FULL LENGTH ARTICLE

The impact of using multimedia on students' academic achievement in the College of Education at King Saud University

Sara Aloraini

Educational Technology, College of Education, King Saud University, Saudi Arabia

Abstract   The purpose of this study is to find out the impact of using multimedia on students' academic achievement in the College of Education at King Saud University. This study's effort is to answer the following questions:

- What is the impact of using multimedia on students' academic achievement in the "computer & its use in education" curriculum?
- Are there any statistically-significant differences between the average marks of the experimental group & that of the control group in the pre & post measurements of students' academic achievement in the school of Education?

To this end, an experiment of two equivalent groups was designed, one of the groups is experimental & the other is control; each of them consists of 20 female students. The lecture was given to the first group using a computer presentation program which uses multimedia treated as an experimental group, while the second group was given the same lecture using the traditional method which uses the dialog & discussion technique treated as a control group. Both groups were subjected to pre & post tests in the subject tackled by the lecture. The analysis result of the pre test showed no statistically-significant differences, which in turn proves the equivalence of the two groups. Meanwhile, the analysis result of the post test showed the following:

There are statistically-significant differences between the experimental group and the control group at a significance level of 0.05 for the interest of the experimental group.

© 2012 King Saud University. Production and hosting by Elsevier B.V. All rights reserved.

1. Introduction

Education encounters, in modern times, challenges in all aspects of social, economic & cultural life; the most important of which are over-population, over-knowledge, education philosophy development & the change of teacher's role, the spread of illiteracy, lack of the staff & the technological development & mass

E-mail address: oraini@ksu.edu.sa

media (Aloraini, 2005, p. 30–32). This drove the teaching staff to use the modern teaching technologies to face some of the main problems, which education & its productivity encounter, by increasing the learning level which may be achieved through providing equivalent opportunities for all people whenever & wherever they are, while taking into account the individual differences between learners (Wilkinson, 1986, p. 13 & Abd El-Halim Said, 1997, p. 19). To improve the educational productivity, some of the teaching staff sought to mainstream technology within education, developing traditional techniques & using new educational methods (Al-A'ny, 2000).

Mainstreaming the technological media within what is called ''Multimedia'' is the pattern which led to infinite applications of computer technologies. The concept of this technology came into being with the appearance of sound cards, then compact disks, then came the use of digital camera, then the video which made computer an essential educational tool. Nowadays, multimedia expanded to become a field on its own.

The concept of multimedia technology is broad & it has infinite usage fields; it is a profound element as an educational technology in addition to its use in medical & statistical domains & in establishing databases. Moreover, the entertainment sector is one of the sectors that has the lion's share in using this technology. Interaction is the main element in multimedia technology as most of its applications are characterized by interaction. Consequently, multimedia programs may provide a more effective & more influential experiment than using each technology separately.

The researcher thinks that multimedia is one of the best educational techniques because it addresses more than one sense simultaneously, as it addresses the senses of sight & hearing. Multimedia programs provide different stimuli in their presentations which include a number of elements some of which are (Aloraini, 2005, p. 55–75):

- Texts,
- spoken words,
- sound & music,
- graphics,
- animations and
- still pictures.

These elements were mainstreamed in a comprehensive presentation so as to provide effective education, which in turn will support the participation of the different senses of the learners in diverse syllabi. (Hadmin, 2000).

Some of the advantages of these programs are:

1. They make the reading process a dynamic one instead of the written presentation of the texts printed in the book (Zaitoun, 2002, p. 259).
2. Presenting different drawings & pictures supports the clarification of ideas & communication of information.
3. Moving easily from a presented subject to another provides a good chance for questions & discussions.
4. Using different presentations like video clips along with maps or other kinds of presentations help to get the information closer to reality. Adding music makes the idea clearer and it attracts the attention of the learners (Aloraini, 2005, p. 73).

5. They rise the attention & interaction between students & the educational subject (Qandeel, 1998, p. 1625).
6. They comprise the elements of amusement & suspense (Qandeel, 1998, p. 1625).
7. They are graded according to the learner's abilities from easy to difficult ones (Qandeel, 1998, p. 1625).
8. They provide teachers with a new educational style & encourage curiosity (Holsinger, 1995, p. 9).
9. They help teachers & learners look into topics from a broader perspective as each topic comprises enormous information (Holsinger, 1995, p. 9).
10. They guide learners to peer learning (Alfar, 2009, p. 123).
11. They are concerned with providing simultaneous feedback (Qandeel, 1998, p. 1625).
12. They help learners remember & transfer their knowledge (Alfar, 2009, p. 123).
13. They support the user's work & innovation, which makes the possession of a computer a necessity for both the student & the teacher.

