

A Quantitative Study in Using Digital Games to Enhance the Vocabulary Level of Saudi Male Secondary School Students

Sultan R Alfuhaid^{1,2}

¹ Department of English Language and Translation, College of Arabic Language and Social Studies, Qassim University, Buraydah, Saudi Arabia

² The Educational Administration of Al Bukayriyah, Ministry of Education, Saudi Arabia

Correspondence: Sultan R. Alfuhaid, Department of English Language and Translation, College of Arabic Language and Social Studies, Qassim University, Buraydah, Saudi Arabia. E-mail: Sultanfuh@gmail.com

Received: February 2, 2023

Accepted: February 23, 2023

Online Published: February 24, 2023

doi: 10.5539/elt.v16n3p16

URL: <https://doi.org/10.5539/elt.v16n3p16>

Abstract

Vocabulary learning is crucial to language acquisition. Although numerous techniques have been proposed for the teaching and learning of vocabulary, the need remains for the research and development of new, effective methods. In this technological era, digital games have proven their efficacy in promoting learners' vocabulary acquisition. The current study investigates whether the integration of technology-driven digital games is effective in enhancing the vocabulary level by comparing experimental and control groups. The researcher conducted a pretest for the experimental group and a posttest for both groups within a period of five consecutive weeks. The experimental group used *7 Little Words*, which is a game for learning vocabulary, whereas the participants in the control group learned vocabulary through traditional methods. The sample comprised 30 Arabic native speakers studying English as a required course in two all-male classes (15 students from each) in the third year of secondary school. Data were analyzed quantitatively. Paired-samples *t*-tests and independent-samples *t*-tests were used to compare the mean scores of the two groups. The results indicated that using digital games to learn vocabulary enhanced learners' overall vocabulary acquisition.

Keywords: digital games, vocabulary, Arabic, technology, learning, secondary school students

1. Introduction and Background

The English language is a primary element of most educational systems and is also considered an international channel of communication (Wallace, 2007). Accordingly, it is taught in many countries, including Saudi Arabia. In Saudi Arabia, English is taught from the first year of elementary school; therefore, it has become a primary requirement for almost every student. Foreign language learners are required to master the four basic skills of speaking, listening, reading, and writing. A crucial aspect of acquiring a language has to do with the range of vocabulary.

Vocabulary indicates the words of a given language that must be understood to communicate effectively. Vocabulary has been considered an influential bearer of meaning (Hubbard, 1983). Furthermore, Hubbard (1983) defined vocabulary as the knowledge not only of words but of their significance. Stahl (2006) recognized that vocabulary is knowledge not only of the given definitions of words but also how they fit into the real world.

Thus, vocabulary is indispensable to developing and exercising the four fundamental language skills. Accordingly, learners should become adept at dealing with unfamiliar words in their language acquisition endeavors (Huyen & Nga, 2003). Vocabulary is the cornerstone of students' overall level of proficiency and comprehension (Nation, 2001). For instance, it is crucial for children to be able to recognize and identify a range of between 100–300 words in print, because this small number of words accounts for approximately 50% of the words that children encounter in a typical reading passage (Adams, 1990). Furthermore, "learning new words is a cumulative process, with words enriched and established as they are met again" (Nation, 2000, p. 6). Vocabulary can be acquired intentionally through explicit instruction in word-learning strategies or incidentally through indirect exposure to words. Therefore, vocabulary instruction plays a vital role in enhancing the language level of students.

From a traditional teaching perspective, vocabulary has not generally been considered an independent subject for students, and teachers have instead integrated it into lessons on the four language skills. For instance, students may

be asked to use their own vocabulary in the classroom, with teachers introducing new words for students to apply during classroom activities. Instruction in vocabulary has often been perceived as offering learners a list of new words that carry certain meanings in their native language, although in many cases, this instruction lacks both efficacy and real-world context (Stahl, 2006). Some teachers still apply and depend on traditional methods such as drilling and memorization in teaching and practicing vocabulary. Many language learners rely on bilingual dictionaries to look up words and memorize their meanings; however, this method is not particularly effective (AlNatour & Hijazi, 2018). Decarrico (2001) concluded that dependence on memorization in teaching vocabulary is not recommended, as learners may not be able to remember all of the words they encounter. Moreover, traditional teaching methods may hinder the possibility for student involvement in the classroom because, with such methods, the teacher is the controller of the class (AlNatour & Hijazi, 2018). In contrast, Ferreira (2007) asserted that teachers should be facilitators who involve the students in the learning process, which in turn might result in better learning. Because vocabulary learning is a tall order (Ringbom, 1987; Schmitt, 2008), adopting a comprehensive method of instruction is required to tackle the difficulty of vocabulary acquisition.

