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The effectiveness of using smart board for teaching social studies at public schools in Jordan

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The purpose of this research is to investigate the effectiveness of using Smart Board for teaching social studies on students' achievement in public schools in Jordan. To achieve the purpose of the study, a pre/post-test was constructed to measure students' level in social studies. The sample of the study consisted of 258 eighth grade students; (120) male students from Marj Al Hamam secondary school for boys and (138) female students from Marj Al Hamam Basic school for girls during the first semester of the academic year 2015/2016. The subjects of the study were distributed into two groups (experimental and control). The experimental group was taught social studies using smart board while the control group was taught using the conventional way. Descriptive statistical analyses were used (means and standard deviation) for the pre and post- tests of students' achievement in social studies. Comparison statistical methods were used (Two Way ANOVA) analysis of variance to make a comparison between the control and the experimental groups and gender variables (male and female). The findings of the study indicated that there were statistically significant differences in the post- test between the control and the experimental groups in their achievement in social studies in favor of the experimental group, and there was no statistically significant difference in the students' performance in social studies due to gender.

Key word: Smart board, social studies

INTRODUCTION

Nowadays, providing schools with computer technology is considered as yielding few improvements in educational outcomes unless it is coupled with changes in pedagogy, curriculum, assessment and school organization (Dede, 1998). In other words, the real power of interactive learning to improve achievement and performance may only be realized when people actively use computers as cognitive tools rather than simply interact with them as tutors. It is also believed that computer technology may have an effect on some people and no significant impact on others.

Computer technology provides students of the opportunity to interact and helps them acquire knowledge and computer skills (Bicknell, 1999). Computer technology and the Internet promote discussion between teachers and students. The teacher becomes an organizer and participant in the discussion (Nagata, 1996). On the other hand, Kulik (2003) claims that evaluation studies from the 1990s have consistently found that integrated learning systems (ILSs) make little or no contribution to the improvement of reading programs.

Web technology is only one alternative among the wide range of available media for helping people to learn. According to Sabry & Baldwin, (2003), increasingly, web technology is used for learning interaction and is becoming commonplace in educational institutions.

One of the new technological advancements that is widely used in the classroom nowadays is a smart board to increase a student's knowledge and motivation (Rakes et al., 2006; Siemens and Matheos, 2010; Knezek et al., 2006). The technological capabilities of the smart board

and its attendant software are highly compelling to students, effectively drawing them into the content of the lesson. Investment of financial and human resources in smart board technology is seen as warranted in part because it promises to make learning more engaging for students, especially in technical subjects (e.g., mathematics) in which teachers sometimes struggle in their efforts to help students engage and achieve (Torff & Tirotta, 2010).

Interactive smart boards have gained a reputation in the educational system from the first grade to the university stage (Bell, 2002; Oigara, 2010). Cognitive research has shown that learning is most effective when four fundamental characteristics are present: active engagement, participation in groups, frequent interaction and feedback, and connection to real-world contexts (Roschelle et al., 2000). Research in educational technology has shown that combining smart boards with computer use increases the interactive atmosphere in the classroom (Carbonara, 2005; Oigara & Keengwe, 2011). The interactive quality of a smart board lends itself to a degree of student participation not offered by other presentation methods. Certain factors play a major role in how smart boards are used in education and are sometimes called “contextual factors”. The most common contextual factors include school culture, teacher training, time to practice and prepare materials, teacher confidence, and technical support (Digregorio & Sobel-Lojeski, 2010).

The smart board works in conjunction with a projector to create the image on the board. When working with the board, it is very easy to step into the light produced by the projector, thus creating a shadow which makes it impossible to see what you are actually writing or doing. The audience is also not able to see the presentation, thus leading to frustration for the audience and presenter. Applications of the smart board are dependent on the software that is installed and used on the computer connected to the smart board. Some of the many applications available include hiding and revealing, writing and manipulating text, handwriting recognition, saving, retrieving, and printing notes, capturing and manipulating web content, shading, coloring, and animation. In addition, more recent smart board software allows the teacher to connect over the Internet to a library of subject specific flash content like a virtual calculator, virtual frog dissector, interactive maps, and more. Many libraries are located at the smart board manufacturer’s website, so that content can be added on a regular basis, giving teachers more options (Digregorio & Sobel-Lojeski, 2010).