As a result of the efficiency the multimedia programs achieved in the educational domain, the researcher sought to subject these programs to research in order to find out the best style for presenting & applying them in a way which ensures their optimization in education.

1.1. Study problem

The study problem is focused in finding out the influence of using multimedia in teaching computer & its uses in education on the female students' academic achievement, especially the female students of the Education College at King Saud University, in comparison with their colleagues who benefit from this curriculum through traditional education. This problem is made more specific in the following question:

What is the impact of using multimedia in teaching ''computer & its uses in education'' curriculum on the female students' academic achievement?

1.2. Study objectives

The study aims to find out the impact of using multimedia on the female students' academic achievement in the ''computer & its use in education'' curriculum through knowing the difference of academic achievement between the female students who were given the lecture by using multimedia program (the experimental group) & those who were taught by using traditional methods – teacher, discussion & dialog (the control group).

1.3. Study significance

The importance of the subject study is a result of the following issues:

1. It allows reaching a simplified strategy which leads to easy understanding on the part of the female students.
2. It raises the female students' academic achievement in computer subjects.
3. It develops the female teachers' abilities of using multimedia in teaching computer subjects.

4. It encourages the use of multimedia in the University environment of the colleges of theoretical bases.

1.4. Study questions

The subject study provides an answer for the following main question:

What is the impact of using multimedia on the female students' academic achievement in "computer & its use in education" curriculum in the Faculty of Education at King Saud University?

This question can be subdivided into the following questions:

- Are there any statistically-significant differences between the average marks of the experimental group & that of the control group in the pre measurement of the female students' academic achievement in the "computer & its use in education" curriculum?
- Are there any statistically-significant differences between the average marks of the experimental group & that of the control group in the post measurement of the female students' academic achievement in the "computer & its use in education" curriculum?
- Are there any statistically-significant differences between the average marks of the experimental group & that of the control group in the pre & post measurements of the female students' academic achievement in the "computer & its use in education" curriculum?

1.5. Study limits

The study limits are confined to the following:

1.5.1. Spatial limits
The category of female students who study the 250 NHG "computer & its use in education" curriculum comprises 400 of them from different branches of the College of Education. A sample, consisting of 40 female students distributed on two educational branches of the curriculum taught in the College of Education at King Saud University – Riyadh.

1.5.2. Temporal limits
Studying starts by the beginning of the first semester of the University year 2010–2011 & it wraps up by its end.

1.5.3. Educational stage
University stage – level four.

1.6. Study variables

The study involved the following variables:

1. The independent variable: represented in using multimedia in teaching the "computer & its use in education" curriculum to the experimental group.
2. The dependent variables: represented in the students' academic achievement.
3. The variables controlled before the experiment:
   (a) The faculty to which the female students belong.

(b) The female students level (level four).
(c) The previous academic achievement depending on the students' marks.
(d) The teaching location used.
(e) The teacher.

1.7. Study terminology

1. **Multimedia**: They represent the consolidation of all elements of technology as they combine sound, image, video, drawing & text with a high quality in addition to the interactive environment (Fouda, 2008, p. 386).
2. **Student's academic achievement**: It is the result of what the students learn after the learning process.
3. **The "computer & its use in education" curriculum**: It is one of the obligatory syllabi provided to the students of the Faculty of Education by King Saud University with two credit hours. This curriculum is designed especially for male and female teacher students and for all those who want to use the computer applications in the teaching process. It is considered a practical entry to the use of computer and software in education. It focuses on mainstreaming the modern computer applications (like the text editing software programs, presentation programs, Excel & internet) and computer technology within the educational fields on the one hand, and how to use them in learning and education processes.

1.8. Previous studies (literature review)

Reading the previous studies is essential for providing some scientific facts which serve the study. Many researchers were concerned with studying the influence of the use of multimedia on the students' academic achievement and their attitudes. The following are the most prominent studies.

Ila Mariss (1980) conducted a study entitled as "Comparison of the student's success & change of attitude as a result of two different educational cases". The study aims at comparing the efficiency of the teacher's traditional explanation and the multimedia method in the students' academic achievement and their attitudes. The researcher used the experimental method and the study was conducted on a sample comprising 80 students from the ninth grade. The sample is divided into two groups: one is control and the other is experimental. The researcher used (diagrams, tapes & programed films) achievement tests designed by him. The most important results are: the academic achievement of the experimental group students rose as a result of using the multimedia group as there were statistically-significant differences of the average achievement in favor of the experimental group students who used the multimedia group.