Therefore, integrating technology into the learning process has been increasingly used by many teachers. Numerous researchers have focused on computer-assisted language learning (CALL), which primarily refers to the search and study of computer applications in language teaching and learning (Levy, 1997). Moreover, we live in a world in which technological changes are considered the norm, and students might thus prioritize learning vocabulary in a way that is compatible with such changes. For example, Prensky (2001) claimed that the average teenager in the United States spends almost 3 hours a day watching television, using the internet, and playing video games. Prensky (2003) also estimated that many young people will have spent nearly 10,000 hours playing digital games by age 21. Accordingly, digital game-based language learning (DGBLL) has recently demonstrated potential in improving vocabulary acquisition. Researchers have stated that “digital games are another avenue for experimentation in a safe virtual environment” (Kirriemuir, 2002). DGBLL has dramatically proliferated over the past two decades. Although the debate over the usefulness of video games in promoting learning through play has not reached consensus (Kirriemuir & McFarlane, 2004), the majority of the literature has demonstrated positive effects of such learning tasks (Hung, 2011; Fotouhi-Ghazvini et al., 2009; Yip & Kwan, 2006; Zheng, 2008).

Games might indeed simplify learning as they require students to participate through the use of the material in its entire context (Cruikshank & Telfer, 1980). Moreover, although certain obstacles to the utilization of technology in the past, the increasing prevalence of portable devices such as smartphones and laptops has made the integration of technology in classroom widely possible (Golonka et al., 2014). There is overwhelming evidence corroborating the recommendation that learning through the use of mobile technology (i.e., m-learning) be implemented to expose L2 learners to an environment in which the target language is dominant (Norbrook & Scott, 2003; Thornton & Houser, 2003). Therefore, this study aims at investigating the influence, if any, of integrating digital games into the acquisition of English vocabulary for Saudi male students in a secondary school (i.e., *Sharia* Institute).

2. Research Hypotheses

- 1) There will be a statistically significant difference between the mean pre- and posttest scores of the experimental group.
- 2) There will be a statistically significant difference between the mean posttest scores of the experimental and control groups.

3. The Significance of the Research

The present study examines the integration of portable technologies such as smartphones into the learning process to enhance the acquisition of English vocabulary among Saudi male secondary school students. Thus, this study will be significant for teachers, students, and curriculum designers. On the one hand, the current study is educationally significant because it may help teachers address the difficulties that Saudi students encounter with the traditional teaching methods related to vocabulary, such as constant memorization. On the other hand, modern teaching methods, such as learning through digital games, may also motivate students to become self-directed learners.

4. Purpose of the Study

The primary objective of this study is to investigate the effect, if any, of integrating online and digital games into the instruction of Saudi male secondary school students in the acquisition of English vocabulary.

5. Methodology

5.1 Design

This study is experimental because it measures the influence of an independent variable (smartphone game application) on a dependent variable (students' acquisition of English vocabulary).

5.2 Participants

The sample of the study consisted of two all-male classes in the third year of secondary school. Fifteen participants were selected from each class and distributed randomly into experimental and control groups. Both classes were taught by the same instructor to ensure that any significant difference observed between groups was due to the experiment and not to other factors.

The participants were L1 Arabic speakers and third-year secondary school students attending school in the Al-Qassim region; the school is commonly known as the Sharia Institute and is affiliated with Al-Imam University. Moreover, all participants were Saudis who shared the same cultural and educational background.

5.3 Instrument

The researcher conducted two techniques in teaching vocabulary: the traditional method of teaching was applied to the control group, whereas the integration of modern methods (online games) was applied to the experimental group. In addition, the data were collected quantitatively through conducting pre- and posttests for the experimental group and a posttest for the control group to evaluate participants' overall English vocabulary knowledge. The participants in the experimental group were tested before and after the experiment, and their mean scores were measured through a parametric statistical test known as the paired-samples *t*-test. The posttest was conducted to enable a valid comparison between the mean scores of the control and experimental groups through a parametric statistical test known as the independent-samples *t*-test.

5.4 Procedures

The researcher was granted permission from the institute supervisor to create additional course material designed for vocabulary acquisition. Participants in both the control and experimental groups unanimously consented to be presented with this extra material. The words were identical between groups. The only difference was in the instruction: The control group received instruction through the traditional teaching method of drilling and memorization, whereas the experimental group learned through an online game, *7 Little Words*, that can be downloaded onto portable devices such as smartphones. To ensure credibility, the researcher requested that participants in the experimental group share screenshots of their daily vocabulary tasks.

