Advances in Language and Literary Studies
ISSN: 2203-4714
www.alls.aiac.org.au

Study on the Role of Video Educational Games with a Linguistic Approach in English Language Education of the 2nd Grade High School Students

Farzad Jalalian*

Academic Center for Education, Culture and Research (ACECR), Iran

Corresponding Author: Farzad Jalalian, E-mail: Jalalian_farzad@yahoo.co.uk

ARTICLE INFO

Article history
Received: December 09, 2017
Accepted: February 18, 2018
Published: April 30, 2018
Volume: 9 Issue: 2
Advance access: March 2018

Conflicts of interest: None
Funding: None

Key words:
Education,
Video Educational Games,
Computer Games,
Language,
Students

ABSTRACT

The inability of English language learners to recall English concepts is a major challenge faced by teachers. This paper aims to determine the effectiveness of video educational games with a linguistic approach in English language education of the 2nd grade high school students. This is an applied and quasi-experimental study conducted in 2016. For the purpose of this study, we divided the participants into test and control groups and omitted the impacts of covariate (pretest scores measured before execution of any test on the learners). The statistical population consists of 90 students, divided into three groups each consisting of 30 students. Due to the long process of the research, we used availability sampling method in order to minimize the drop in the number of participants. The data was analyzed by SPSS and ANCOVA. The results of this study confirmed that a significant difference exists between English language recalling ability of 2nd grade high school students in test and control groups who are provided with video educational games with and without English language concepts respectively. We concluded that video educational games play an effective role in English language recalling ability of the students. Therefore, it is recommended that video educational games be used for enriching the leisure times of English learners.

INTRODUCTION

Reading is one of the most important learning tools in everyday life (Najafi Pazoki, Darzi, Dastjerdi, Saadatishamper and Danapetousi, 2013). Reading skill is an essential requisite for acquiring knowledge in primary school and forms the basis for future educational achievements (Karami, Abbasi and Zakiei, 2013; Abdi and Mohammadi, 2013). However, some students have reading problems despite having a normal intelligence, appropriate educational opportunities, and emotional and psychological health. The weakness in learning skills affects almost all aspects of educational performance of such students (Halahan, Lloyd, Kaufman, Veic, and Martinez, 2005, translated by Alizadeh, Hemmati, Alamdarloo, Rezaei Dehnavi and Shojaei, 2011). Despite the great importance of reading skill in learning process, evidences show that Iranian students suffer from weakness in reading skills (Raghebian, Akhavan, Tafti and Hejazi, 2012).

Reading is founded on decoding and the ultimate goal of reading skill is comprehension. Reading skill plays a significant role in the educational progress of students (Ghobari Bonab, Afrooz, Hassanzadeh, Bakhshi and Pirzadi, 2012). The activity of reading includes complicated cognitive processes which are affected by both vocabulary development and education. Moreover, comprehension process is affected by the prior knowledge of individuals (Pourtaherian, Khosravi and Mohammadifar, 2014).

In order to read a text efficiently, not only students should read the text accurately but also they should use comprehension strategies (Halahan et al., 2005) and extract the meaning of the words, sentences and texts by creating a mental image of the contents (Aarnoutse & Van Leeuwe, 2000). Despite the great importance of comprehension in learning process, however, students have many problems with their reading skills (Shokoohi Yekta and Parand, 2006).

With the recent technological advances and production of educational video packages with multimedia capabilities, students have been provided with new learning opportunities (Falth, Stefan, Tjus, Hejmann & Svensson, 2013). Provision of educational and specialized materials in an attractive multimedia space in the form of computer educational games is a new achievement which can enhance the motivation and enthusiasm of students and increase their accuracy and attention (Asghari Nekah, Kalani and Ghanaei Chaman Abad, 2013). During the educational games, students achieve new mental concepts and acquire new skills.

Published by Australian International Academic Centre PTY.LTD.

http://dx.doi.org/10.7575/aiac.alls.v.9n.2p.59

Researchers believe that the selection of an appropriate and timely educational game would enable students, with any level of talent and ability, to learn the educational concepts (Angaji and Asgari, 2006). By involving the students in entertaining activities and enabling them to control the game and face new challenges, computer educational games increase the motivation and enthusiasm of students to learn new concepts and make the learning process faster, easier, and more effective (Holmes, 2011). Education, exercise and repetition, combined with quick feedbacks, encourage students to use their prior knowledge in order to pass different challenges of the game (Carolyn Yang, 2012).

