

Integration of Serious Games in Teaching English as a Foreign Language to Iranian Children

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Abstract

Nowadays computers are increasingly being incorporated into school curriculums and serious games are occupying the educational games markets. This article addressed the integration of serious games as tools for learning and teaching English in Iranian schools to zero-beginner students. An experiment was concluded using Computer Assisted Language Learning (CALL) to investigate the effectiveness of using serious games; namely, *Mingoville English* as an educational aid and also to examine parents, students and instructors' attitudes towards using serious games. To this end, 60 female students were chosen and divided into two groups. The control group was taught in the conventional way and the experimental group received the educational aiding material *Mingoville*, a web-based serious game program, as the treatment. The results of the analyses revealed that the experimental group outperformed the control group as the method of teaching was changed. The study also showed the willingness of children, their parents, and teachers toward using such games. It can be concluded that using serious games such as *Mingoville* can be regarded as an effective tool in teaching English to Iranian EFL children at schools and language institutes. The study can benefit teachers and heads of institutes to add serious games as aiding instructional materials to their English classes.

Keywords: Attitude, CALL, Iranian EFL children, Mingoville English, serious games

Introduction

In the third millennium, where technology is the basis of each and every action and children tend to spend most of their time playing computer games, there is a chance for teachers to use CALL as an opportunity to employ the potential capabilities of digital games and serious games in language classes. Recently, digital, serious games are receiving increasing attention by different researchers and practitioners in different parts of the world in educational settings (e.g. Squire, 2006; Gee, 2005; deHaan, 2011; Derakhshan & Davoodi Khatir, 2015). These studies and similar research studies have emphasized that utilizing serious games could be innovative and effective procedures in the teaching environments related to school children and can help the educators to create situations in which the language is meaningful and beneficial.

In the case of playful learning, it seems that it is more effective on children than other age ranges. To the best knowledge of the researchers, there have not been many research studies in Iran investigating the effectiveness of integration of serious games in teaching English to the children. On the other hand, in recent years, the officials have tried to digitalize schools and train school teachers to use technology in their classes. Therefore, the field is now open for trying to train these children with digital games or serious games and see how they affect children's

language learning abilities in comparison with conventional classes.

This study aimed at investigating the quality and the amount of learning among the subjects of the study after an educational term of teaching them using serious games. It also investigated the attitudes of learners, their parents, and teachers regarding the integration of such games as educational tools. The emergence of technology and the integration of CALL in educational settings could help learners especially, children to enjoy learning a foreign language in a playful and cool environment. It could change the atmosphere of the class, reduce the affective filter students might take to the classroom.

Literature Review

During the recent years, adaptation of technology in different environments, school curriculums, and educational settings have increased. Computer games and serious games have occupied educational games market. They are being used for different areas such as government, military, hospitals, business, and education (Susi, Johannesson, & Backlund, 2007). Serious games are not just used for teaching facts and rote memorization, but they also encompass different aspects of education at different levels and ages (Michael & Chen, 2006).

According to Donmus (2010), educational games are activities that provide students with the opportunity to reinforce the previous knowledge by repeating it in a more comfortable environment. Educational games are software that help students to learn the lesson topics and develop their problem solving skills by using their desire and enthusiasm to play.

The term serious game itself came into wide use with the emergence of the serious games initiative in 2002. It is exploring management and leadership challenges facing the public sector. Employing serious games in educational settings could provide important beneficial results for teachers in teaching to learners. Because learners get the chance to experience and make mistakes in a safe environment; the environments that parents want for their children.

In recent years, many of language researchers have worked on Computer Assisted Language Learning (CALL) or Computer Assisted Language Teaching (CALT) and more specific, on teaching through games especially *serious games* or educational games. McGrath (2004) focused on a junior secondary English class at a school in Queensland. The students undertook a curriculum unit that used a critical literacy framework to study the narratives and cultural identifications inherent in a number of computer games. The study showed that using narrative computer games as a form of text for study in subject English allowed for an examination of new forms of literacies and the students found it more student-friendly.