5.5 Data Analysis

Data were analyzed quantitatively. Quantitative analysis was conducted of the pre- and posttest scores using the appropriate statistical tests in SPSS: a paired-samples *t*-test and an independent-samples *t*-test.

6. Results

To test the experimental group prior to and after the experiment, the researcher used a paired-samples *t*-test, as shown in Table 1. The test consisted of 20 words, with each word associated with a three-option multiple-choice question. The words were identical to those provided by the online game application (*7 Little Words*).

As indicated in Table 1, on average, the participants in the experimental group scored worse on the pretest than on the posttest ($M = -1.933$, $SD = 2.344$). Moreover, this improvement, -1.933 , 95% CI $[-3.232, -.635]$, was statistically significant, $t(14) = 3.194$, $p > .006$.

Table 1. Results of the Paired Samples Test

		Paired Differences					t	df	Sig. (2-tailed)
		Mean	Std. Deviation	Std. Error Mean	95% Confidence Interval of the Difference				
					Lower	Upper			
Pair 1	Pretest–Posttest	-1.933	2.344	.605	-3.232	-.635	-3.194	14	.006

A posttest was also used to compare the means of the two groups (experimental and control). Prior to testing the main hypothesis of this study, the researcher generated descriptive statistics in SPSS. The mean and standard deviation of both groups' posttest scores are presented in Table 2. On average, the participants in the

experimental group performed better ($M = 9.87, SD = 3.399$) than those in the control group ($M = 6.73, SD = 3.105$), as illustrated in Table 2.

Table 2. Group Statistics

	Group	N	Mean	Std. Deviation	Std. Error Mean
Marks	Experimental	15	9.87	3.399	.878
	Control	15	6.73	3.105	.802

As indicated in Table 3, there is a statistically significant difference in the mean scores between the two groups, 3.133, 95% CI [.699, 5.568], $t(28) = 2.636, p > 0.014$.

Table 3. Results of Independent Samples Test

		Levene's Test for Equality of Variances		t-test for Equality of Means						
Marks		F	Sig.	t	df	Sig. (2-tailed)	Mean Difference	Std. Error Difference	95% Confidence Interval of the Difference	
									Lower	Upper
Marks	Equal Variances Assumed	.035	.852	2.636	28	.014	3.133	1.189	.699	5.568
	Equal Variances Not Assumed			2.636	27.773	.014	3.133	1.189	.698	5.569

7. Discussion

The country of Saudi Arabia considers English a primary requirement for the majority of job opportunities. The four basic skills of listening, speaking, reading, and writing are integral in acquiring any language and are, accordingly, the focus of most language instruction; however, it is almost impossible to acquire a language without also attaining a wide range of vocabulary. Therefore, this research aimed at enhancing the vocabulary level of Saudi learners of English by integrating a digital game into the learning process while simultaneously abandoning the traditional methods in teaching vocabulary. The researcher tested the experimental group prior to and after the experiment, and the results indicated that participants improved during a five-week span while integrating one of the modern teaching/learning methods, a digital game application.

After a period of five consecutive weeks of instruction, the results showed a statistically significant difference in the posttest between the two groups in favor of the experimental group. Moreover, the current study showed promising results, as students in the experimental group learned as they played, an obstacle that Kirriemuir (2004) assumed would negatively impact learning. Contrary to Ertmer (1999), the students in the experimental group adapted well to the new teaching method despite a shortage of time. Although Chuang (2007) and Zeng (2005) claimed that the lack of efficiency in learning vocabulary through games could increase learners’ anxiety, on the contrary, in this study, simultaneous playing and learning facilitated the participants’ vocabulary acquisition during the five-week course. Taking a more moderate position, Ersöz (2000) claimed that games that are designed to teach vocabulary should not be overlooked because they bring real-life contexts to learning, thereby encouraging learners to be expressive during classroom activities. The findings of the current study suggest that integrating modern methods into language teaching, and ensuring that they are implemented accurately and helpfully, is crucial in increasing the range of learners’ vocabulary.

The above discussion also implies that it is vital to choose suitable games to achieve the primary goal of vocabulary learning. The number of participants as well as the context of the classroom should be considered during the integration of modern teaching methods such as digital games. The results of the current study provide confirmatory evidence of students’ improvement in vocabulary learning and support the conclusion by Aslanabadi and Rasouli (2013) that vocabulary games might enhance vocabulary acquisition (in their study, among kindergarten students). Additionally, Pound (2005) stated numerable advantages for learners in learning vocabulary while playing games, such as strengthening their overall English competence and enhancing their social skills.

