

## Computer Games: Implementing Computer Games on Iranian Early EFL Learners

Fateme EBRAHIMI

Mustafa ZAMANIAN

**Abstract :** *Teaching children is different from others. They are energetic with little patience to stay at classroom. Therefore, it is necessary to find an appropriate method for this age. Thus, this study investigates the impact of implementing computer games on early EFL vocabulary achievement and using the vocabulary at the sentence level. To have 20 students in the same level of intelligence, 20 students that enrolled in a language institute completed the Raven's colored progressive test (IQ test). Then they were divided into two groups randomly in that case computer group was taught by using two software Jumpstart English and Baby Einstein, and children in control group learned vocabulary by traditional methods. In the sixteenth session (last session) an oral achievement test (reliability= 0.87) was run. The results revealed that computer game group outperformed at sentence level, while at word level there is not any significance difference between two groups.*

**Key words:** *computer game, vocabulary learning, early EFL learners, Raven's colored progressive test*

### 1 Introduction

“Vocabulary is an essential means of interchanging ideas and of acquiring new experiences. Man's growth in ideas has always been accompanied by a corresponding expansion of his vocabulary.” (Gray 1939, p.1, as cited in Iheanacho, 1997)

Scholars work on the importance of vocabulary learning and in this way they work on different methodologies to help different learners. Nevertheless, “Our students are no longer the people our educational system was designed to teach.” (Prensky, 2005, p. 98) Gradually learners are becoming separate from educational system.

Some scholars (Cornillie, 2012, Mingfong Jan, 2011, Demirbilek, 2010) believe that there are so many studies have been done on different kinds of method to learning vocabulary but still teaching methods need more research on how to improve second language learners' vocabulary size. Computer assisted language learning (CALL) programs have been found to be effective in many language learning studies. After mid-1980s, digital games have been developed into computer games, video games and electronic games. (Soyluçiçek, 2011) Through playing digital games, even the shyest students participate in language learning. (Aghlara & Hadidi Tamjid, 2011)

Game provides communication, sharing and relaxing fields that play an important role in human education process as studied by anthropology, psychology, pedagogy or communication sciences etc. (Binark, 2009, as cited in Soyluıek, 2011)

In other words, *Games* are not just used as an entertaining means. It can be used as a learning material. Studies on the using games had shown that teaching a lesson with a game environment attracts students' attention and increases their motivation towards the lesson. (Cornillie, 2012, Demirbilek, 2010).

Today by incorporating characteristics of games with instructional material, the potential for motivating students to learn may increase, as well as improving the chances that students will perform at higher academic levels. (Gale, 2011)

By studying the literature of different studies in CALL, it is inferred that computer proved to be a useful application in helping teachers through their methodologies. But Iran's English classrooms except few are not equipped with computes. On the other hands, parents mostly prefer traditional ways, too. Therefore, the result of such research can be helpful for teachers and parents.

## **2 Literature Review**

"Those who educate children well are more to be honored than parents, for these only gave life, those the art of living well" (Aristotle). However, the question is that by which method, which syllabus, and so many other questions. Stec (2011) attempted to answer at least one of these questions. She believed, "For understanding the theory and practice of early language education, teachers should know the characteristic features and needs of children as language learners." (p. 1123)

Today, kids are growing up with technology. They interact with each other through technologic devices like cell phones, gaming boxes or computing machines. Learning processes of children have been modifying by the use of computer in education. Computer offers unique opportunities for learning. Using computers in preschool education is an important issue investigated frequently in last decades. In this sense, the use of computer assistance cannot be ignored especially at pre-school level. (Ayvaci & Deveciog˘lu, 2010)

Gorjian (2012) believe that "the use of computer technology in teaching languages has been dramatically increasing worldwide over the past decade but also holds other great potentialities for language learning" (p. 335). One of these potentialities is the ability to present information in different formats using graphics, sound, text, and video with links to other chunks of information through using Web-Based Language Learning (WBLL) activities (Cummins, 2008, as cited in Gorjian, 2012).