Furthermore, the excitement of gameplay and the curiosity for proceeding to higher steps of the game motivates students to improve their gameplay and encourages them to think about concepts and try to solve the problems (Li & Tsai, 2013). Demirbilek and Tamer (2010) reported that emotional and motivational features of computer games encourage students to participate in official and non-official activities. It could be said, therefore, that multimedia video games are able to motivate inactive students to actively participate in educational programs.

The present study aims to determine the difference between English language recalling ability of 2nd grade high school students, divided into test and control groups who were provided with video educational games with and without English language concepts respectively. This research attempts to determine whether or not a significant difference exists between English language recalling ability of 2nd grade high school students in test and control groups who are provided with video educational games with and without English language concepts respectively.

RESEARCH METHOD

The present research is a quasi-experimental study with pretest and posttest. The statistical population consists of 2nd grade male high school students in the city of Ilam. The participants were divided into three classes, each consisting of 30 students, who were selected from Shahid Modares High School by availability sampling method. The school had ninety 2nd grade students. For the purpose of this study, we investigated English language scores of the students in the second semester. Next, we divided them into three classes based on their English language scores. It should be noted here that by "class" is not meant school classes but is meant three homogenous groups based on the scores obtained by the participants in the subject of English language. In the next step, we randomly selected one class as experimental group 1, one class as experimental group 2, and one class as witness group. All participants were male students within the age group of 16-17. After the end of examinations held in June of school year 2015-2016, we provided all students with pretest questions consisting of definitions and concepts of English language textbook for the 2nd grade of high school. The questionnaire had 20 items and the students were asked to answer the questions with Yes, if the definition was correct, or No,if the definition was incorrect. The pretest and posttest were executed for the following three groups:

1. Witness group: This group took no test and passed the summer as they wished.
2. Experimental group 1: This group was provided with video educational games which did not contain English language concepts and were only for fun.
3. Experimental group 2: This group was provided with video educational games in which English language concepts had been used.

The goal of this study was to compare the posttest scores obtained by these three groups, while omitting the probable impact of the pretest. It should be mentioned that the participants in experimental groups 1 and 2 played the video games with their personal PC at home due to the lack of equipment in the school's computer site. For a few students who lacked a PC at home, we used the computer site of the school on Mondays for a period of two hours. In order to ensure that the students played the games at home, we informed their parents about the objectives of this research before the execution of the research whether in face-to-face manner or by phone. We also followed up the research process at specified intervals during the summer and gave necessary advices to the students and their parents.

In order to omit any unwanted probable impact on the dependent variable, we carried out the pretest before providing any type of education or applying the independent variables. Since the posttest was executed after nearly two months (month of August), the impact of pretest was minimized. The validity of covariate (pretest) was confirmed by Kuder-Richardson method. The questions were designed in 20 items with Yes-No answer. All questions concerned the concepts educated in video educational games (Table 1).

The pretest reliability was confirmed with a score of 0.83. In order to determine the validity of the pretest, we had the questions confirmed by a group consisting of five elite teachers who were the main members of English Language Department of Ilam Province. The posttest was the same as pretest. Since the posttest was executed around two months after the pretest, we could overlook the factors threatening the internal validity. However, no drop factor was seen in the research.

RESULTS

Table 2 contains the descriptive statistics for the pretest and posttest.

Research Question

Is there any difference between English language recalling ability of 2nd grade high school students in test and control groups who are provided with video educational games with and without English language concepts respectively?

We attempted to answer this question using ANCOVA method. In doing so, we had to confirm ANCOVA presumptions before the execution of this method, so that it could produce the correct answer for the research question. In the first step, we investigated all the presumptions as follows:

Scores distribution normality

In order to investigate this presumption, we first computed skewness and kurtosis for the research variables. The statistic of skewness test was 0.602 for the pretest and 0.820 for the posttest. The statistic of kurtosis test was 0.602 for the pretest and 0.820 for the posttest. The values of skewness and kurtosis for the research variables were between -2 and +2, which indicated that the variables were likely to have normal distribution. In order to ensure the normality of data, we used Shapiro-Wilk Test according to Table 3.