Chuang and Chen (2007) studied the effect of digital games on children's cognitive achievement. Their study investigated whether digital games facilitates children's cognitive achievement in comparison to traditional computer-assisted instruction. The results indicated that digital game playing not only improved the subjects' fact or recall processes, but also promoted their problem-solving skills by recognizing multiple solutions for problems.

Ranalli (2008) used The Sims™ game as a mass-market simulation games for CALL. Nine intermediate-level students with different linguistics background participated in the study. He reported that "the study provided further evidence that commercially produced computer simulation games can, with theoretical guidance, be adapted for use by ESL students; and further that supplementary ESL materials used to support such play can contribute to vocabulary acquisition" (p. 13).

Turgut and Irgin (2009) studied young learners' language learning via computer games in Turkey. Their qualitative research investigated young learners' experiences of language learning through computer games played in the Internet cafes. They collected the data employing some

interviews and observations. The analysis of the data showed that young learners' playing online games promoted language learning and especially vocabulary gaining.

Wang (2010) examined the use of communicative language games for teaching and learning English in Taiwanese elementary schools. The teachers received 150 questionnaires through which the author investigated the subjects' perspectives on the use of communicative language games in English lessons. The results of the study provided encouraging evidence to indicate that the teachers generally appreciated the benefits and effectiveness of communicative games in educational settings for teaching English. The findings of the study also advocated that teachers should take into account students' different individual differences, linguistic backgrounds, wants, expectations, motivations, learning styles, or needs and be more flexible in their use of communicative games in order to maximize educational effect.

deHaan (2011) worked on two aspects of games involving educational game designs and game magazine creation. In the first project three students worked on designing games and developing English language role-playing games on the library computers. Eight students participated in the second project that was game magazine creation in order to create an online and printed game magazine. At the end of the projects he reported that "the projects motivated the students, challenged the students, provided opportunities for authentic discussions in the foreign language, and gave the students concrete language, technology, teamwork, and creative experiences." (p. 52)

To the best knowledge of the researchers, not so many research studies have been completed on the concept of *serious games* in Iran. Aghlara and Hadidi Tamjid (2011) examined the effect of digital games on Iranian children's vocabulary retention in foreign language acquisition. They used a program named SHAIEX (Sistema Hipermedia Adaptativo para la enseñanza de idiomas en entorno Linux). Their subjects were 40 girls, 6-7 years old, with no prior knowledge of English. The subjects were divided into two groups as a control group and an experimental group. The programs included some activity games and after a teaching period, the children were tested for what they have gained during the course. The findings showed that digital games had positive effects on the learning process and motivated the children and reduced their stress.

Karimi and Nosrati (2012) discussed the basic principles and issues like motivation and game facts like challenge, goals, and instructional games. Meihami, Meihami, and Varmaghani (2013) used simulation games to teach English to adult sailors and mariners. Their experimental group received treatment with navy simulator software, and the control group received ordinary training. After the training period, the subjects were tested for what they had gained during the course. The result showed that simulation game had a significant role in learning English vocabulary and pronunciation of the experimental group. Rohani and Pourgharib (2013) investigated the effect of games on learning vocabulary and concluded that the use of games helps the teacher to create various contexts for the students to use the language to communicate, exchange information and express their opinions. Most of the studies conducted in Iran have just focused on vocabulary improvements.

Lack of studies on the effect of serious games in educational setting was the main motivation for conducting this research study. Therefore, to investigate the contributory role of games such as Mangoville and to describe the attitudes and perception of the students, parents, and teachers, the following questions were posed.

Q1. Does the integration of serious games have positive effects on the amount and quality of learning English by Iranian zero-beginner children studying in elementary schools?

Q2.Does the student motivation increase when serious games are utilized in EFL zero-beginner classrooms?

Q3.What are the attitudes of teachers and parents towards the use of serious games in schools?

Method

Design and setting

The design of study was quasi-experimental because it required the subjects to go under some treatment and procedures where no random selection of the subjects were possible. In the design of experiments, the experimenter is often interested in the effect of some process or intervention or treatment on some objects or experimental units. The study was conducted in a female students' elementary school, in Isfahan, Iran. Two classrooms were used as the setting of the experiment equipped with educational instruments and electronic aids such as laptops, video projectors, loud speakers, and ADSL Internet connections. The classes were held during the mornings from 9 to 11 a.m. in summer 2014. The virtual setting for the subjects in the experimental group also included *Mingoville English*.

