary for 4th graders.

As a result of the study, it was found that there was a significant difference between the experimental group's pre-test and post-test scores. This finding can be interpreted as the fact

that using Plickers in vocabulary teaching and learning is an effective tool in an EFL classroom. In addition, it was also found that the experimental group got slightly higher scores than the control group according to the post-test results even though the difference between groups was not significant. This result can indicate that students in the experimental group caught up with and surpassed the control group in vocabulary knowledge by using Plickers. The findings of this study are in line with the findings of the studies on the use of different MALL tools in teaching and learning vocabulary and which found out that using MALL tools was effective in vocabulary teaching and learning (Ağca & Özdemir, 2013; Anderson & Freebody, 1981; Cabrera et al., 2018; Ellis, 1995; Kılıçkaya & Krajka, 2010; Lu, 2008; Wang & Chen, 2015; Wu, 2014).

In addition to its impact on teaching and learning vocabulary, Babacan and Güler (2022) found that using Plickers has a significant positive impact on the academic achievement of students. Similarly, Sasmiko et al. (2019) put forward that using Plickers in teaching vocabulary has a positive impact on students' academic achievement in reading skills while learning a foreign language. Moreover, it was claimed that using Plickers in teaching and learning language has a positive impact on the motivation of the students in learning vocabulary (Babacan & Güler, 2022; Hassan & Haşim, 2021; Masita &Fitri, 2020; Sasmiko et al., 2019).

Conclusion

This study aimed to investigate whether practising vocabulary via Plickers, a MALL tool has a greater impact on 4th graders' vocabulary test scores than practising by using traditional methods does. In order to analyse the data, paired-sample t-tests and independent samples t-tests were utilized.

As a result, a significant difference was found between the pre-test and post-test scores of the students in the Plickers group on vocabulary. This result shows us that using Plickers is an effective way of teaching vocabulary in an EFL classroom. t-test for independent samples was used in order to compare the pre-test and post-test results of the experimental group using Plickers to teach vocabulary to 4th graders and the control group using traditional tools. A significant difference was found between the pre-test scores of the learners in the experimental group using Plickers to teach vocabulary to 4th graders and the control group using traditional tools. The significant difference was in favour of the control group when compared to the experimental group. That is to say, the control group started with an advantage over the experimental group. However, there was not any significant difference between groups in terms of post-test results. Although there is not any significant difference between groups in terms of the mean scores of the students in the post-test, the experimental group has a slightly higher mean score than the control group. This result indicates that students in the experimental group caught up with and surpassed the control group in vocabulary knowledge by using Plickers.

Accordingly, these results can have a couple of implications for EFL teachers. The first implication is that EFL teachers can use Plickers in order to enhance their vocabulary teaching and their students' vocabulary learning to be more effective. The second implication is that EFL teachers can benefit from MALL tools in their classes not only for vocabulary teaching but also for other topics that they teach. In addition, there is also a significant difference between the pre-test and post-test scores of the control group and the findings revealed that traditional

methods are also effective in promoting vocabulary acquisition of the learners, and they are as effective as using Plickers.

However, this study has some limitations. First of all, this study was carried out with 85 4th graders and this study can be expanded with a larger sample. In addition, this study was carried out in a short time period, so this can be a drawback. At this point, a longitudinal study can be designed to test the effectiveness of Plickers. Another drawback may be the design of the pre-test and post-test as the items were provided in a cloze multiple-choice test, which may have made it possible to choose the correct option by chance for the students. One last limitation is that there were some cognates regarding the theme, which may have caused students to find context clues in other items in the test. Therefore, it can be suggested that a longitudinal design with a redeveloped pre-test and post-test may give more solid results.

References

Anderson, R. C., & Freebody, P. (1981). Vocabulary knowledge. In J. T. Guthrie (Ed.),

Comprehension and teaching: Research perspectives (pp. 71-117). Newark, DE:

International Reading Association.

Agca, R. K., & Özdemir, S. (2013). Foreign Language Vocabulary Learning with Mobile Technologies. Procedia - Social and Behavioral Sciences,83, 781-785. doi:10.1016/j.sbspro.2013.06.147

Babacan, N., & Güler, C. (2022). The Effects of Plickers on English Vocabulary Achievement, Motivation and Anxiety. Education Quarterly Reviews, Vol.5 Special Issue 2: Current Education Research in Turkey, 617-630. DOI: 10.31014/aior.1993.05.04.648.