As you can see in Table 3, the significance level for Shapiro-Wilk Test is bigger than 0.05, which indicates the normality of data with high confidence.

Homogeneity of variance of the studied groups

We investigated the homogeneity of variance of the studied groups using Levene test. Table 4 contains the test results:

As you can see in Table 4, the significance level of Levene Test is bigger than 0.05, which confirms the homogeneity of variances. In this test, H0 is "the variances of three groups are homogenous". Since the significance level is bigger than 0.05, H1 is rejected and H0 is confirmed.

The reliability of control variable (covariate)

The covariate test (pretest) should be reliable and suitable to the subject of research. As mentioned earlier, the reliability of control variable was confirmed by Kuder-Richardson Test with a score of 0.83.

Regression slope homogeneity

In order to confirm the homogeneity of regression slope, we have to compute the F value of interaction between covariate and independent variable in all groups. If this index is not significant (P>0.05), this presumption is confirmed.

As shown in Table 5, F value of the interaction between independent variable and covariate is 19.704, which is not significant (P>0.05). Therefore, H0 is accepted and H1 is rejected, which confirms the homogeneity of regression slope.

Table 1. Details of the games

Game Title	Purpose of the game	Number of applications	Sessions
Upwords	This game increases the English vocabulary of learners and helps them to create sentences.	6	1-6
Quarto, Quoridor, Pentago, Ab alone	These games not only enhance the vocabulary of the learners but also help the healthy competition and increase the patience and tolerance of the learners.	9	7-15
Civilization Series, anno series	These two games provide accurate and full details of different historical ages through English language and make the learners familiar with the historical progress of science, technology, ethics and civilization.	15	16-31
Scribblenauts	In this game, a name and an adjective appears after writing each combination. Since this game involves different age groups, its educational aspect is undeniable.	4	32-36

Table 2. Description of the data relating to pretest and posttest execution

Test	Group	Number of samples	Mean score	Score deviation	Standard error of the mean
Pretest	Experimental group 1	30	9.2667	4.91257	0.89691
	Experimental group 2	30	8.9000	5.12835	0.93630
	Witness group	30	9.8000	4.78071	0.87283
Posttest	Experimental group 1	30	10.8000	4.78792	0.87415
	Experimental group 2	30	13.0000	4.90601	0.89571
	Witness group	30	7.3000	4.16181	0.75984

Table 3. Normality test

	Kolmogorov-Smirnov test			Shapiro-Wilk test		
	Statistic	Degree of freedom	Significance level	Statistic	Degree of freedom	Significance level
Pretest	0.078	90	0.200	0.981	90	0.203
Posttest	0.071	90	0.200	0.976	90	0.095

Linearity of correlation between covariate and independent variable

As you can see in Table 6, F value of covariate impact is 22.049, which is significant because its probability (0.000) is smaller than the significance level (0.05). In other words, P<0.05 and F(1-86) = 22.049. Therefore, the correlation between the covariate and independent variable is confirmed. If F value of the covariate is not significant, ANCOVA is true but the selected covariate has no impact on the proposed model (which means that the right covariate has not been selected). Now that all five requirements have been met, we can use ANCOVA with high confidence.

The main output of ANCOVA

To answer the research questions and investigate the difference between English language recalling ability of the 2nd grade high school students in test and control groups, who were provided with video educational games with and without English language concepts respectively, we used the 4th row of Table 6 which is the main output of ANCOVA. As you can see, F value of the impact of independent variable is 16.244, which is significant because its probability (0.000) is smaller than the significance level (0.05). This means that a significant difference exists between the mean scores of the three groups in English language posttest. Therefore, the insignificance of the difference between the mean scores of the three groups in posttest is rejected after omission of the probable impact of the pretest.

DISCUSSION AND CONCLUSION

The results produced by ANCOVA confirmed that, considering the pretest scores as the covariate, a significant difference existed between the posttest scores of the students who had used video educational games with English language concepts in their leisure times and the posttest scores of the students who had used video educational games without English language concepts during the summer.

The willingness of students to work with computer may accelerate the learning process. Since motivation plays a determining role in learning process, computer-based simulation programs may motivate students to learn the language more efficiently. The presence of English language concepts in the game encouraged the participants to ask some questions about the meanings and concepts and motivated them to search for them in the textbook.

