IT System-based Instruction vs. Traditional Instruction of Teaching Reading Comprehension: A case of low-intermediate EFL learners

Parastoo Soroudi*, High School English Teacher, Public School, Tonekabon, Iran
parastoo.soroudi@gmail.com
Davood Mashhadi Heidar, Assistant Professor, Islamic Azad University, Tonekabon Branch, Tonekabon, Iran
davoodm_tarbiatmodares@yahoo.com

Abstract
The present study was an attempt to investigate the effect of IT system-based instruction vs. traditional instruction of teaching English on Iranian low-intermediate EFL learners' reading comprehension ability in a smart school in Tonekabon, Mazandaran, Iran. To collect the data, 60 low-intermediate high school learners took part in the study. As to the homogeneity of the participants, they took Solution Placement Test (SPT). The participants were divided into one experimental group (i.e. receiving the treatment in terms of using smart tools) and one control group (i.e. receiving no treatment and being traditionally taught through white board). A reading comprehension test (pre-test) was given to examine the participants' initial knowledge of reading comprehension. Similar to the pre-test, a reading comprehension test (post-test) was utilized to check the participants' performance of reading comprehension and look into their probable progress as a result of receiving the treatment. Findings revealed that the experimental group outperformed the control group after the treatment highlighting the success of instruction in enhancing the students' reading comprehension ability. The results suggest the application of smart tools to promote interaction among the learners and assist them to freely express their thoughts in the e-learning environment.

Keywords: IT system-based instruction, reading comprehension ability, EFL

Introduction

In the present era, students and teachers need possibilities that ease teaching and learning process. Electronic instruments such as computer, software and smart instruments will increase abilities for students (Karimi, Manuchehri, &Shahvarani, 2012). Increasing the use of IT (Information Technology), in smart schools, entails a modern education method that doesn't conform to prevalent traditional education in Iran. On the other hand, Electronic schools are established all over the world. In such schools, students are provided with internet access and get information easily about any topic they want (Soltani, 2012). In another research, Majidi (2001) mentioned that "in this system, key elements for any change, is a change in thinking and tools and facilities are only a means to cover the thoughts" (p. 45)

The application of the so called technological tools in teaching language skills is also of great importance in that how computers and smart boards should be used by the teachers to make a new environment for teaching language skills and replace it with traditional instruction using whiteboards. One of the most important language skills is reading comprehension study, which is the focus of the present study. The point to be considered is that how reading is taught in high schools in Iran. Can computers teach students to read or help teachers teach students to read? Over the years educators may have not agreed on the contribution computers can make, but they have generally agreed that computers seem to have something to offer. They have pointed out the

computer's role in providing provide individualized, self-paced instruction with immediate feedback (Doerr, 1979). Moreover, Bruno (1987) argues that the use of computer tools in the educational process helps those students who are not relaxed to take part in classroom interaction since it indirectly involves the learners' attention toward the target point. Quality research must be done to identify which students, from a particular level of proficiency, can profit from the use of computers and its related tools such as smart boards in the process of learning language skills particularly reading comprehension ability, which is the concern of the current study.

Educators are constantly seeking new and better ways to improve instruction (kennedy, 2005). Discovering a method of instruction that meets or exceeds conventional and traditional methods of instruction would be an appropriate justification for its implementation. Computer-assisted instruction may be the answer to problems that have attracted educators' attention for years.

As to the teaching reading methodology, it is imperative that children learn to read. Methods of teaching reading seem to need improvement. Students who are experiencing learning to read through traditional methods should be exposed to new or nontraditional methods paving the way for them to interactively participate in classroom discussions and comprehend the text cooperatively. Carbo (1987) claims that there exists a lot of reading methods which demand the teachers' acquaintance with them as well as his/her ability to implement those methods. A reading method is applicable if it helps a particular child to learn to read.

Studies (e.g. Coiro&Dobler, 2007) related to the use of computers to teach reading may vary widely. Some studies (e.g. Gersten, Fuchs, Williams, & Baker, 2001) have applied computers as supplements for varying lengths of time with various populations of students with different levels of proficiency. Many dependent measures have also been used to measure the quality of the teaching techniques. Some studies (e.g. Kennedy, 2005) have taken into account statistical analyses to probe the effectiveness of computer programs in language learning.