Sterling and Gray (1991) conducted a study on the impact of the computer stimulation programs on the students' tendencies and their response to the statistics course. The study sample comprised 40 students who studied using the stimulation program on their own, which is called the experimental group, and other 36 students who studied using the traditional method depending on the teacher, which is called the control group. After analyzing the study results, the two researchers found

out that there are statistically-significant differences in the cognitive achievement in favor of the experimental group.

Beichner (1994) found out that the multimedia have a positive effect on the knowledge and emotions of the students who study scientific subjects.

Ameen (1995) conducted a study on the impact of the hypermedia on the students' academic achievement and the attitudes toward using computer to teach the Faculty of Education students, Minya University. The study was conducted on 30 male and female students in the third grade in the faculty and they represent different branches and specializations. They were equally divided into two groups: one is experimental and the other is control. One of them studied using the hypermedia and the other studied by the traditional method. The study found out statistically-significant differences between the two groups concerning students' marks on the computer attitude scale in favor of the experimental group. Moreover, it found out statistically-significant differences, in the academic achievement test, between the two groups in favor of the experimental group.

Callaway (1997) a study to find out the impact of using the computerized program of a multimedia structure on students' cognitive traits and the educational methods which were ignored in the traditional method. The study showed a statistically-significant difference in the average marks of the experimental group and the control group in favor of the experimental group which studied using the multimedia method.

Allen (1998) conducted a study to find out the efficiency of multimedia software in the academic achievement of a sample from Texas University in the microorganism curriculum, their knowledge retention, and their attitudes toward using multimedia computers in teaching the microorganism course. The study sample comprised 76 students, divided equally into two groups: control and experimental. The 16-week study result uncovered statistically-significant differences, in the academic achievements, knowledge retention & attitude toward computer, in favor of the experimental group which studied using the multimedia method over the control group which studied using the traditional method.

Algerioy (1999) carried out a study on the impact of using multimedia on the academic achievement of the first grade secondary school students in mathematics in Riyadh by using the experimental method with the study sample which comprises 62 students. They were divided into two groups where the experimental group studied on its own using multimedia while the control group studied using the traditional method. The study found out no statistically-significant differences, between the average achievement of the experimental group students and those belonging to the control group, in remembrance, understanding and application level.

Watkins (1999) carried out a study which aimed at finding out the efficiency of teaching by using the multimedia software stored on a CD in the academic achievement of a sample of students from the University of Arizona (49 students) and their attitudes toward sciences. The study used the semi-experimental method as it divided the study sample haphazardly into two groups: one is experimental whose students studied using educational software while the other is control whose students studied some subjects of sciences using the traditional method. An achievement test is applied in this study in addition to an attitude scale. The results showed the excelling of the experimental group over the control group which studied using the traditional method in an attempt to reach an academic

achievement. They also showed no statistically-significant differences in attitudes between the two groups.

Hong et al. (2001) conducted a study which aimed at finding out the impact of multimedia software on students' academic achievement in the main concepts of astrology, their ability to acquire the skills of solving big problems as well as the simple skills. The study sample consisted of 238 students in the ninth grade, who studied in a practical class near Austin City & were interested in astrology. The study sample was divided haphazardly into two groups: one is experimental whose students studied using educational software (called The Astrological Village) which aims at teaching them the main concepts of astrology as well as presenting some of the contemporary problems in astrology. Pre and post tests were designed, moreover, the study depended on the study hypotheses tests. The results showed the following:

- Statistically-significant differences between the average marks of the experimental group students' achievement & that of the control group in favor of the experimental group.
- It was apparent that (The Astrological Village) software is an effective tool which helps students to acquire the special skills of solving problems as they become able to apply the problem-solving technique on new similar environments and situations.

Atawaim (2000) conducted a study entitled as "The effect of using computer on 6th grade primary students in the curriculum of the Arabic language". The study aims to investigate the effect of the computer as an educational tool on students' academic achievement in the Arabic grammar taught to the 6th grade primary students in Riyadh. The study sample consisted of an experimental group including 30 students studied by using computer and a control group including 30 students studied by the traditional method. The study revealed significant statistical differences in students' average academic achievement between the two groups in the level of remembrance and the absence of significant statistical differences in the level of academic achievement and application and the overall test level.