These results are in line with the findings of Marzano (2007), Amiri Ahoie (2009), Heidari et al. (2010), Mehrabifar et al. (2012) and Bijari (2013). The results of the present study and the aforementioned studies suggest that computer games may play an effective role in the learning process of students thanks to their entertaining nature.

Table 4. Homogeneity of variances in test groups

	Levene statistic	Degree of freedom 1	Degree of freedom 2	Significance level
Pretest	0.136	2	87	0.873
Posttest	0.786	2	87	0.459

Table 5. The interaction between independent variable and covariate

Dependent variable (posttest)					
Resource	**Total type III squares**	**Degree of freedom**	**Mean square**	**F**	**Significance level**
Modified Model	961.718	3	320.573	19.704	0.390
y-intercept	858.836	1	858.836	52.788	0.000
Posttest Group	961.718	3	320.573	19.704	0.390
Error	1399.182	86	16.270		
Total	12033.000	90			
Modified Total	2360.900	89			

Table 6. Test of the relationships between the subjects

Dependent variable (posttest)						
Row	**Resource**	**Total type III squares**	**Degree of freedom**	**Mean square**	**F**	**Significance level**
1	Modified Model	876.403	3	292.134	16.924	0.000
2	y-intercept	793.054	1	793.054	45.943	0.000
3	Pretest	380.603	1	380.603	22.049	0.000
4	Group	560.803	2	280.402	16.244	0.000
5	Error	1484.497	86	17.262		
6	Total	12033.000	90			
7	Modified Total	2360.900	89			

The video educational games help students to learn English words, synonyms, acronyms, sentencing, and spellings, and improve their comprehension skills by useful activities such as completion of sentences with words and choosing the correct verbs and subjects.

Regarding the efficiency of educational activities in the improvement of reading skills, the results of this study are in line with the findings of Ghobari Bonab et al. (2012), Zare, Amiri Ahoie and Taraj (2009), and Najafi Pazoki et al. (2013).

Regarding the efficiency of computer-assisted instruction (CAI) in the improvement of reading skills, the results of this study are in line with the researches of Stetter and Hughes (2011), Marzban (2011), Saeidi, Seif, Asadzadeh and Ebrahimi Ghavam (2013), and Ponce, Lopez and Mayer (2012).

The above mentioned researchers compared computer-assisted instruction (CAI) with traditional teaching methods and studied the efficiency of each method in the improvement of reading skills. They reported that the students who were instructed by video educational programs achieved significantly higher scores in comprehension and reading tests compared to the students who were educated by traditional method.

Seo and Woo (2010) studied the methods used for presenting and transferring the educational materials and found that the use of video programs which have an appropriate graphic interface and suit the cognitive characteristics of the students can play an important role in the motivation of students to interact with computer educational programs. For the purpose of this study, they designed an interactive and attractive graphic interface and offered efficient solutions for identification, combination and analysis of phonemes and syllables in order to enhance the visual and auditory accuracy of the students and improve their decoding performance.

The possibility of frequent use of the game instruction helps the students with a weak auditory memory to analyze and understand the phonemes and syllables and select the correct answers. Highlighting the key points in the game instruction helps the students to focus on the important points. In these games, the student listens to the instruction and at the same time sees the text on the screen, in which the important points necessary for the correct execution of the activity are bolded and highlighted in red color.

After frequent use of the game, students learn to extract the important points form what he sees and hears in order to understand the instruction. The game gives immediate feedbacks after each game, reports the performance after the end of each step of the game, plays an animation depending on the points obtained, and enables the students to examine their progress. These valuable advantages help the students to reduce their reading mistakes and improve their comprehension skills.

Comprehension skills are the mental activities which students perform to understand and organize the information and think about the contents of the text (Braten and Samuelstuen, 2004). Ponce et al. (2012) conducted a study on the education of comprehension strategies via computer programs and reported that the education of efficient strategies such as highlighting the text, explanation about text title, self-questioning and overview of the text by computer multimedia equipment significantly improved the comprehension skills of the students who had been educated by video educational programs.

Shen (2012) conducted a study on the efficiency of visual narratives in word recognition, reading and comprehension abilities of the 5th grade students, using digital illustrated books. They found that the students who had used visual narrative method achieved better scores in word recognition, reading and comprehension compared to the students who had used traditional methods. Moreover, they reported that this method positively affected the attitude of students towards learning the reading and comprehension skills.