Perhaps the most important question to be addressed in the computer-related research on teaching reading is which computer programs are most effective. All computer programs are not classically equal. A program can be only as beneficial as its quality, creativity, and interest to a given group of students. After identifying the program most beneficial for a certain group, educators can proceed to identify cost effectiveness variables and particular needs of different student groups. Many teachers use information and communication technology to support traditional learning methods, for example, information retrieval in which students are 'passive learners' of knowledge instead of 'active producers' able to take part in the learning process. One of the achievements of information technology and communication is small schools creation. Smart school is a physical school which is controlled and managed by computer and network technology, the content of its course is electronic and its evaluation and monitoring system is intelligent. Also the visual-auditory contents are developed in an attractive environment and increase operational capabilities, allowing school officials to replace blackboard and traditional homework with computer and CD in smart schools. One area of language learning for which rich resources can be found on the internet is reading comprehension. Reading is a source of learning and a source of enjoyment.

Therefore, the present study aims to answer the question that whether IT system-based instruction, which is in favor of using smart tools plus computer programs, can pave the way for low-intermediate high school learners to improve their reading comprehension abilities in comparison with traditional methods of teaching reading.

Literature Review

Online Learning

With improvements in educational technology, material developers are taking serious measures to get rid of traditional methods of instruction and move toward the application of technology-based education in classroom settings. In this regard, the use of computers seems to be the focus of attention in which lots of terms can be taken into account. Online learning is one of those internet-based educational contexts in which the learners experience the virtual network and how they can take part in meaningful communication with their peers as well as their teachers, which can save their time to spend more time to interact with each other rather than being physically present in the classroom.

While research on learning with hypermedia reports the struggles of students generally, Roblyer and Davis (2008) argued that minority students may be at the greatest disadvantage in online virtual schools. Identifying students who need assistance to be successful online is the first step in the learners' success in online learning environment. In fact, identified needs should be empirically founded for support, and there should be a system in place to facilitate such support. According to Smith, Clark, and Blomeyer (2005), "state-level virtual schools are developed, administered, or funded in part by state government, and intended to provide online learning statewide" (p.7). State virtual schools are not solely offering online education while virtual charter schools also play a major role in online education. Online programs (Viber, Telegram, etc.) are also practical in online learning paving the way for the learners to comfortably engage in virtual classroom discussions and share their viewpoints.

In fact, online learning creates an atmosphere to express their thoughts clearly and be able to take part in meaningful communication with the teachers' scaffolding support. In other words, in online education, there are the learners themselves who regulate their thoughts and openly express their reflection on the provided subject without being under the pressure of getting ready for speaking, which might happen in non-online educational settings.

Teaching Reading and Technology

Today, reading scholars attempt to view reading comprehension as constructivist, understanding that readers build comprehension through reading armed with prior knowledge and experiences (Duke & Pearson, 2002; Graves, Juel, & Graves, 2006). Many educational scholars, cognitive psychologists, and educational practitioners alike agree that the teacher is instrumental in helping students build their comprehension of text during reading (Graves, Juel, & Graves, 2006; Pressley, 2006). Each of these groups contends that systematic and programmatic instructional practices can improve students' reading comprehension. Many of the instructional practices used to help students comprehend text were designed after decades of research on the practices that skilled readers invoke while comprehending text (Pressley & Afflerbach, 1995).

Readers who are in favor of making meaning from connected text, i.e. text that contains a coherent message (Duffy, 2003), are considered as proficient readers. They are active, self-regulated readers who use multiple comprehension strategies to understand what is read (Pressley, 2006). Proficient readers are able to read easily and with interest. They read for different purposes and they read a wide variety of different kinds of materials. Further, they comprehend even when material is not easily understood or particularly interesting (Duffy, 2003). This is not the case for readers who struggle to comprehend.

In today's developing society, seeking modern teaching methodologies seems to be a usual action taken by language educators to benefit from the invention of new and practical technological teaching methodologies to arm the learners with a rather different learning

atmosphere (Delcloque, 2000). The terms CALL (Computer-Assisted Language Learning) and CMC (Computer-Mediated Communication) have become effective and more common techniques to be adopted in the language learning process nowadays since the advent of technology and prevalence of variety of media have made technology as a powerful tool to enhance and promote language teaching and learning.