Subjects

The main target population of the study was all Iranian school children, but the sample was chosen via convenience sampling from a female elementary school in Isfahan, Iran. A sample of 60 female students aged between 7-12 years old was chosen. At the time of the study, the subjects were studying in level two, three, four, five, or six of elementary school. Based on the location of the school and the district, they were classified as middle low class in terms of social class and economic statuses. Because the subjects had no or very little prior confrontation to English and learning English, there was no need for any pre-tests or placement tests in order. The subjects were equally divided into two groups, an experimental and a control group. It is worthy of mention that at the time of registration for classes, the parents were asked if their children had prior knowledge and basic information on working with Windows™ based computers. If the child did not know how to work with them, her name was registered in the control group class and if the answer was positive, they were placed in the experimental group.

Moreover, addressing the second objective of the study, 17 English teachers, one of whom was the same individual teaching the two classes in the present study, were asked to fill in an attitude questionnaire. The instructors included were eight males and seven females, aged between 18 and 30 (average=25) all living in Isfahan, Iran and teaching English for more than at least 3 years in language institutes there. Their mother tongue was Persian and English was their foreign language. They were familiar with computers and used it frequently. To collect the required data for the end-user's attitudes towards using series games to teach English, all the students as well as their parents (N=60) were asked to respond to a survey questionnaire too. Table 1 shows the demographic characteristics of the parents:

Table 1. Parents' Demographic Characteristics

Gender	Male		Female	
		22	36.67	38
Having Pcs, Tablets, Smart Phones	Yes		No	
	51.00	85.00	9.00	15.00

Educational Background	Below diploma	7	11.67
	Diploma	29	48.33
	Bachelors' degree	18	30.00
	Master's degree	3	5.00
	PhD	3	5.00
Total		60	100.0
Internet Connectivity Type	Dial-Up	5	7.69
	ADSL	38	58.46
	Wi-MAX	5	7.69
	Mobile Data	6	9.23
	No access	11	16.92
	Total	65	100

Materials

The main coursebook used in this study was the *Starter* coursebook of *Family and Friends Series* written by Simmons (2012). The teachers' book describes the series as a complete seven level course of English for children in primary schools. It uses a clear grammar-based curriculum alongside parallel syllabi in skills and phonics. In this way, children develop the confidence and competence to communicate effectively in English, as well as understanding and processing information from a wide range of sources. *Family and Friends* combines the most effective literacy techniques used with native English speakers with proven techniques for teaching English as a foreign language to children. The following key features characterizes the coursebook as publicized by Oxford University Press in the back of the series:

- Exceptionally strong skills training program
- Amazing package of integrated print and digital resources
- Step by step phonics program
- Values syllabus - social and emotional skills
- Testing resources - including Cambridge Young Learners English Tests and Trinity Examinations practice papers

Children have different learning styles. Some learn better by seeing (visual learners), some by listening (auditory learners), some by reading and writing, and some with movement (kinesthetic learners). This book series were chosen for this study because it uses all of these approaches to help every child realize his or her potential. The materials of this series are also written in a way that was perfect to be used along with the treatment materials.

The instructional materials used as an educational aid for treating the subjects in the experimental group of the study were a series of educational materials in the form of serious games known as *Mingoville English*, a web-based program. This program can be accessed through its official website (<http://www.mingoville.com>) which provides different versions of the software for individual and schools use, both paid and free. For this particular study, the normal free school version was used. *Mingoville* is a series of small games classified for teaching different subjects in English. As stated in its website, it is a city where the flamingo family Pinkelton lives. Together with the Pinkeltons, children learn English through a world of non-stop activities that combine social interaction, pictures, animation, sound, and text.

Instruments

Since the subjects present in the study were true zero beginners with no previous exposure to English, unlike similar studies using the experimental design, there was no need for pre-test inclusion to guarantee the homogeneity of subjects in terms of their proficiency level in English.