Computer assisted language learning has different branches like computer games, video games, and learning softwares. Jacob (2009) stated “by using materials on CD-ROM, DVD’s or even Web-based resources, the ESL class (English as a second language) becomes more dynamic, attention-grabbing, offering the students new entertaining ways of practicing their listening and responding skills.” (p.141)

Educational software is other teaching instrument. Educational software development is one of the major fields in Computer Education and Instructional Technologies Department. Educational software can assist students in their learning process in many ways. CAI (computer assistance instrument) is a tool to enhance and reinforce teaching learning activities. It increases pupils’ motivation and engagement in the activities. It is important to set up the settings with multimedia in order to stimulate all senses of a child for better learning. (Yürütücü, 2002, as cited in Ayvaci & Deveciog˘lua, 2010) Software development processes of education must provide the students with knowledge and practice of Educational Software development.

### **3 Research Questions**

1. Is there any significant difference between the vocabulary learning of the group using computer games in classroom and the group applying traditional method?
2. Is there any significant difference between the vocabulary learning of the group using computer games in classroom and the group applying traditional method at the sentence level?

### **4 Methodology**

#### **4.1 Participants**

Twenty-eight children enrolled to study English in Sokhan institution. They were between 4 to 6 years old. Only individuals who were not familiar with English were allowed to participate in this study. So four students who knew words like hello, water, cat, apple, banana, mom and dad, home were removed from the study. To have two groups in the same size and same level of intelligence Raven’s colored progressive test (IQ test) was run. The sample in each group consisted of ten participants (five girls and five boys). All of them were Iranian and Persian is the only language that they knew. Consent forms were given to students’ parents who read, signed, and returned it. The heads of institution gave approval for their students’ participation in the study, too.

#### **4.2 Teachers**

The teacher of the computer group was familiar with computer software. She had teaching experience in different institutions and at different levels. Because of her interest in computer software, she used them in different classes at different levels. The teacher of the control group trusts in books without any innovation. She graduated from Chamran state university in English literature.

### **4.3 Materials**

#### *4.3.1 Raven's Colored Progressive Matrices*

Colored Progressive Matrices is designed for younger children. This test contains sets A and B from the standard matrices, with a further set of 12 items inserted between the two, as set Ab. Most items are presented on a colored background to make the test visually stimulating for participants. However the very last few items in set B are presented as black-on-white; in this way, if a subject exceeds the tester's expectations, transition to sets C, D, and E of the standard matrices is eased. This test was used for homogenizing two groups and control the moderating variable that is the intelligence level of children.

#### *4.3.2 Softwares: "Jumpstart English" and "Baby Einstein"*

##### *4.3.2.1 Jumpstart English*

Through fun activities and songs, Jumpstart Phonics Read & Rhyme encourages children to master each new word and sound as they progress through engaging activities. It is consisted of eight CDs: alphabet, reading adventure, geometry, numbers, time, and my magic playground.

##### *4.3.2.2 Baby Einstein*

Baby Einstein introduces babies to the world around them by using real-world objects, music, art, poetry, animals and nature in playful, enriching ways. "Its focus is to create high quality, innovative products that bring the arts and humanities to babies in a way that is fun and appropriate to their age. The philosophy of this company is to engage babies and make discovery." (Baby Einstein's website, Retrieved Feb 24, 2013)

To have the same content for teaching some parts of each of these programs were used.

#### *4.3.3 Achievement Test*

The test was made of twenty questions. It was an oral test and children one by one answered the questions. The test was made of two parts: vocabulary and using words in the sentences. Concerning validity, the test was based on the content of materials that were covered in the class so it had content validity. Teachers agreed on it and two experts approved it. To be reliable, the test was piloted in a group

with the same number of peer children. Test retest was used for calculating the reliability of this test and the calculated reliability was 0.876.

#### **4.4 Data Collection Procedures**

Prior to collecting data for this study, permission was obtained from the head of the institution. Additionally, I gained permission from parents to use their children's data in the study. One day before treatment, students participate in pretest. The test was consisted of two parts the first part was an interview about students' name, age, gender and some questions in English to recognize if they were familiar with English words. In this stage, four students who know English words were eliminated from the study. The second stage of pretest was IQ test. Then two other students that are not in the normal curve were eliminated and the remaining people were divided randomly into two groups.