To conclude, research has shown that technology has been at the service of education and facilitated the language learning process by suggesting some tools to bring about variety in the language classroom. Although a lot of research has been conducted to highlight the significance of computer programs in language skills, there seems to be no study, or at least very few ones, done to measure the efficiency of the applied technological tool or computer software in an educational context; thus, paving the way to take into account more up-to-date and modern programs and instructional methods to analyze their impact on the students' performance in language skills. As technology has been welcomed by developing countries like Iran, there are smart schools which are experiencing e-learning to teach language skills. However, very few studies, up to the present, have been carried out to investigate their practicality in language classrooms. Therefore, the present study aims to examine whether IT system-based instruction, which is in favor of using smart tools plus computer programs, can pave the way for low-intermediate high school learners to improve their reading comprehension abilities in comparison with traditional methods of teaching reading.

Research Question

The present study sought to answer the following research question:

Q. Do IT system-based instructions have any effect on the learners' reading comprehension ability?

Methodology

Participants

To gather desirable data, there were 60 low-intermediate high school learners who studied in a smart school in Tonekabon, Mazandaran, Iran. It is noteworthy that they consisted of only female students with the age range of 16 to 19 years old. As to the homogeneity of the participants, they took Solution Placement Test (SPT) for the purpose of unifying their levels to meet the requirements of the study. All the 60 students were low-intermediate ones after taking the placement test. The participants were divided into one experimental group (i.e. receiving the treatment in terms of using smart tools and technological software in the classroom) and one control group (i.e. receiving no treatment and being traditionally taught through white board and studying reading comprehension texts with hard copies). The experimental group included 30 participants and the control one consisted of 30 high school students as well. As to the data collection procedure, all the participants were invited to take part in the study in that some of them did not prefer to take part in the study and were removed. Moreover, ethical issues regarding their anonymity and confidentiality have also been considered in order to allow the students to comfortably fill in the pre- and post-tests and receive the treatment of IT instruction in a smart class.

Instrumentation

Solution Placement Test (SPT)

The Solution Placement Test was adopted to specify the participants' proficiency level to homogenize the learners as the study benefitted from low-intermediate learners as the main

participants of the study. In fact, the solution Placement Test intended to help teachers decide which level of solutions (Elementary, Pre-intermediate, Intermediate) is the most suitable for their studentso SPT contains 50 multiple choice questions aiming to measure the students' knowledge of grammar and vocabulary.

Reading Comprehension Test (Pre-Test)

The reading comprehension test, which served as the pre-test of the study, was used to examine the participants' initial knowledge of reading comprehension. The pre-test included 20 questions of reading comprehension provided based on a reading passage given to the learners. Total score was estimated at 20 in that a participant who got 20, it meant that he succeeded in coping with reading comprehension. The questions of the pre-test involved various types of questioning such as writing, true and false, filling the blanks, and short and long answer formats to be aware of the participants' initial understanding of reading comprehension.

Reading Comprehension Test (Post-Test)

Similar to the pre-test, a reading comprehension test, which served as the post-test of the study, was utilized to check the participants' performance of reading comprehension and look into their probable progress as a result of receiving the treatment on IT instruction through technological software. The same as the pre-test, the post-test contained 20 questions of reading comprehension provided based on a reading passage given to the learners. The questions of the post-test as well as the scoring rate were the same as the pre-test.

Multimedia Builder (MMB) Software

The Multimedia Builder is inexpensive authority software with which the user can easily develop auto-run menus, multimedia applications and lots more without even knowing bare basics of programming. It comes with many impressive features facilitating the user to create small size standalone apps, such as games, installation programs and similar things without spending a lot of time.

MMB has a modern interface with the useful features that one expects from high end graphics software, such as a multiple document interface, multiple Undo/Redo, selections, grouping, nested grouping, context sensitive menus, checking, distributing the files, etc. With MMB the user can create auto-run CD browsers for corporate CD-ROMs, Tutorials Cue Cards, Kiosks, File launchers and toolbar and the application can also help in computer based training. It comes with plenty of Alignment tools, Blending graphics with background, Alpha Transparency Masks for blending, MP3 format with feedback 24-bit color, optimized performance, real glow and drop shadow effects like Sharpen, Blur, Flip as well as special effects such as fire, cut-out, bevel along with more than 40 bitmap effects and filters.

As to the purpose of the study, MMB was applied to add variety to the teaching procedure by putting some audios on the texts as well as providing some signals on the learners' responses to the reading comprehension questions.