Smart boards offer more benefits than computers. Computers are designed for individual use, whereas smart boards are designed for whole-class instruction. The entire premise of this technology is built upon active engagement. Touch-sensitive screens are mounted on the wall of the classroom and a projector shows information that can be manipulated and displayed with unlimited capabilities. The advantage of smart board technology is its design for use in a spacious work area with group interaction. The enlarged visuals are easily seen due to the size of the interactive whiteboard. Participants become both visually and physically engaged as they connect with electric content and multimedia in a collaborative learning environment (Smart Technologies, 2004). Using special pens, students and/or teachers write directly on the screen. They can manipulate text and images, view websites, cut and paste research information, view video clips, formulate graphs and charts, and design vivid and creative presentations. Students combine their cognitive and physical abilities to interact with smart board technology. The interactive nature of the technology and the state-of-the art software enable students to generate activities that are engaging, useful, and enlightening. Informational text, research, and real-time Internet sites can be easily incorporated and accessed during the lesson (Starkman, 2006). Additional interactive features include the conversion of handwritten text to typewritten text, drag and drop boxes, the opportunity to highlight specific words, and the option of diagramming/scaffolding information. Teachers can download lesson plans, adjust them to the specific needs of the students, and save them for future use.

Statement of the Problem

Having observed some classes for teaching social studies at some Schools in Amman in Jordan , the researcher noticed that students most often memorize information, they learn without interaction with the material. They lack the motivation for learning social studies. To solve this problem the researcher aims at using smart boards and investigates its' effect on students' achievement in social studies.

Significance of the Study

Many researchers are interested in using technology in general as a medium for teaching and learning. Therefore, many studies have been conducted on using many technologies such as smart board for teaching. To the researchers' best knowledge; a few studies were conducted on using smart board in teaching social studies in Jordan.

The current study focused on the effect of using smart board on students' achievement in Social Studies.

This study was motivated by several factors: Firstly, the study responds to the increased demand in the use of technological instruction in education among which is smart board to meet the new educational needs. Secondly, the study may motivate other researchers to reconsider the using of different types of technology used nowadays and to make use of it. And finally, the using of smart board might be a source of excitement and motivation to Jordanian students in their social studies courses.

Purpose of the Study

The purpose of this research is to investigate the effectiveness of using smart board on eighth grade students' achievement in social studies in public schools in Jordan; it also seeks to study the effect of the gender in their achievement.

Questions of the Study

The questions of the study are:

1. Are there any statistically significant differences (α≤0.05) in the eighth grade students' achievement in social studies due to the kind of instruction they are exposed to (using smart board and conventional way)?
2. Are there any statistically significant differences (α≤0.05) in the eighth grade students' achievement in social studies due to gender?
3. Are there any statistically significant differences (α≤0, 05) in the eighth grade students' achievement in social studies due to the interaction between gender and group?

Definition of operational terms

The following terms had the associated meaning in this study:

Smart board: Hardware and software programs are combined by the smart board to create an interactive whiteboard that allows presenters to display and manipulate information on the board for the audience to view. The board operates by touch or by pens that are provided with the board. The smart board was used in teaching social studies course for the eighth grade students.

Conventional Method: it is the method of teaching that uses the teachers' book.

Eight Grade Students: Those who are studying in Jordanian governmental schools and whose ages rouse between 12 and years old.

Social Studies Course Achievement

The scores that will be achieved by the learners on the social studies test which will be designed by the researcher.

Limitations of the study

This study is limited to the male and female eighth grade students at Marj Al Hamam secondary school for boys and Marj Al Hamam Basic school for girls during the first semester of the academic year 2015/2016, and to any other similar samples.

LITERATURE REVIEW

Most studies have based their findings on case, qualitative and research-based studies while discussing the efficacy of computer assisted programs. One of the studies discussing the use of computer assisted programs is Pawling's study, which was conducted in 1999. In her study, she aimed to evaluate the feasibility and effectiveness of a CD-ROM as a tool for research-based language learning and focused on two case studies. She carried out her study with eleven sixth grade children learning English vocabulary through an application called Directions 2000 (a multimedia dictionary) and found that learners assimilated vocabulary through playing the modal sentences as many times as required. According to Pawling:

CD-ROM is potentially a liberating instrument for teachers and learners alike in that it has the special facility of incorporating practice in all four language skills mentioned above in a multimedia package using video, text, photograph and sound. There is much evidence; not least teachers' own experience, to suggest that computer-based learning is very motivating for children (p. 164).