##### *4.4.1 Group one (Computer Group)*

The class was held on Saturday, Monday, and Wednesday from 18 to 19 o'clock. This group worked with computers. Each pair of students shared one system and one headphone for each student. They had a rectangular table and could see each other. Their class had two parts. At first part, teacher ran program that reviewed previous lessons like matching. Before the second part of class time, they had snack time. During this time, computers were off and teacher prepared new program for new lessons. Before second part of class, teacher gave explanation to students about what students were faced. During teaching part, teacher just answered questions and if it was necessary repeated new words or expressions.

##### *4.4.2 Group two(control group)*

Class was held in Sundays, Tuesdays, and Thursdays on 18 to 19 o'clock. *My First English Adventure* book were used. Again, control group's class consisted of two parts. The first part, like other two groups, focused on reviewing prior lesson. In this part, teacher showed picture cards to children and asked questions in Persian. The second part begun with teacher's explanation about new expressions. E.g. colors: teacher asked students to name colors in Persian then she named it in English.

At the sixteenth section the achievement test was run. The test was oral and the students one by one answered teacher's questions.

## **5 Results**

### **5.1 Pre-test Result**

The results of the performance of three groups on pre-test were evaluated and descriptive statistics of the mean scores were computed for the two groups in table 5.1 because of slight differences independent sample *t*-test was run (see table 5.2).

| type     |          | N  | Mean     | Std. Deviation | Std. Error Mean |
|----------|----------|----|----------|----------------|-----------------|
| computer | computer | 10 | 120.9000 | 6.87103        | 2.17281         |
|          | control  | 10 | 120.8000 | 7.58361        | 2.39815         |

Table 5.1 Descriptive Statistics of IQ Test

| Independent Samples Test |                             |   |      |                              |        |                 |
|--------------------------|-----------------------------|---|------|------------------------------|--------|-----------------|
|                          |                             | Levene's Test for Equality of Variances |      | t-test for Equality of Means |        |                 |
|                          |                             | F                                       | Sig. | t                            | df     | Sig. (2-tailed) |
| computer                 | Equal variances assumed     | .388                                    | .541 | .031                         | 18     | .976            |
|                          | Equal variances not assumed |   |      | .031                         | 17.828 | .976            |

Table 5.2 Results of the t-test for the IQ Test

From Table 5.2 it is inferred that three groups were homogeneous with regard to their IQ test.

## 5.2 Addressing the First Question

*Is there any significant difference between the vocabulary learning of the group using computer games in classroom and the group applying traditional method?*

Table 5.3 displays the descriptive statistics of post-test scores for the control group and computer game group. There is a difference between the means of two groups. In order to see if the difference is statistically significant or not, an independent sample *t*-test was run. The results are displayed in table 5.4.

| type  |          | N  | Mean   | Std. Deviation | Std. Error Mean |
|-------|----------|----|--------|----------------|-----------------|
| group | computer | 10 | 9.2000 | .91894         | .29059          |
|       | control  | 10 | 8.6000 | 1.17379        | .37118          |

Table 5.3 Descriptive Statistics of Post-test Scores for the Control Group and Computer Game Group

| Independent Samples Test |  |  |  |  |  |  |
|--------------------------|--|--|--|--|--|--|
|--------------------------|--|--|--|--|--|--|

|       |                             | Levene's Test<br>for Equality of<br>Variances |      | t-test for Equality of Means |        |                 |
|-------|-----------------------------|---|------|------------------------------|--------|-----------------|
|       |                             | F   | Sig. | t                            | df     | Sig. (2-tailed) |
| group | Equal variances assumed     | 1.000   | .331 | 1.273                        | 18     | .219            |
|       | Equal variances not assumed |   |      | 1.273                        | 17.020 | .220            |

Table 5.4 Independent Sample t-test of Post-test Scores for the Control Group and Computer Game Group

Based on table 5.4, the amount of  $t$  is 1.273, which is not significant at the probability level of .50. In other words, there is no significant difference between the two groups.