Pretest and Posttest

Reading Comprehension Diagnostic Test (Pre-Test)

The reading comprehension diagnostic test, which was served as the pre-test of the study, was used to examine the participants' initial knowledge of reading comprehension and look into the probable problems they might face in dealing with reading and comprehending different texts. The pre-test included 10 questions of reading comprehension provided based on a reading

passage given to the learners. Total score was estimated at 20 in that a participant who got 20, it meant that he succeeded in coping with reading comprehension. The questions of the pre-test involved various types of questioning such as writing, true and false, filling the blanks, and short and long answer formats to be aware of the participants' initial understanding of reading comprehension. In fact, the aim of the pre-test was to give the researcher enough clues in terms of what to teach, how to teach, and what materials to be adopted to arm the learners with new teaching methodologies in reading to get mastery over comprehension and be able to overcome their comprehension problems as well.

Reading Comprehension Achievement Test (Post-Test)

Similar to the pre-test, the reading comprehension achievement test, which was served as the post-test of the study, was utilized to check the participants' performance of reading comprehension and look into their probable progress as a result of receiving the treatment on IT instruction through technological software. The same as the pre-test, the post-test contained 10 questions of reading comprehension provided based on a reading passage given to the learners. Total score was estimated at 20 in that a participant who got 20, it meant that he/she succeeded in coping with reading comprehension.

The questions of the post-test involved various types of questioning such as writing, true and false, filling the blanks, and short and long answer formats to investigate the effectiveness of IT instruction in smart schools on the participants' final understanding of reading comprehension and how they could improve their reading proficiency. In fact, the aim of the post-test was to give the researcher enough clues in terms of the efficiency of smart tools to be used to arm the learners with new teaching methodologies in reading to get mastery over comprehension and be able to overcome their comprehension problems as well. Using Cronbach Alpha, the reliability of the pretest and the posttest was estimated to be .77 and 81 respectively.

In the beginning, Solution Placement Test (SPT) was administered to distinguish the level of the students and homogenize the learners according to the purpose of study aiming to select low-intermediate learners. After the administration of the SPT, 60 participants were selected as the main subjects for the study. All the 60 students were of low-intermediate proficiency level after taking the placement test. The participants were then divided into one experimental group (i.e. receiving the treatment in terms of using smart tools and technological software in the classroom) and one control group (i.e. receiving no treatment and being traditionally taught through white board and studying reading comprehension texts with hard copies).

The experimental group included 30 participants and the control one consisted of 30 high school students as well. Both the experimental and the control groups took the reading comprehension test as the pre-test of the study to measure their initial knowledge of reading comprehension.

After the Pre-test, the experimental group underwent five treatment sessions during five weeks. Each week included one 90-minute session of reading comprehension instruction by the application of multimedia builder (MMB) software to make the learners motivated and allow them to experience a rather different learning environment by the use of smart tools. In each session, there were some reading texts provided by the researcher (who was the instructor) and were shown on the screen while the participants were asked to do the related tasks of comprehension. As to the MMB software, audio files of the texts were also provided and played for the purpose of correct pronunciation. The activities done in each session were comprehension questions in the form of true and false statements, filling the blanks, matching, and synonyms and antonyms to activate the learners' mind through the use of technology and fostering interaction in

the classroom. The participants were given positive marks on the screen with an audio sound of clap to motivate them and make the class interesting for the learners while simultaneously improving their reading comprehension ability. Some related pictures were also provided to activate the learners' background knowledge regarding the title of the reading text. It should be noted that the participants did not receive any hard copies of the texts during the instruction and all the attention was paid to the screen in that they were in direct contact with smart technology. However, the control group did not receive any smart instruction, and they were traditionally taught by giving them the hardcopies of the target texts and they were asked to do the tasks with their peers and receiving the teacher's help where necessary.

After five weeks of instruction in an IT system-based environment as well as the traditional reading comprehension instruction, the participants in the experimental and control groups took the post-test to check the their performance of reading comprehension and investigate their probable progress as a result of receiving the treatment on IT instruction through technological software. The experimental and control groups' scores were compared to find out the possible differences in reading comprehension performance between the experimental and control groups in order to look into the effectiveness of IT instruction on the learners' reading comprehension ability by the application of smart tools and technological software.