In another study conducted by Gillespie and McKee (1999), learners from undergraduate and graduate studies were exposed to CALL software. The findings of this study showed that CALL enhanced student performance and skills considerably in their studies with undergraduate and graduate learners.

Lambacher (1999) used software designed for pronunciation training in teaching English to forty primary school Japanese learners, which resulted in the improved perception and production of English consonants which they were able to review as many times as they wished, getting immediate feedback. Kulik and Kulik (1991) surveyed more than 500 studies which compared learners who received computer-assisted instruction with the learners who received traditional instruction. They found that learners tend to learn more and in less time with computer-assisted learning. Dunkel (1987) stated that "Many of the researches conducting literature reviews and meta-analyses in the 1960s and 70s were forced to conclude that there was no discernible cause-and-effect relationship between pupil learning" (p. 252). He also added that the results were questionable in terms of the other fields such as social sciences since these studies were mostly related to mathematics. Nagata's study in 1996 included participants from two first-semester Japanese classes at the University of San Francisco. Twenty-six students participated in the study. These results show that given the same grammar notes and exercises, ongoing intelligent computer feedback is more effective than simple workbook answer sheets for developing learner's grammatical skill in producing Japanese particles and sentences. Nutta's study in 1998 consisted of 53 students enrolled in an intensive academic ESL institute at a major university in Florida. It compared the method of grammar instruction, teacher-directed or computer-based. The results showed that computer-based students scored significantly higher on open-ended tests than the teacher directed students. No

significant differences were found between the computer-based and teacher-directed students' scores on multiple choice or fill-in-the-blank tests.

In the study of Hauck, McLain, & Youngs (1999), thirty-three French II students were the participants. Findings indicated that the students in the CALL group performed equally well as the control group in listening and speaking and better on reading and writing. Murray (1999) studied the effect of interactive video program. Participants (twenty-three French second language learners) were mostly students from the Faculty of Arts of a large Canadian university.

Russel (1999) compared the paper and the computer versions of reading tests. He found out that paper versus computer administration did not significantly affect the test taker's performance. Dewhurst, Macleod and Norris (2000) compared the difference between the computer-assisted instruction and traditional instruction. The results revealed that sixty-two students of undergraduate Physiotherapy studying on Human Physiology did equally well.

Similarly, Garcia and Arias (2000) compared the performance of sixty students of Land Surveying at the Extremadura University in Spain. They found out that students made use of the references provided by the computer more extensively than they did of the printed references.

Also, the results showed that students' motivation to access computer-supported information was higher than accessing similar information in print-oriented references. Yang (2001), in his study of fifty-five participants, second-year students in an applied linguistics program, discussed that students benefited from maximizing the language and learning link in computer-mediated environments, particularly web-based instruction. Sawaki (2001) listed the studies carried out on computer-based and paper-based reading. The studies done by Heppner, Anderson, Farstrup, and Weiderman (1985) (as cited in Sawaki) showed that students outperform in the paper-based version of the reading tests. In Ying's study (2002), the participants were thirty-two junior students majoring in Foreign Trade English at the school of Foreign Languages of Suzhou University. The results indicated that network-assisted environments provided learners with autonomous training and learning. On the other hand, Allum (2002) stated that "…CALL does indeed deliver as effectively as conventional means in a range of language learning tasks" (p. 147). Clark (1985c) (as cited in Allum, 2002) proposed that when methodology is kept consistent, there is no difference in results between computer-based instruction and teacher-led instruction.

DESIGN AND METHODOLOGY

The researcher discussed here the procedures that he used to conduct the study. He described the study population, sample, variables, instrument, procedures and the statistical analyses that he used in the study.

Population of the Study

The population of the study will consist of:
All tenth grade students in governmental schools in Al Tafila in Jordan enrolling in the second semester 2010/2011 who form (4600) females and males.

Sample of the Study

The sample of the study consisted of 129 tenth grade students; (60) male students from Yaser Bin Ammar school for boys and (69) female students from Zain Al Sharaf school for girls during the second semester of the academic year 2010/2011.

Design of the Study

This study was carried out to follow the equivalent pre /post-test two-group design. The experiment consisted of two levels: The subjects of the experimental group were exposed to the computer-assisted teaching for (8) weeks. However, the subjects of the control group were exposed to the traditional way of teaching which is using printed material for the same period. A pre-test was given before the application of the treatment to both groups to make sure they are equivalent and the same test was administered as a post-test after applying the treatment to see whether the computer-assisted programs had any influence on the experimental groups and which way of instruction have more influence on the subjects than the other.