Jabbari and Khademi (2009) studied the comprehension skills of 4th and 5th grade students and reported that narrative educational methods was much more efficient than traditional methods in the improvement of comprehension skills of the students with and without reading difficulties.

REFERENCES

Aarnoutse, C. A. J., & Van Leeuwe, J. F. J. (2000). Development of poor and better readersduring the primary school. Educational Research and Evaluation, 6, 251–278.

Abdi, R. & Mohammadi, Sh. (2013). The effect of metadiscourse markers presence on high school EFL learners reading comprehension. *Journal of School Psychology*, 2(2), 93-106. (Persian).

Ahromi, R., Shooshtari, M., Golshani Monazah, F. & Kamarrazin, H. (2011). The effectivness of training accuracy on the ability of reading of dyslexia in third grade elementary students Isfahan. *Quarterly Psychology of Exceptional ndividuals*, 1(3), 110-139.(Persian).

Akbari, E. (2011). Learning Disability. Tehran: Nazari publication. (Persian).

American Psychiatric Association (1994). Diagnostic and statistical manual of mental disorders, 4th ed. Washington DC: American Psychiatric Association.

Angabi, L. & Asghari, A. (2006).The game and its impact on children's development. Tehran: Tarahan Emaj publication. (Persian).

Asghari Nekah, S. M., Kalani, S. & Ghanaye, A. (2013). Educational computer games with linguistic approach to intelligent schools For students with specific learning disorders. Special Education, 5(118), 36-48.(Persian).

Ayumi, S., Kazumi, K., Hitoshi, U. & Tatsuya, K**.** (2008). Readingability and phonological awareness in Japanese children with dyslexia. Brain and Development, 30(3), 179-188. Braten, I. & Samuelstuen, M. S. (2004). Does the influence of reading purpose on reports of strategic text processing depend on students' topic knowledge? *Journal of Educational Psychology*, 96, 324-336.

Carolyn Yang, Y.T. (2012). Building virtual cities, inspiring intelligent citizens: Digital games for developing students' problem solving and learning motivation. Computers & Education 5, 365–377.

Demirbilek, M. & Tamer, S. L. (2010). Math teachers' perspectives on using educational computer games in math education. Procedia Social and Behavioral Sciences, 9, 709–716.

Fälth, L., Gustafson, S., Tjus, T., Heimann, M. & Svensson, I**.** (2013). Computer-assisted interventions targeting reading skills of children with reading disabilities– A longitudinal study. *Dyslexia Journal*, 19(1), 37–53.

Ghamari Givi, H., Narimani, M. & Mahmoodi, H. (2012). The effectiveness of cognitionpromoting video on executive functions, response inhibition and working memory of childern with dyslexia and attention dificit/hyperactivity. *Journal of Learning Disabilities*, 1 (2), 98-115. (Persian).

Ghobari-Bonab, B., Afrooz, Gh.A., Hasanzadeh, S., Bakhshi, J. & Pirzadi, H. (2012). The impact of teaching active metacognitive thinking-oriented strategies and self monitoring on realing comprehension of students with the reading difficulties. Journal of Learning Disabilities.1 (2), 77-97.(Persian).

Halahan, D. P., Lloyd, Ch., Kaufman, J., Veic, M. & Martinz, E. (2005). Learning disorders, translated by Alizadeh, H., Hemati Alamdarlo, G., Rezaei Dehnavi, S, & Shojaei, S. (2011). Tehran: Arasbaran publication. (Persian).

Holmes, W**.** (2011). Using game based learning to support struggling readers at home.Learning, Media and Technology, 36(1) 5-19.

Hosseynayee, A., Aghajani, A. & Noferesti, A. (2011). Prevalence special disability ofreading and writing in elementary students. *Developmental Pscychology*. 7(28), 354-364. (Persian).

Jabari, s. & Khademi, M. (2009). Assessing the impact of new methods of teaching comprehension strategies and traditional strategies on reading comprehension of the fourth and fifth grade students with reading problems and without reading problems. Studies in Learning and Instruction. *Journal of Social Sciences* & *Humanities of Shiraz University*, 1(2), 19-58. (Persian).