Salem's study (2000) tackled "The Effect of using computer as an educational tool in teaching the curriculum of statistics on the development of statistical skills among the third grade commercial secondary school students". The study aims to identify the effectiveness of using computer as an educational tool in teaching the curriculum of statistics on the development of statistical skills among the third grade commercial secondary school students in the Arab Republic of Egypt. The experiment has been conducted on 30 students in the experimental group and 30 students in the control group. The experimental group was taught by computer while the control group was taught by the traditional method. The study results showed significant statistical differences in the average grades of the experimental and control groups in favor of the experimental group after teaching the program.

Abu Yunis (2005) study entitled "The effectiveness of multimedia software to teach Geometry in the second grade of preparatory schools" aimed at identifying to what extent multimedia software helps in the academic achievement of the preparatory school students in the subject of Geometry and its remembrance. The sample of experimental study included

300 male and female students divided into two experimental and control groups each group consisted of 150 male and female students. The experimental group was taught by multimedia software program that contain a content of the Geometry unit identified by the Ministry of Education in the Syrian Arab Republic. The results showed significant statistical differences in the average of academic achievement of the experimental and control groups in the test conducted after the experiment in favor of experimental group.

Obaid (2001) conducted a study entitled as "A program using multimedia bags to develop the necessary competence of the mathematics head teacher in high schools". This study aims to identify the effectiveness of a program using multimedia bags to develop some necessary educational competencies whose number is 41 educational competencies of the mathematics head teacher in the high school in the Arab Republic of Egypt. The experiment has been conducted on one experimental group consisting of 30 resident mathematics head teacher. The academic achievement test has been conducted on the students before and after the test. The study results showed significant statistical differences between pre and post tests in favor of post test.

Ghazzawi (2002) carried out a study entitled as "The computerized software design, its effects and the effect of the movement variable on the academic achievement of 6th grade primary school students concerning some concepts of pilgrimage". The study aims to design educational software according to recognized standards and to study its effects and the effect of the movement variable and gender on the academic achievement of 6th grade primary school students concerning some concepts of pilgrimage in Jordan. To this end, specific educational software has been prepared and applied to a sample of 107 male and female students who were divided into three processing groups distributed on six branches to find out the influence of the educational software on students' academic achievement & the effect of the variables of movement and gender through a verified achievement test. The associated variance analysis and Neumankloz test were used for post comparison. The study results showed significant statistical differences in favor of computational method which involves moving stimuli because of the movement factor.

Abdul-Majid (2002) has conducted a study on "The effect of a proposed program using enhanced multimedia along with computer in teaching Analytical Geometry on acquisition of knowledge and developing the divergent thinking and decision-making skills of the first grade high school students". The research sample was chosen, it included two classes from the first grade high school students, Neda Secondary School for boys and girls in Sohag and the results are as follows:

- There is a difference in the average grades between the experimental group and the control group in favor of the experimental group grades in the academic achievement test.
- There is a difference in the average grades between the experimental group and the control group in favor of the experimental group grades in the test of developing the divergent thinking skills.
- There is a difference in the average grades between the experimental group and the control group in favor of the experimental group grades in the test of decision-making skills.

Abu Nadar (2003) conducted a study entitled as "The effective use of computer on the development of some necessary basic skills to enable the students of technology education to use video camera". The study aims to measure the effective use of computer on the development of some necessary basic skills to enable the students of technology education to use video camera in the Faculty of Specific Education in Tanta. The study used the experimental method and the sample consisted of 40 students from technology education divided randomly into experimental and control groups. The results of the study showed significant statistical differences at the significance level of 0.05 between the average grade of the experimental group students and the average grade of the control group students in the academic achievement in favor of the experimental group.

Ibrahim (2003) conducted a study which aims to "Using multimedia technology to present computer basics subject in a way that leads to the availability of adequate skills and information related to the computer domain". To this end, the two groups of study were selected randomly from the second year students, Art Education division, Faculty of Specific Education, with a number of 15 students for the experimental group and 15 students for the control group. A pre test was conducted to both groups regarding the variable of study. Then, the proposed and prepared computer program of multimedia technology was prepared and taught to the experimental group. The control group students studied the same curriculum in a traditional method during the period between 28/2/2003 and 17/3/2003, after that the post test has been conducted. The delayed academic achievement test has been conducted on 7/4/2003. The study results showed significant statistical differences at the significance level of 0.01 between the average grade of the experimental group in the post application and the delayed post academic achievement test.