Instruments

In this research study, the National Education Course for the tenth grade is used and computer assisted programs for teaching this course, tests designed also measure the students' level.

Instructional Material

The instructional material was the tenth grade students' course for National Education

Procedures of the Study

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The researcher used two strategies for teaching National Education: using computer-assisted programs and the conventional way. Then the researcher designed a test

based on the instructional material and collected the data.

There were two groups of students: one experimental group and one control group. All groups received 8 weeks of instruction on the National Education. Students in the experimental group received teaching using computer-assisted program for National Education. They spent all of their class time using computer- assisted programs.

Interactive computer- assisted programs were developed, as research suggests that animated demonstration may be more efficiently processed by learners than non animated demonstration. Therefore, students in the experimental groups had tasks making use of dynamic animated representations on computers. The selected computer assisted programs are interactive and can illustrate a concept through attractive animation, sound, and demonstration. In addition, they allow students to progress at their own pace and to work individually or to do problem solving in a group.

They provide immediate feedback, letting students know whether their answers are correct or not. If an answer is incorrect, the program shows students how to answer the question correctly, and this helps them strengthen their procedural knowledge of English pronunciation.

Students in the control group were instructed using conventional way such as printed material. The traditional instruction in this study was lectures given by a teacher, use of textbooks and other materials, and a clear explanation of procedural knowledge and conceptual knowledge of some subjects to students. The teacher reviewed some of the textbook topics. They spent their class time using hands-on and manipulative activities. However, they didn't have any tasks that made use of dynamic representations on computers.

Statistical Analyses

To answer the study questions, descriptive methods (means and standard deviation) were used for pre and post tests for National Education test to experimental and control groups.

Comparison statistical method (Two-Way ANOVA) analysis of variance was used to make a comparison between the control and the experimental groups and gender variable (male and female).

FINDINGS OF THE STUDY

The purpose of this research is to investigate the effect of using computer assisted programs on tenth grade students' achievement in National Education in Jordanian schools; it also seeks to study the effect of the gender in their achievement.

The researcher followed the equivalent pre /post test two group designs. Therefore, the means, standard deviations and Two-Way ANOVA analysis of variance were used to analyze data. The results will be displayed based on the questions of the research.

To determine if there is a statistically significant difference between the male and the female groups, a t-test for independent samples was conducted. Table 1 shows the results.

Table 1: Means and Standard Deviations of the Achievement of Male and Female Groups on the Pretest.

GROUP	SEX	Mean	Std. Deviation	N
Experimental	Male	54.14	6.71	29
	Female	55.12	8.71	33
	Total	54.66	7.79	62
Control	Male	54.71	7.93	31
	Female	52.42	7.55	36
	Total	53.48	7.75	67
Total	Male	54.43	7.31	60
	Female	53.71	8.18	69
	Total	54.05	7.76	129

Table 1 shows the mean and standard deviation of the groups on the pre-test. It shows the experimental group at 54.66. While the control group at 53.48. As for the males and females, the males were 54.43 and the female were 53.71.

To determine if the two groups are equivalent in achievement in National Education, a pre-test was conducted and Table 2 presents the results.

Table 2: Two-way ANOVAs Results of the Experimental and the Control Groups on the Pretest.

Source	Type III Sum of Squares	df	Mean Square	F	Sig.
GROUP	36.443	1	36.443	.602	.439
SEX	13.743	1	13.743	.227	.635
GROUP * SEX	85.995	1	85.995	1.421	.235
Error	7564.101	125	60.513		
Corrected Total	7711.721	128			

Based on the Two-way ANOVAs on the pre-test, the groups were equivalent. Hence, level of significance is .789 while is not significant at α≤0, 05. Also the groups in terms of gender were equivalent at a level of .439. This is not statistically significant at α≤0, 05. This means that the groups were equivalent on the pre-test.

At the end of the experiment, a t-test for independent samples was conducted to determine if there was any statistically significant difference between the males and the females on the posttest, which may be attributed to gender. Table 3 shows the results.

Table 3: Mean and Standard Deviations of the Achievement of Male and Female Groups on the Posttest.