Data Analysis Procedures

The present study benefitted from quantitative methodology to collect and analyze the data. As to the data analysis, quantitative measures included both descriptive and inferential statistics to measures the impact of IT system-based instruction vs. traditional instruction of teaching English on Iranian low-intermediate EFL learner's reading comprehension ability in a smart school. To do so, the learners' pre- and post-tests results of the experimental group and the control group were quantitatively analyzed through SPSS software (version 20). The descriptive statistics shows the development of the mean scores on the two occasions of the reading comprehension diagnostic and achievement tests (i.e. pre- and post-tests).

Additionally, inferential statistics involves independent sample t-test as well as paired sample t-test to look into the effectiveness of the treatment sessions on the learners' performance in reading comprehension tests and compare the results of control group with the experimental one. To analyze the learners' pre- and post-tests results of the control group, paired sample t-test was used to find out the difference between the two occasions. Similarly, paired sample t-test was applied to measure the learners' progress in the experimental group form the pre-test to the post-test. Finally, independent sample t-test was taken into account to go for the effectiveness of the treatment sessions (i.e. using smart tools and technological software in the classroom) on the learners' reading comprehension ability by measuring the post-test scores of the learners in the experimental and control groups.

Results

Descriptive Statistics

The descriptive analysis of the data for different groups of the study has been summarized below. Table 1 summarizes the descriptive analysis of the data of experimental group of the study.

Table 1. *Descriptive statistics for the experimental group*

	Mean	N	Std. Deviation	Std. Error Mean

Pretest	12.2667	30	1.74066	.31780
Posttest	16.2167	30	1.2083	.22061

As Table 1 indicates, the mean value of reading comprehension for theexperimental group before IT System-based Instructions is 12.2667 (SD= .31780), while the mean for the experimental group after IT System-based Instructions is 16.2167 (SD=.22061). It is obvious that the experimental group performance on reading comprehension improved greatly after the treatment.

Table 2 summarizes the descriptive analysis of the data of the control group before and after treatment.

Table 2. *Descriptive statistics for the control group*

	Mean	N	Std. Deviation	Std. Error Mean
Pre-test	12.8667	30	2.02115	.36901
Post-test	13.9833	30	1.93196	.35273

As Table 2 demonstrates, the mean for the control group before IT System-based Instructions is 12.8667 (SD=.36901), while the mean of the control group after the treatment is 13.9833 (SD=.35273). With regard to its performance on the posttest, the control group showed a small degree of improvement.

Table 3 illustrates the descriptive analysis of the experimental and control groups for the posttest scores of reading comprehension as in the following:

Table 3. *Descriptive analysis of the experimental and control groups for the posttest*

Text	N	Mean	Std. Deviation	Std. Error Mean
Reading				
Control Group	30	13.9833	2.02115	.36901
Experimental Group	30	16.2167	1.20833	.22061

As to the Table 3, it was found that the mean value of the experimental group on the posttest measures of reading comprehension is 16.2167 with a standard deviation of 1.20833. However, the mean value of the control group of the study in the posttest is far lower than that of the experimental group (Mean=13.9833, SD=2.02115). Thus, it can be stated that although two groups had almost the same mean value on the pre-test, the experimental group outperformed the control group on the post-test of reading comprehension. Yet, in order to investigate whether the difference between groups is significant, the results of t-tests should be presented and discussed.

Inferential Analysis

The study aimed to investigate the effectiveness of IT System-based Instructions on learners' reading comprehension. The inferential analyses of the data for testing the research hypothesis have been summarized in the tables below.

Table 4 summarizes the inferential analysis of the data before and after treatment for the experimental group of the study.

Table 4. *Paired-sample test for the experimental group*

	Paired Differences					
	Mean	Std. Deviation	Std. Error	t	df	Sig. (2-tailed)
Paired1 Experimental Group						
Pretest-Posttest	-3.9500	1.0284	.18777	-21.036	29	.000

A paired-sample t-test was conducted to evaluate the impact of the treatment on students' scores on the reading comprehension measures. There was a statistically signiifcant increase in reading scores from pretest (M =12.2667, SD= .31780) to posttest (M = 16.2167, SD = 1.0284), t (29) =21.036, p <. 0005 (two-tailed). The mean increase in reading comprehension scores was 3.95 with a 95% confidence interval.