### 5.3 Addressing the second Question

*Is there any significant difference between the vocabulary learning of the group using computer games in classroom and the group applying traditional method at the sentence level?*

Table 5.5 displays the descriptive statistics of treatment for the control group and computer group. Based on table 5.5 there is a difference between the means of two groups. In order to see if the difference is statistically significant or not, an independent sample  $t$ -test was run. The results are displayed in table 5.6.

|       |          | Group Statistics |        |                |                 |
|-------|----------|------------------|--------|----------------|-----------------|
| group | type     | N                | Mean   | Std. Deviation | Std. Error Mean |
| group | game     | 10               | 9.7000 | .67495         | .21344          |
|       | computer | 10               | 7.2000 | 1.81353        | .57349          |

Table 5.5 Descriptive Statistics of Treatment for the Control Group and Computer Group at Sentence Level

| Independent Samples Test |                             |   |      |                              |        |                 |
|--------------------------|-----------------------------|---|------|------------------------------|--------|-----------------|
|                          |                             | Levene's Test<br>for Equality of<br>Variances |      | t-test for Equality of Means |        |                 |
|                          |                             | F   | Sig. | t                            | df     | Sig. (2-tailed) |
| group                    | Equal variances assumed     | 19.478  | .000 | 4.086                        | 18     | .001            |
|                          | Equal variances not assumed |   |      | 4.086                        | 11.446 | .002            |

Table 5.6 Independent Sample t-test of Post-test Scores for the Control Group and

Computer Game Group at Sentence Level

As it can be seen from the table, the mean score in the experimental group was higher than the mean score of the control group. Based on table 5.6, the amount of  $t$  is 4.08, which is significant at the probability level of .50. In other words, there is significant difference between the two groups.

## 6 Discussion

Based on table 5.4 there was not any difference between the two groups on vocabulary retention. In other words, computer method was not more influential than traditional method of teaching words to children.

The first part of this study is in line with Penna and Stara (2007) as they put it “educational software and environments did not help students to learn more and better than in traditional training contexts.” (p. 127) They conducted a study on literature review of CALL studies and founded that failure in educational software “... could be found both in user’s information processing strategy, and in a lack of evaluation studies concerning cognitive models of human learning process underlying the design of software actually in use.” (p.133)

However, Peterson (2010) in a study on computerized games and simulations in computer assisted language learning referred to the beneficial effects of computerized games and simulations in computer assisted language learning. He put that computerized games need “more large-scale longitudinal studies that explore a number of key areas. These include the influence of factors such as task, training, proficiency level, and affective variables on learner language development” (p. 89). “Computer games are today an important part of most children’s leisure lives and increasingly an important part of our culture as a whole.”(Aghlara & Tamjid, 2011, p. 557) These and others believe in the effectiveness of the computer programs. The answer to the second question proved these results, too.



Table 5.6 also show the significance difference between experimental group and control group. Children in computer group learn new words in sentences better than the control group. They learn sentences in the context while control group learn in uncontextualized situation.

## 7 Conclusion

The purpose of this study was to determine the impact of implementing computer games on early EFL vocabulary learning. This study compared the differences in students' scores following an instructional session. The results illustrate that computer games' influence is more obvious at sentence level students in the computer game's class use more correct sentence in compare with students in the control group.

When conducting the study, a couple of variables in the study were controlled. The study was begun by an IQ test, Raven's colorful progressive matrices. Students at two groups were homogenized based on their level of intelligence (moderator variable) then the second important factor was gender. The number of boys and girls in computer group were equal but the control group included three boys and seven girls. This must be taken into account before any generalization can be made.

If a teacher wants to use computer programs in the classroom, he or she should consider implementing a variety of pedagogical situations before the students using it. The teacher might ask students if they are familiar with the game and its rules. Teacher might consider the balance between the program and language learning.