GROUP	SEX	Mean	Std. Deviation	N
Experimental	Male	85.31	7.31	29
	Female	86.70	6.74	33
	Total	86.05	6.99	62
Control	Male	77.06	9.49	31
	Female	78.64	11.54	36
	Total	77.91	10.59	67
Total	Male	81.05	9.40	60
	Female	82.49	10.31	69
	Total	81.82	9.89	129

Table 3 shows the mean and standard deviation of the groups on the post-test. It shows the experimental group at 85.31. While the control group at 77.91. As for the males and females, the males were 81.05. And the female were 82.49.

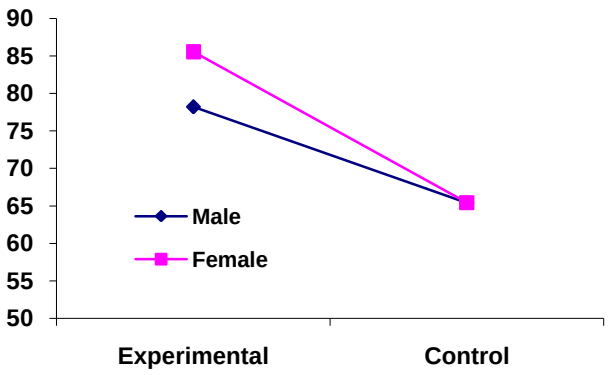
The researcher also conducted a two-way analysis of variance to analyze the posttest achievement scores of the two groups. Table 4 shows the results.

Table 4: Summary of the Two-way Analysis of Variance of the Achievement of the control and the Experimental Groups on the Post-test

Source	Type III Sum of Squares	df	Mean Square	F	Sig.
GROUP	2129.579	1	2129.579	25.811	.000
SEX	70.240	1	70.240	.851	.358
GROUP * SEX	.282	1	.282	.003	.953
Error	10313.353	125	82.507		
Corrected Total	12516.899	128			

To answer the first question: Are there any statistically significant differences (α≤0.05) in the tenth grade students' achievement in National Education due to the kind of instruction they are exposed to (computer-assisted program and conventional curricula)? The table shows that the level of significance is .000 which is statistically significant at α≤0, 05 on favor of the experimental group. To answer the second question: Are there any significant differences in the participants' output due to gender distinction in using this program in the experimental group? Table five shows significance .358 which means it is not significant at (α≤0, 05)

SEX	Experimental	Control
Male	78.20	65.40
Female	85.53	65.47



To sum up, the researcher believes that the development of students' achievement attributed to the using of computer-assisted program.

The experimental group subjects managed to significantly improve their achievement in National Education in a period of 8 weeks. The improvement achieved by the control group subjects, however, was not statistically significant. By comparing the results achieved by the two groups, the researcher reached the conclusion that the improvement achieved by the experimental group may have been attributed to the way he rendered instruction; computer-assisted program.

As a result of this experience, the researcher concluded that students were more engaged in learning when they were given a chance for using the computer-assisted language program.

DISCUSSION

The greater success of students in the experimental group may be attributed to the following: students' participation in Computer-based instruction helped them to acquire meaningful learning in National Education. They utilized different representations they found in the interactive computer-assisted programs. This helped them in facilitating their understanding and also encouraged their conceptual restructuring. In addition, computer based programs encouraged students to use interactive and virtual representations. This helped them not only to strengthen their academic knowledge of phonetics, but also to practice using the phonological rules accurately. Therefore, it is recommended that teachers of education programs should take into consideration the use of technology for preparing pre service teachers to teach pronunciation effectively in tomorrow's English classroom.

CONCLUSION

After treatment, the experimental group got higher mean scores than the control group. The study also showed

that there was statistically significant difference in a post-test between the control group and the experimental group in favor of the experimental group and this means that the using of computer-assisted program is better than using the conventional way in developing students' achievement. It is evident that the experimental group performed much better on the post-test than the control group. Thus, it could be concluded that the students who were taught by using computer-assisted programs scored significantly higher in the post-test than the students who were taught by conventional way at(α=0, 05). The findings of the study indicated that there was no statistically significant difference in the students' achievement due to their gender. Furthermore, the results showed that there was no statistically significant difference (α=0, 05) due to the interaction between gender and group.

RECOMMENDATIONS

In light of the results of the study, the following recommendations were proposed:

- Performing the experiment over a longer period of time so that students have adequate time to shake off current habits of traditional methods of teaching and become more familiar with the computer-assisted programs.
- Conducting other studies to investigate the effect of computer-assisted programs on other subjects such as English, chemistry, mathematics and physics.
- Training and encouraging teachers on using computer-assisted programs.

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