Karami, J., Abbasi, Z. & Zakei, A. (2013).The effect of phonological awareness training on speed, accuracy and comprehension of students with dyslexia. *Journal of Learning Disabilities*.2 (3), 116-135.(Persian).

Li, M, & Tsai, Ch**.** (2013). Game-Based Learning in Science Education: A Review of Relevant Research. *Journal of Science Education and Technology*, 22, 877-898.

Marnat, G. G. (2005). Psychological Evaluation Guidelines for clinical psychologists, counselors and psychiatrists. Translation by Mohammad Hassan Pasha Sharifi and Mohammad Reza Nikkhou. Tehran: Growth Publication. (Persian)

Marzban, A. (2011). Improvement of reading comprehension through computer-assisted language learning in Iranian intermediate EFL students. Procedia Computer Science, 3, 3–10.

Mehdizadeh, H, Feyzi, F, & Eslampanah, M. (2011). Education The method "Letter-Spell- Word" with digital multimedia for the development of the first grade primary school students.1(3), 146-164.(Persian).

Najafi Pazooki, M., Darzi, A., Dastjerdi, M, Saadati Shamir, A, & Danaye Toosi, M. (2013). Syntactic awareness, working memory and Comprehension. *Journal of Educational Innovations*, 45(12), 61-84. (Persian).

Nojabaee, S., Amoopour, M. & Azarnoosh, K. (2012). Evaluation Of Revalence And Diversity Of Learning Disorders Among Elementary School Students In Rasht City. *Kuwait Chapter of Arabian Journal of Business and Management Review*, 1(5).

Ponce, H. R., López, M. J. & Mayer, R. E. (2012). Instructional effectiveness of a computer-supported program for teaching reading comprehension strategies. Computers & Education (2012), doi: 10.1016/j.compedu.2012.05.013.

Poortaheriyan, Z., Khosravi, M. & Mohammadifar, M. A. (2014). The relationship between reading metacognition strategies and study habits on academic motivation. *Journal of school psychology*, 3(1), 22-36. (Persian).

Raghebian, R., AkhavanTafti, M., & Hejazi, E. (2012). An examination of the effectiveness of a program based on combining questioning the author and triarchic reading comprehension approaches in improving the students'reading comprehension. *Journal of school psychology*, 1(2), 39-58. (Persian).

Saeedi, A., Saif, A. A., Asadzadeh, H. & Ebrahimi Qavam, S. (2013). Comparing effectiveness of methods of presentation and providing concept maps on reading comprehension. *Journal of school psychology*, 2(3), 125-143. (Persian).

Seo, You-Jin,& Woo, Honguk. (2010). The identification, implementation, and evaluation of critical user interface design features of computer-assisted instruction programs in mathematics for students with learning disabilities. Computers & Education, 55, 363–377.

Sedaghati, L., Foroughi, R., Shafiei, B. & Maracy, M. R. (2010). Prevalence of dyslexia in first to fifth grade elementary students Isfahan, Iran.Audiol. 19 (1), 94-101. (Persian).

Shahim, S. (1994). Wechsler intelligence scale for use in children. *Phsychological Research Journal*,18, 67-80. (Persian).

Sharifi, A. A. & Davari, R. (2009). Prevalence of dyslexia in third and fourth grade elementary students Sharkord. *Research on Exceptional Children*, 8(4), 413-418. (Persian).

Shen, Y. (2012). The Effects of Using Story Structure Strategy in English E-Picture Books on Word Recognition, Reading Fluency and Reading Comprehension Ability among Fifth Graders. www.140.133.6.46.

Shirazi, S. & Nilipoor, R. (2004). Design and scaling diagnostic reading rest. *Journal of Rehabilitation*, 5(1, 2), 7-11.(Persian).

Shokoohi Yekta, M. & Parand, A. (2006). Learning disabilities.Publishing Institute Teymorzadeh, Tabib publication. (Persian).

Stetter, M. E. & Hughes, M. T**.** (2011). Computer assisted instruction To promote comprehension in students with learning disabilities. *International Journal of Special Education*, 26(1), 88-100.

Zare, H., Amiri Ahooei, F. & Taraj, Sh. (2009). The effective educational games on shortterm memory and spelling primary school with disabilities learning. *Research on Exceptional Children*, 4, 367-374.(Persian).