To measure the ultimate achievement of the subjects in both group, a researcher-made post-test was developed and administered at the very end of the instruction. This final test was constructed by the present researchers based on the instructional objectives of the coursebook and was successfully piloted once before with some similar subjects in a private institute. The paper-and-pencil five-page post-test had eight questions testing all four skills of language encompassing listening, speaking, reading, and writing. The first question evaluated listening comprehension and pronunciation and also recognition of colors. The second question evaluated how the subjects learned the alphabet and their sounds. The third question evaluated handwriting, reading and vocabulary. The fourth question was a repetition and replacement task evaluating both vocabulary and subject pronouns. The fifth question evaluated letter recognition. The sixth question evaluated vocabulary and handwriting beside letter recognition. The seventh question evaluated English alphabet sounds and finally the eighth question evaluated vocabulary and small or capital letter recognition.

In order to investigate the instructors' attitudes and willingness towards using Serious Games as an educational aid in their classes, a 10-page survey questionnaire developed by Christensen and Knezek (1996) at Texas Center for Educational Technology University of North Texas, was adopted and administered to 17 English instructors teaching in Isfahan institutes including the instructor participating in the main study. This accredited questionnaire was chosen because it is frequently used by the scholars and its reliability and validity are well established.

Moreover, a 30-item five-point Likert scale survey questionnaire in Persian was developed and administered to the student subjects as well as their parents. Of course, due to their age, the subjects were permitted to complete the questionnaire with the help of their parents at home. In addition to its opening part asking the respondents for their personal demographic background information, the questionnaire consisted of two different parts of equal size, both having 15 items: the first part investigated their attitude towards using serious games and the second part dealt with the possible educational barriers. It is worth mentioning that the content validity of the survey instrument was checked with three experts in the field.

Data collection procedure

Following the twin objectives of the study, the data required for the present study came from two sources: Treatment and Surveys.

Treatment

To achieve the main objective of the present study, first, the subjects were divided into two control and experimental groups of 30. For both groups, three 90-minute sessions were held every week for a period of six weeks in a row; thus, there were 17 sessions of instruction in total. The classes were held in the same school where the subjects attended their ordinary school classes. Both groups were taught in the classes well-equipped with modern laptops connected to video projectors and connected to the high-speed Internet.

The subjects in the control group were taught the same English lessons as those in the experimental group from the starter book of *Family and Friends* series of course in the conventional way. The only digital instrument used for the control group was the audio CD

provided with the coursebook. The subjects in the control group used the workbook as their class activities and exercises too. The normal routine of the sessions was a brief greeting at first and then the teacher reviewed the materials taught in the previous session. Then, the class started with students' book materials including sections on words, grammar and song, sound and letters, numbers and reading and writing skills. When the teacher started teaching each of the parts mentioned, related audio parts were played multiple times for better comprehension of subjects. The students were asked to chant with the audio or sing the audio track with the music. The book includes a review after every three units that were covered during class time. For further practices, the workbook exercises were also done every two sessions.

The subjects in the experimental group were taught the same book using the same audio CD. The only crucial difference was that they were engaged in *Mingoville* activities instead of the typical workbook exercises, using a laptop and video projectors. The workbook exercises were done at home and checked by the teacher later in the absence of the subjects. Every session after greeting and reviewing, the book was taught to the subjects and then a related part from *Mingoville* was chosen and worked on in the class. For each activity, in *Mingoville* game series, the teacher introduced the activity and gave the subjects a brief tutorial on how to play the game, and then the students came in front and played the game one by one. Others were asked not to interrupt or give hints to the person that was playing at the time. The students challenged other players worldwide since the games were online real-time activities.

It should be mentioned that all of the subjects had the skill of working with computers as the requirement for being included in the treatment process. After Session 17, an achievement test was administered as a post-test to check whether the two groups were meaningfully different from each other. As the post-test had some sections measuring the oral skills of the subjects in English, to increase the reliability of the test scores especially for subjective items, it was decided that every subjects were evaluated, during the same testing session, by the class teacher as well as the two researchers themselves as raters. In fact, the subject's score recorded for the oral section was the average of the four rating scores made simultaneously but separately to ensure the inter-rater reliability of the test. The average amount of time spent for every subject for this part of the test was about 15 minutes.