Da'lij (2008) conducted a study entitled as "The effect of using Mathematics software produced locally on second grade intermediate female students' academic achievement in Riyadh". The study aims to identify the effect of using multimedia software produced locally on second grade intermediate female students' academic achievement in mathematics. The study sample consisted of 70 female students divided equally into two experimental groups studying by the locally produced software and a control group studying the traditional method. The study revealed no statistically-significant differences at the significance level of 0.05 between the experimental and control groups.

Nasr (2005) carried out a research to study the "Effectiveness of the use of multimedia computer technology on teaching Geometry to the third preparatory grade students on students' academic achievement and the development of innovative thinking". The researcher used the experimental method based on the design of two equal groups: one of them was experimental which studies the two units of the proposed program that is based on interactive multimedia technology in the "Unit of the Circle" in Geometry book taught to the third preparatory grade students and the other is a control group which taught the same content in the traditional method. Each group was subjected to academic achievement test as well as innovative thinking test before the experiment. The two groups were also subjected to the same tests after the completion of the experimental design. The study resulted in the following:

- There are statistically-significant differences between the average grades of the two groups of study (experimental and control groups) at the level of academic achievement in Geometry due to the pattern of the program used, which is based on the technology of interactive multimedia at a significance level of 0.01 in favor of the experimental group.
- There are statistically-significant differences between the average grades of the two groups of study (experimental and control groups) in innovative thinking test as for Geometric circle due to the pattern of the program used, which is based on the technology of interactive multimedia at a significance level of 0.01 in favor of the experimental group. This applies to each skill separately as well as the test as a whole.
- The used program is effective in developing students' innovative thinking skills in geometry where the value of ETA to each skill separately in the thinking test was larger than 0.14, and for the whole test as well.
- The percentage of the program efficiency was 72% in developing students' academic achievement to geometry and 71% in developing thinking skills in geometry.
- The efficiency degrees of the proposed program were 60/72, which mean that 72% of the students who studied the program got 60% or more of the final grade in geometry thinking test.

The previous studies show that most experimental studies stress the effective use of multimedia as a facilitating strategy, it helps in delivering the educational material to students easily and it plays a positive role in enhancing the general trend toward the use of computer in education. Multimedia has a positive impact on cognitive achievement, academic achievement, comprehension and application.

The current study is an attempt to support the previous studies in using the experimental method in studying variables. Perhaps this study will reach scientific results over research ethics in the field of using multimedia software, it helps in revealing the importance of computer in students' academic achievement to the subject of ''computer and its uses in education'' and also it stimulates the activation of multimedia use in academic teaching.

2. Methodology of the study

The researcher used the experimental method in studying the impact of an independent variable (a computer representation program using multimedia) on dependent variable (academic achievement), a comparison was made between the experimental group who studied by using a computer presentation program which uses multimedia along with a teacher, and the other group is a control one who studied by using the traditional way of discussion and dialog, along with a teacher. The variables were controlled, which mean that both groups are equivalent in terms of specialty, academic level, teacher and teaching location and the two groups have undergone a pre and post academic achievement tests.

3. The study population and its sample

The study population was the female students whose curriculum is computer and its uses, in the Faculty of Education, King Saud University, in the first semester for the academic year 2010–2011 and they were 400 female students.

The sample was randomly taken from the study community, where two branches were selected from the curriculum of the fourth year of the Faculty of Education, the two divisions. The researchers divided them into control group and experimental group. The experimental group was given a lecture on ''Communication and Network'' through a computer representation program which uses multimedia, where the other group was given the same lecture through using the traditional ways of teaching (teacher, lecture, discussion).

4. The study tools

The researchers designed a presentation program which uses multimedia to present ''Communication and Network'' and the presentation included sound, images and video clips, it is worth mentioning that the researchers are experienced in teaching that curriculum.

The researchers conducted a pre and post academic achievement test, with the help of the curriculum professors, which covers all aspects of the topic to measure the different levels of academic achievement not memorizing. The test included 13 questions divided into two kinds of questions:

- True or False (six questions)
- Multiple-choice (seven questions), each one included four answers and the student choose the right one.

The test was made in an objective way and it was submitted to a group of arbitrators to judge it scientifically and pedagogically, in terms of the scientific material, its suitability to students and the clarity of its form (the arbitrators were teachers of the curriculum). After knowing their views and suggestions, few questions were modified then the test came out in its final form.