8. Conclusion

Many job opportunities have begun to require that applicants be fluent in English. Therefore, students worldwide have become much more enthusiastic to learn foreign languages, such as English, to meet future job requirements. Alongside such demand, teachers' task has become slightly more difficult as they must adapt traditional teaching methods, which often lack efficacy, and accommodate the explosion of technology in the classroom (AlNatour & Hijazi, 2018). Multiple studies have supported the claim that more modern teaching methods can help students attain the desired learning outcomes and may even accelerate their learning (Aghlara & Tamjid, 2011). The current study was designated to integrate modern techniques—in this case, a digital game—into vocabulary instruction. Vocabulary is considered a cornerstone in language acquisition; ESL learners cannot learn a language unless they acquire a wide range of vocabulary. The researcher selected 30 male participants to undergo the experiment and assigned them equally to either an experimental or a control group. The former consisted of 15 participants who learned vocabulary through a digital game (*7 Little Words*) for five weeks, whereas the control group included the remaining 15 participants, who received traditional instruction. The results indicated a significant enhancement in the level of vocabulary for the experimental group. Indeed, the researcher deduced that adopting modern teaching methods is ultimately intrinsic to improving the vocabulary level of students.

8.1 Limitations of the Study

Lack of time as well as the number of participants were issues encountered by the researcher; therefore, the results of this study might not be entirely conclusive. In addition, due to the nature of the educational system in Saudi Arabia, which separates face-to-face classes by gender, this study recruited only male participants given the researcher's gender.

References

- Adams, J. N. (1990). *The Latin sexual vocabulary*. Johns Hopkins University Press.
- Aghlara, L., & Tamjid, N. H. (2011). The effect of digital games on Iranian children's vocabulary retention in foreign language acquisition. *Procedia: Social and Behavioral Sciences*, 29, 552–560. <https://doi.org/10.1016/j.sbspro.2011.11.275>
- AlNatour, A. S., & Hijazi, D. (2018). The impact of using electronic games on teaching English vocabulary for kindergarten students. *US-China Foreign Language*, 16(4), 193–205. <https://doi.org/10.17265/1539-8080/2018.04.001>
- Aslanabadi, H., & Rasouli, G. (2013). The effect of games on improvement of Iranian EFL vocabulary knowledge in kindergartens. *International Review of Social Sciences and Humanities*, 6(1), 186–195.
- Chuang, H. Y. (2007). *The study of foreign language anxiety, English learning motivation and strategies in the elementary school* [Unpublished Master's thesis, National Chiayi University, Chiayi, Taiwan].
- Cruickshank, D. R., & Telfer, R. (1980). Classroom games and simulations. *Theory into Practice*, 19(1), 75–80. <https://doi.org/10.1080/00405848009542875>
- DeCarrico, J. (2001). Vocabulary learning and teaching. In M. Celcia-Murcia (Ed.), *Teaching English as a second or foreign language* (3rd ed., pp. 285–299). Heinle & Heinle.
- Ersöz, A. (2000). Six games for the EFL/ESL classroom. *The Internet TESL Journal*, 6(6). <http://iteslj.org/Lessons/Ersoz-Games.html>
- Ertmer, P. A. (1999). Addressing first-and second-order barriers to change: Strategies for technology integration. *Educational Technology Research and Development*, 47(4), 47–61. <https://doi.org/10.1007/BF02299597>
- Ferreira, F. H. L. (2007). *How to teach vocabulary effectively: An analysis of the course book Eyes and Spies*. <http://www.portaldoconhecimento.gov.br/bitstream/10961/2431/1/lastversion.pdf>
- Fotouhi-Ghazvini, F., Earnshaw, R., Robison, D., & Excell, P. (2009). The MOBO city: A mobile game package for technical language learning. *International Journal of Interactive Mobile Technologies*, 3(2), 19–24. <https://doi.org/10.3991/ijim.v3i2.757>
- Golonka, E. M., Bowles, A. R., Frank, V. M., Richardson, D. L., & Freynik, S. (2014). Technologies for foreign language learning: A review of technology types and their effectiveness. *Computer Assisted Language Learning*, 27(1), 70–105. <https://doi.org/10.1080/09588221.2012.700315>
- Hubbard, P. (1983). *A training course for TEFL*. Oxford University Press.