Survey

At the end of the instructions, the participant instructor along with 16 other English instructors were given a questionnaire survey constructed by Christensen and Knezek (1996) to be completed in a week. In order to avoid hastiness, stress and anxiety when filling the questionnaire, the respondents were given enough time. In practice, the researchers made the survey available online in Google docs platform and sent the link to the instructors by E-mail and Viber™. In addition to the first survey, the student subjects of the study as well as their parents were given a 30-item questionnaire in Persian. Due to their age, the students were allowed to take the surveys home, filling them with the cooperation of their parents and bringing them back at the final-test session. These two surveys were supposed to determine how the teachers, students and parents were motivated and willing to use these tools in their classes as teaching/learning aids.

Data analysis procedure

To analyze the data statistically, first the scores of the subjects on the post-test were summarized as descriptive statistics; namely, mean and standard deviations. Moreover, Kolmogorov-Smirnov Test was used to check the normality of the data. To examine whether the difference found between the two groups was statistically meaningful or not, the most appropriate

test in inferential statistics; namely, the Mann–Whitney U test was employed as the data distribution was not normal. Unlike the t-test, Mann–Whitney U test does not require the assumption of normal distributions. To run the tests, the researchers made use of the famous software package IBM SPSS Statistics.

To codify, classify and analyze the non-parametric data elicited from the survey questionnaires, the verbal and content analysis was done and the frequencies and percentages of the instances were calculated and reported. The following section presents the results of the data analysis.

Results and Discussion

Addressing Research Question One, the results and their possible interpretations are reported and discussed here.

Results for comparing the post-test means

To start the data analysis, first, Kolmogorov-Smirnov test was run to determine whether the data distribution was normal or not. The results showed that the significance level observed for the control group and experimental group was 0.001 and 0.037 respectively, both lower than the p value 0.05. Thus, it was concluded that the data distribution in groups was not normal. Table 2 presents the results of the Kolmogorov-Smirnov test:

Table 2. *Results of Normality Tests*

Groups	Kolmogorov-Smirnov Statistic	Sig
Control	.213	.001
Experimental	.165	.037

Next, it was necessary to summarize the whole data for the post-test using measures of central tendency and variability. Table 3 presents the means and standard deviations as descriptive statistics for the performances of the subjects in the control and experimental groups on the final achievement test:

Table 3. *Descriptive Statistics of Scores in Control and Experimental Groups*

Score	N	Minimum	Maximum	Mean	Std. Deviation
Control Group	30	34.00	50.00	43.2333	4.71742
Experimental Group	30	43.00	50.00	46.5667	2.28463

As evident in Table 3, the mean score of subjects in the experimental group was more than that of those in the control group. Moreover, the subjects were more homogeneous in the experimental group as the respective standard deviation was almost half of its counterpart in the control group. In other words, the scores were closer in the experimental group; the minimum score in experimental group was higher too. In fact, it seemed that the subjects receiving the treatment outperformed those who did not.

However, to see whether the difference found was statistically significant, the Mann–Whitney U test was run as the data distribution was not normal. Table 4 summarizes the results:

Table 4. Results of Mann–Whitney U test

Score	N	Mean Rank	Sum of Ranks
Control	30	24.63	739.00
Experimental	30	36.37	1091.00
Total	60		
Mann-Whitney U	274.000		
Z	-2.620		

As Table 4 reveals, the observed value was found highly significant at the value level of 0.0009 much lower than 0.05; thus, it was proved that the treatment was meaningfully effective. The results of this study are in line with the findings of Chuang and Chen (2007), indicating that digital game playing not only improves subjects' fact/recall processes, but also promotes problem-solving skills by recognizing multiple solutions for problems. Moreover, the results confirmed those of Turgut and Irgin's (2009); they reported that young learners' playing online games promotes language learning and especially vocabulary skills.