## References

- HAKAN S. A., & YASEMIN D. Computer-assisted instruction to teach concepts in pre-school education. *Procedia Social and Behavioral Sciences*, 2, 2083–2087, 2010. [http://ac.els-cdn.com/S1877042810003253/1-s2.0-S1877042810003253-main.pdf?\\_tid=44758714-6d71-11e3-92fb-00000aacb35f&acdnat=1387982079\\_f791a047a9d41653076486008aded180](http://ac.els-cdn.com/S1877042810003253/1-s2.0-S1877042810003253-main.pdf?_tid=44758714-6d71-11e3-92fb-00000aacb35f&acdnat=1387982079_f791a047a9d41653076486008aded180)
- CORNILLIE, F., GERALDINE C., & PIET D. The role of feedback in foreign language learning through digital role playing games. *Procedia - Social and Behavioral Sciences*, 34, 49 – 5, 2012. <http://www.sciencedirect.com/science/article/pii/S1877042812003163/pdf?md5=454cc083d802b00e7ec4368e6bab590d&pid=1-s2.0-S1877042812003163-main.pdf>

DEMIRBILEK, M., EBRU Y., & SUSZAN T. Second language instructors' perspectives about the use of educational game. *Procedia Social and Behavioral Sciences*, 9, 717–72, 2010.

<http://www.sciencedirect.com/science/article/pii/S1877042810023281/pdf?md5=1eecd6227062163843856948998f166e&pid=1-s2.0-S1877042810023281-main.pdf>

GALE, M.T. Game play in higher education: The use of serious games vs. traditional instructional methods in learning. *ProQuest Dissertations and Theses*. (UMI Number: 3464449), 2011.

GORJIAN, B. Teaching vocabulary through web-based language learning (WBLL) approach. *Procedia Technology*, 1, 334 – 339, 2012.

<http://www.sciencedirect.com/science/article/pii/S2212017312000710/pdf?md5=2426d31a323d78a09d4752e35e98528c&pid=1-s2.0-S2212017312000710-main.pdf>

IACOB, I. The effectiveness of computer assisted classes for English as a second language. *Annals. Computer Science Series*, VII , 141-148, 2009. <http://arxiv.org/ftp/arxiv/papers/0905/0905.4611.pdf>

IHEANACHO, C. C. The effects of two multimedia computer assistance language learning programs on vocabulary acquisition of intermediate level of ESL students. *Master Abstracts International*. (UMI Number: 3024746), 1997.

JAN, M., CHEE Y. S., & EK M. T. Reconceptualizing science classroom discourse towards doing science through a game-based learning program. *US-China Education Review B*, 6, 786-796, 2011. <http://files.eric.ed.gov/fulltext/ED529374.pdf>

LALEH, A., & NASRIN H. T. The effect of digital games on Iranian children's vocabulary retention in foreign language acquisition. *Procedia – Social and Behavioral Sciences*, 29, 552 – 560, 2011. <http://www.sciencedirect.com/science/article/pii/S1877042811027364>

PENNA, M. P., & VERA S. The failure of e-learning: why should we use a learner centered design. *Journal of e-Learning and Knowledge Society*, 3(2),127-135, 2007. [www.jelks.org/ojs/index.php/JeLKS\\_EN/article/.../236](http://www.jelks.org/ojs/index.php/JeLKS_EN/article/.../236)

PETERSON, M. Computerized games and simulations in computer assisted language learning: A meta-analysis of research. *Simulation & Gaming*, 41(1) 72 –93, 2010. [sag.sagepub.com](http://sag.sagepub.com)

PRENSKY, M. *Digital natives, Digital immigrants*. 2001.

<http://www.marcprensky.com/writing/Prensky%20%20Digital%20Natives,%20Digital%20Immigrants%20-%20Part1.pdf>

SOYLUÇIÇEK, S. Graphical design issues on educational computer games for children. *Procedia Social and Behavioral Sciences*, 15, 642–645, 2011.

<http://www.sciencedirect.com/science/article/pii/S1877042812015613/pdf?md5=b504777d17810e0ea00e86aeca5e9456&pid=1-s2.0-S1877042812015613-main.pdf>

STEC, M. Early language teaching and syllabuses. *Procedia - Social and Behavioral Sciences*, 29, 1123 – 1132, 2011.

<http://www.sciencedirect.com/science/article/pii/S1877042811028072/pdf?md5=8217aae6cf6ff3e79a88f374c1455987&pid=1-s2.0-S1877042811028072-main.pdf>