Table 5 summarizes the inferential analysis of the data before and after treatment for the control group of the study.

Table 5. *Paired-sample test for the control group*

Paired Differences						
	Mean	Std. Deviation	Std. Error	t	df	Sig. (2-tailed)
Paired1 Control Group						
Pretest-Posttest	-1.116	.970	.17728	-6.299	29	.000

A paired-sample t-test was also carried out to investigate whether the traditional method of reading instruction improved students' scores on the reading comprehension measures or not. There was a statistically signiifcant increase in reading scores from pretest (M = 12.8667, SD=.3690) to posttest (M = 13.9833, SD=.35273), t (29) =6.299, p <. 0005 (two-tailed). The mean increase in reading comprehension scores was 1.116 with a 95% confidence interval.

Table 6 summarizes the inferential analysis of the post-test scores for the control and experimental groups.

Table 6. *Independent-sample t-test for the post-test of both group*

Paired Differences						
	F	Sig	t	df	Sig(2 tailed)	Mean Differences
Std. Error Differences						
Equal Variance assumed	6.18	.016	-7.772	58	.000	-3.23333
.41603						
Equal Variances not assumed			-7.772	48.677	.000	-3.23333
.41603						

An independent-sample t-test was conducted to compare the effect of two kinds of instructions on learners' reading comprehension.The Sig. value is not larger than .05 (.016), then

the second line in the table should be used, which refers to Equal variances not assumed. There was significant difference in scores for the control group (M = 34.02, SD = 4.91) and experimental group (M=13.9833, SD=.35273); t (48) = 7.772, p = .000, two-tailed).

Overall, it can be concluded that the experimental group performed significantly better than the control group in the posttest measures of reading comprehension which indicates the great effectiveness of IT-System Instruction for the improvement of students' reading comprehension.

Discussion

The present study was an attempt to investigate the effectiveness of IT system-based instruction vs. traditional instruction of teaching English on Iranian low-intermediate EFL learner's reading comprehension ability in a smart school. Based on the quantitative results of the pre- and post- test scores of the learners in the experimental and control group, it was revealed that the experimental group significantly outperformed the control group after the intervention (i.e. IT system-based instructions), indicating that the instruction was quite successful in enhancing the students' reading comprehension ability. Hence, the study, to a large extent, proved that the application of smart tools in teaching language skills in general, and reading comprehension in particular, which was the focus of the current research, can be productive to improve the learners' efficiency by engaging in a rather different environment by being interactively involved in the learning process. It should be noted that, up to the present, there seems to be no study done to highlight the impact of IT system-based instruction on the learners' reading comprehension ability. Hence, findings of the study are in line with the research done by Zimmerman (2001), and Kirk (2002) who found that teaching language skills through CALL and its sub-elements can pave the way for the learners to experience a different environment while increasing the learning performance and improving their required language skills and simultaneously enhance their motivation toward learning.

According to Okolo, Bahr, and Rieth (1993), "computer-based instruction (CBI) is defined as the use of a computer and/or associated technology with the intention of improving students' skills, knowledge, or academic performance" (p. 22), which was highlighted in the findings of the present study in that IT system-based instructions and smart tools could pave the way for the learners to improve their reading comprehension skills. The point which must be taken into account regarding CALL is the teachers' awareness of how to work with computers (Delcloque, 2000) as well as the learners' computer literacy (Peterson, 1993) that demands the learners' training before the semester to prevent any further problems during the term which seems to cause some kind of failure in the instruction due to the less familiarity of the learners with computers and its application in educational setting.

Pedagogical Implications

The findings of the study suggest some productive and practical implications in terms of the educational setting adopted in teaching and learning reading comprehension through smart tools in a foreign language context such as Iran. The main practical implications include:

1. It is beneficial for teachers to apply computers, as a modern educational tool, to teach reading comprehension in an interactive environment and enjoy the interaction caused by the use of IT system-based instruction, which seems to be more practical than traditional methods of teaching reading focusing on vocabulary and grammar in a boring atmosphere. As teaching reading comprehension seems to be rather challenging, technology-based instruction appears to

practically involve the learners in classroom discussion for the purpose of reading comprehension without directly focusing on the target words or grammar.