Results of the surveys

Addressing Research Questions Two and Three, the results elicited from the instructors, students, and their parents via attitude questionnaires reported, discussed and interpreted here.

Results of instructors' attitude survey

The overall results from instructors' surveys revealed that the Iranian English teachers were willing to use series games and similar computer-assisted web-based programs in their classes; they showed highly positive attitude towards using computers and serious games in the class and they liked the idea of employing *Mingoville*. This supports the findings of Wang (2011) who examined the use of communicative language games for teaching and learning English in Taiwanese elementary schools. The 150 teachers responding to a questionnaire not only reported benefits and valued features of these games but also were satisfied with using this method in their teaching syllabus.

Results of parents'/students' attitude survey

As mentioned before, the questionnaire had two parts. The first part investigated the attitudes of the students and the parents towards using serious games in teaching English. Figure 1 illustrates how they evaluated using computers and especially serious games in teaching English.

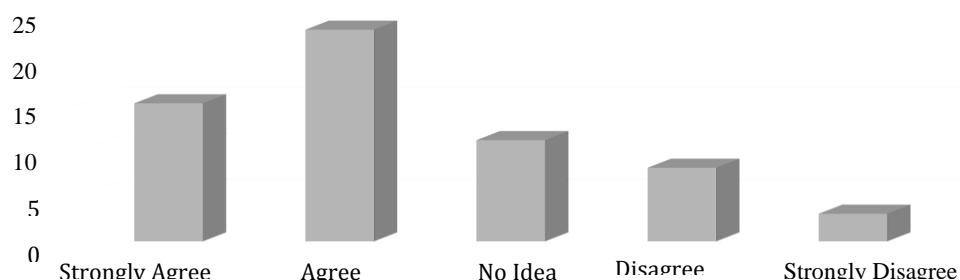


Figure 1. Parents' attitude toward using serious games.

The results showed that about two third of the parents and almost all students liked the idea of using computers and especially serious games like *Mingoville* as an educational aid in teaching English to children. Based on the responses to the questionnaires, majority of students and their parents reported that using series games like *Mingoville* increases motivation to learn English. They found it mostly, exciting, enjoyable, pleasant, and natural way of learning. The findings are in line with those of Ruphina and Liu (2011) on the potential integration of *Mingoville* game program for learning English as a foreign language in two primary schools in China. Their findings revealed that digital games has great potentials to motivate, engage and provoke the interest of Chinese primary school students in learning English language. Likewise, the findings also support those of deHaan (2011).

It is worth mentioning that disagreement with the using of these methods could be attributed to the financial problems in these families for providing facility or equipment. This conjecture was confirmed by the findings obtained from the second part of the questionnaire which dealt with the effect of possible educational barriers. Reflecting their opinions in a five point Likert-Scale survey, the parents reported that in their opinion the major dominant barriers in incorporating this programs and other ones in the educational system in general and English learning in particular included the high cost in terms of money, time, and expertise, unfamiliarity of the teacher/student with the technology, and lack of facility among others.

Conclusion

This study addressed the integration of serious games as tools for learning and teaching English in Iranian schools. An experiment was concluded using *Mingoville* as a serious game as an educational aid. It also examined the learners, parents, and instructors' attitudes and perceptions towards using serious games. The control group was taught in the conventional way and the experimental group received *Mingoville* as the treatment. The results of the analysis revealed that the experimental group outperformed the control group as the method of teaching was changed. The findings also showed that the parents, children, and their teachers had positive attitude towards using such games.

However, no research can be conducted under ideal conditions, and each research has its own sets of limitations. Therefore, the findings of this study are only applicable to the setting and subjects of this study. More studies are required to support and confirm the findings of the present research. This study can be conducted with various levels of students with different gender in different teaching environments or different software. The method can be implied in teaching English in schools including Iranian school and also language institutes. The software developers could also consider this point and design instructional software which are applicable in Iranian educational settings considering cultural, social norms and scripts of Iranian society. Language teachers could also employ such games to teach languages other than English. It is hoped that the concept of serious games would be taken serious in children's classes to make language learning more beneficial for Iranian kids.

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