Ball, N. (2011). Technology in adult ESOL classes. Journal of Adult Education, 40(1), 12-19.

Basoglu, E., & Akdemir, O. (2010). A comparison of undergraduate students' English vocabulary learning: Using mobile phones and flashcards. TOJET: The Turkish Online Journal of Educational Technology,9(3), 1-7.

Benson, P. (2007). State-of-the-art article: Autonomy in language teaching and learning. Language Teaching, 40(1), 21–40. doi:10.1017/S0261444806003958

Bozdoğan, D. (2015). MALL Revisited: Current Trends and Pedagogical Implications. Procedia - Social and Behavioral Sciences,195, 932- 939. doi:10.1016/j.sbspro.2015.06.373

Cabrera, P., Castillo, L., González, P., Quiñónez, A., & Ochoa, C. (2018). The impact of using Pixton for teaching grammar and vocabulary in the EFL Ecuadorian context. Teaching English with Technology, 18(1), 53–76.

Campbell, D. T., & Stanley, J. (1963). Experimental and quasi-experimental designs for research. Chicago, IL: Rand McNally.

Castillo J. (2009). Convenience Sampling. Retrieved from http://explorable.com/convenience-sampling.html.

Creswell, J. W. (2014). Research Design: Qualitative, Quantitative, and Mixed Methods Approaches. Washington: SAGE.

Ellis, R. (1995). Modified input and the acquisition of word meanings. Applied Linguistics, 16, 4.

Hassan, F. A., & Hashim, H. (2021). The Use of an Interactive Online Tool (Plickers) in Learning Vocabulary among Young Learners in ESL Setting. Creative Education, 12, 780-796. https://doi.org/10.4236/ce.2021.124055.

Hu, Z. (2013). Vocabulary Learning Assisted by Mobile Phones: Perceptions of Chinese Adult Learners. Journal of Cambridge Studies, 8(1), 139. https://doi.org/10.17863/CAM.1468a

Kennedy, C. & Levy, M. (2008). L'italiano al telefonino: Using SMS to support beginners' language learning. ReCALL 20(3), 315-330.

Kilickaya, F., & Krajka, J. (2010). Comparative Usefulness of Online and Traditional Vocabulary Learning. Turkish Online Journal of Educational Technology - TOJET, 9(2), 55–63.

Larsen-Freeman, D., & Anderson, M. (2011). Techniques and principles in language teaching   (3rd ed.). NY: Oxford University Press.

Lu, M. (2008). Effectiveness of vocabulary learning via mobile phone. Journal of Computer Assisted Learning 24, 515-525.

Masita, M., & Fitri, N. (2020). The Use of Plickers for Formative Assessment of Vocabulary Mastery. Ethical Lingua: Journal of Language Teaching and Literature, 7(2), 311-320. https://doi.org/10.30605/25409190.179

MohdAsraf, R & Supian, N. (2017). Metacognition and Mobile – Assisted Vocabulary Learning. Arab World English Journal, 8(2). DOI: https://dx.doi.org/10.24093/awej/vol8no2.2.

Sasmiko, A. R., Noni, N., ve Salija, K. (2019). The Use of Plickers to Enhance Students' English Reading Comprehension at SMP Muhammadiyah 6 Makassar. In.

Stockwell, G. (2008). Investigating Learner Preparedness for and Usage Patterns of   Mobile Learning. ReCALL, 20(3), 253–270.

Stockwell, G., & Hubbard, P. (2013). Some emerging principles for mobile-assisted language learning. Monterey, CA: The International Research Foundation for English Language Education.

Wang, B. T., Teng, C. W., & Chen, H. T. (2015). Using iPad to Facilitate English Vocabulary Learning. International Journal of Information and Education Technology,5(2), 100-104. doi:10.7763/ijiet.2015.v5.484

Wu, Q. (2014). Learning ESL vocabulary with smartphones. Social and Behavior Sciences, 143, 302-307.

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