- Hung, K. H. (2011). *The design and development of an education-designed massively multiplayer online role-playing game (EDD MMORPG) for young Taiwanese Mandarin-speaking learners learning English vocabulary words* (Publication No. 3484386) [Doctoral dissertation, Teachers College, Columbia University]. ProQuest Dissertations Publishing.
- Huyen, N. T. T., & Nga, K. T. T. (2003). Learning vocabulary through games: The effectiveness of learning vocabulary through games. *Asian EFL Journal*, 5(4), 90–105.
- Kirriemuir, J. (2002, April). The relevance of video games and gaming consoles to the higher and further education learning experience. *JISC TechWatch*. http://www.jisc.ac.uk/media/documents/techwatch/tsw_02-01.rtf
- Kirriemuir, J. & McFarlane, A. (2004). Literature review in games and learning. *Futurelab*. http://www.futurelab.org.uk/research/lit_reviews.htm
- Levy, M. (1997) *CALL: Context and conceptualization*. Oxford University Press.
- Nation, P. (2001). *Learning vocabulary in another language*. Cambridge University Press.
- Norbrook, H., & Scott, P. (2003). Motivation in mobile modern foreign language learning. In J. Attewell, G. D Bormida, M. Sharples, & C. Savill-Smith (Eds.), *MLEARN 2003: Learning with mobile devices* (pp. 50–51). <https://citeseerx.ist.psu.edu/document?repid=rep1&type=pdf&doi=d17f3aed4a1b3d41f83b05485c6b30885f98c82a#page=59>
- Pound, L. (2005). *How children learn*. Step Forward Publishing.
- Prensky, M. (2001). Digital natives, digital immigrants part 1. *On the Horizon*, 9(5), 1–6. <https://doi.org/10.1108/10748120110424816>
- Prensky, M. (2003). Digital game-based learning. *Computers in Entertainment (CIE)*, 1(1), 21. <https://doi.org/10.1145/950566.950596>
- Ringbom, H. (1987). *The role of the first language in foreign language learning*. Multilingual Matters Limited.
- Stahl, S. A. (2005). Four problems with teaching word meanings (and what to do to make vocabulary an integral part of instruction). In E. H. Hiebert & M. L. Kamil (Eds.), *Teaching and learning vocabulary: Bringing research to practice* (pp. 95–107). Taylor & Francis.
- Wallace, C. (2007). Vocabulary: The key to teaching English language learners to read. *Reading Improvement*, 44(4), 189–194.
- Yip, F. W., & Kwan, A. C. (2006). Online vocabulary games as a tool for teaching and learning English vocabulary. *Educational Media International*, 43(3), 233–249. <https://doi.org/10.1080/09523980600641445>
- Zeng, S. W. (2005). The study of foreign language anxiety and English language strategies in the elementary school [Unpublished master's thesis, National Taichung University, Taichung, Taiwan].
- Zheng, M. H. (2008). *Games in the primary English teaching* [Unpublished master's thesis, Normal University, Nanjing, China].

Appendix A The Vocabulary Test

1. Whisper:
 - a. Speak softly
 - b. Listen carefully
 - c. Write intelligently
2. Overcast:
 - a. Cloudy
 - b. Earthquake
 - c. Floods
3. Quarter
 - a. The art of taking pictures
 - b. Pen
 - c. Group of four
4. Autograph
 - a. Cloudy
 - b. Photo
 - c. Celebrity signature
5. Macaroni
 - a. Rice
 - b. Curved pasta
 - c. Oat
6. Skyscraper
 - a. Tall building
 - b. Large house
 - c. Huge city
7. Potato
 - a. Barbecued
 - b. Vegetable often mashed
 - c. Fruit tastes sweet
8. Cookbook
 - a. Tablet
 - b. A wide whiteboard
 - c. Recipe collection
9. Footwear
 - a. Sucks
 - b. Shoes and boots
 - c. Soccer shin
10. Fashionable
 - a. Outdated
 - b. Old
 - c. Trendy
11. Chocolate
 - a. Ice cream flavor
 - b. A kind of tea
 - c. Soap
12. Continent
 - a. Content
 - b. Country
 - c. Large land
13. Talking
 - a. Listening
 - b. Speaking
 - c. Writing
14. Flying machine
 - a. Aeroplane
 - b. Car
 - c. Train
15. Examine
 - a. Look at closely
 - b. Read attentively
 - c. Focus on
16. Sideways
 - a. Above
 - b. Below
 - c. Not forward or backward
17. Thermometer
 - a. Telling the temperature
 - b. Telling the time
 - c. Related to dates
18. Billionaire
 - a. Poor
 - b. Extravagant
 - c. Wealthy
19. Ingredient
 - a. Notebook
 - b. Putting in a recipe
 - c. Ratio
20. Nappy
 - a. Swaddling
 - b. baby= changing need
 - c. Toddler

Copyrights

Copyright for this article is retained by the author(s), with first publication rights granted to the journal.

This is an open-access article distributed under the terms and conditions of the Creative Commons Attribution license (<http://creativecommons.org/licenses/by/4.0/>).