2. It is enjoyable for learners, especially low-intermediate learners of high school to experience a new teaching environment and take part in the interaction made as a result of applying IT system-based instructions, as the sub-element of CALL, in teaching reading. In other words, the application of smart tools allow the learners to freely share their opinions about the target reading material without being concerned with vocabulary and grammar since their interaction is of importance and comprehension is the final goal.

3. Finally, material developers, who are concerned with the educational curriculum of the semester, can make their best attempt to design the materials based on the requirements of the CALL and e-learning environments. However, schools should be armed with technological smart tools to meet the requirements of the learning environment. In fact, material developers benefit from CALL in that it leads to the learners' satisfaction of the materials covered in the classroom and the use of smart tools are highly motivating for the learners, which results in their ultimate success in the learning process.

Conclusion

The findings of the study clearly acknowledged the application of IT system-based instructions on the low-intermediate high school learners' reading comprehension ability since the learners in the experimental group outperformed the control group and improved their reading abilities. The present research has been quantitatively done to measure the learners' pre- and post-test scores of reading comprehension as a result of receiving IT system-based instructions, thus, paving the way for future qualitative research in order to interpretively look into the effectives of CALL tools in teaching language skills and sub-skills.

References

Bruno, J. E. (1987). The design of micro-computer instructional delivery systems. *Teacher Education Quarterly*, *13*(3), 80-88.

Carbo, M. (1987). Reading styles research: 'what works' isn't always phonics. *Kappan, 68*(6), 431-435.

Coiro, J., &Dobler, E. (2007). Exploring the online reading comprehension strategies used by sixth-grade skilled readers to search for and locate information on the Internet. *Reading Research Quarterly, 42*(2), 214-257.

Delcloque P. (2000). *History of CALL*. Retrieved October 05, 2010, from http://www.ict4lt.org/en/History_of_CALL.pdf

Doerr, Ch. (1979). *Microcomputers and the 3 R's.* New Jersey: Rochelle Park.

Duffy, G. (2003) *Explaining reading: A resource for teaching concepts, skills, and strategies.* New York: Guilford Press.

Duke, N., & Pearson, P. D. (2002). Effective practices for developing reading comprehension. In A. Farstrup & J. Samuels. *What research has to say about reading instruction* (pp. 205-242). Newark, DE: International Reading Association.

Gersten, R., Fuchs, L. S., Williams, J. P., & Baker, S. (2001). Teaching reading comprehension strategies to students with learning disabilities: A review of research. *Review of Educational Research, 71*(2), 279-320.

Graves, M. F., Juel, C., & Graves, B. B. (2006). Teaching reading in the 21st century (4thed.). New York: Allyn & Bacon.

Karimi, K., Manuchehri, M., &Shahvarani, A. (2012). Examining performance of students in learning mathematics using smart board. *International Journal of Emerging Trends in Engineering and Development, 4*(2), 911-918.

Kennedy, C. (2005). *Single case designs for educational research.* Boston, MA: Pearson Education.

Kirk, J. (2002). *E-learning: An executive summary.* (ERIC Document Reproduction Service Accession No. ED461762). Western Carolina University, North Carolina, 1-14.

Majidi, A. (2001). *Superior systems: The future of education and the future of education*. Tehran: SAMT Publication.

Okolo, C. M., Bahr, C. M., &Rieth, H.J. (1993). A retrospective view o f computer-based instruction. *Journal of Special Education Technology, 12*(1), 1-27.

Peterson, S. E. (1993). A comparison of student revisions when composing with pen and paper versus word-processing. *Computers in the Schools, 9*(4), 55-69.

Pressley, M. (2006). *Reading instruction that works* (3rd ed.*).* New York: Guilford.

Pressley, M., & Afflerbach, P. (1995). *Verbal protocols of reading: The nature of constructively responsive reading.* Hillsdale, NJ: Erlbaum.

Roblyer, M. D., & Davis, L. (2008). Predicting success for virtual school students: Putting research-based models into practice. *Online Journal of Distance Learning Administration, 11*(4), 1-9.

Smith, R., Clark, T., & Blomeyer, R. L. (2005). A Synthesis of New Research on K – 12 Online Learning. *Research Studies*, 4, 1-92.

Soltani, M. (2012). The structure of smart schools in the educational system. *Journal of Basic and Applied Scientific Research, 2*(6), 6250-6254.

Zimmerman, E. (2001). Better training is just a click away. Special report: HR on the Internet. *Work force, 3, 36*-32.