5. The study application process

- The section of ''Communication and Network'' was selected from the computer curriculum and its uses in teaching as an experiment.
- A female instructor from the department was selected to instruct both groups (control and experimental) and to refute the impact of changing the teacher on the study, putting into consideration that teaching by multimedia will not affect the traditional way of teaching because this may result in wrong interpretation for the study on the two groups.
- Using the same teacher for the two groups (control and experimental) to contradict the impact of the location variable on the study.
- Ensuring the female students' academic achievement of the given lecture in both groups (control and experimental) (ensuring quality).
- A pre test was conducted to the control and experimental groups before conducting the study and its duration was 15 min.
- A post test was conducted to the control and experimental groups after the first week of the study and its duration was 15 min.

- The equivalence of the two groups was verified through measuring the difference between the two groups' ranges and calculating the standard deviation and the (T) value of the identified variables: the faculty, the female students of the two groups are from the same faculty (College of Education), all of them are on the same year, i.e. fourth year in addition to groups' equivalence in terms of the absence of differences of statistical significance in the pre academic achievement test or their academic achievement, and any of the previous information about "Communication and Network", the subject which will be taught in the study.

6. Statistical processing

The researchers in the following statistical processing used the Statistical Package (SPSS) for analyzing all processes:

- Calculating the median.
- Calculating the standard deviation.
- T-test to examine the difference between the performance of control and experimental groups.

7. The study results and its discussion

After applying the experiment, the researcher conducted a post academic achievement test then she analyzed the study outcomes to figure out the impact of using multimedia on female students' academic achievement and the results were as follows:

8. Results related to the first question

Question (1): What is the impact of using multimedia on the female students' academic achievement in the curriculum of "computer and its uses in education"?

After getting the statistical results of the pre and post academic achievement tests of the control and experimental groups, the positive impact of using multimedia was clear on teaching the curriculum of 250 "Computer and its uses in education" and on better scientific academic achievement of the experimental group compared to the results of the control group, which proves that using multimedia in education is an effective means of reaching a better learning.

9. Results related to the second question

Question (2): Are there any statistically-significant differences between the average marks of the female students of the experimental and control groups in the pre academic achievement test in the "Computer and its uses in education" curriculum?

To answer this question the median and the standard deviation of the pre academic achievement test for the experimental and control groups were extracted as shown in Table 1.

Table 1 reveals that there are no statistically-significant differences between the experimental and control groups at the significance level of 0.05 in the pre test which indicates the equivalence of the two groups.

10. Results related to the third question

Question (3): Are there any statistically significant differences between the average grade of the experimental and control groups in the post academic achievement test to female students in the curriculum of "computer and its uses in education"?

To answer that question, the standard deviation and the median were calculated for both the control and experimental groups in the post academic achievement test as shown in Table 2.

Table 2 shows statistically significant differences between the control and experimental groups at the significance level of 0.05 in the post academic achievement test in favor of the experimental group.

Table 1 Results of the pre academic achievement test for the control and experimental groups.

Group	Number	Median	Standard deviation	Student T-value	Significant differences
Control	20	5.05	1.637	1.915	0.063
Experimental	20	5.15	1.316		

Table 2 Results of the post academic achievement test for the experimental and control groups.

Group	Number	The median	Standard deviation	Student T-value	Significant differences
Control	20	6.06	1.231	9.121	0.00
Experimental	20	10.00	1.239		

Table 3 Comparison between the results of the pre and post achievement tests for the control and experimental groups.

Group	Pre achievement test		Post achievement test		Student T-value	Significant differences
	The median	Standard deviation	The median	Standard deviation		
Control	5.05	1.637	6.60	1.231	3.639–	0.002
Experimental	5.95	1.316	10.00	1.239	11.522–	0.000

11. Results related to the fourth question

Question (4): Are there any statistically significant differences between the average grades of the experimental and control groups in the pre and post academic achievement tests in the curriculum of "computer and its uses in education"?

To answer that question, a comparison was made between the standard deviation and the median for the experimental and control groups in the pre and post academic achievement tests, as shown in Table 3.

There are statistically significant differences between the pre and post achievement test at the significance level of 0.05 for both the control and experimental groups.

It is observed that the development of the academic achievement for the experimental group is greater than that of control group. This stresses the effective use of multimedia in presenting computer lessons.

12. Study recommendations

According to the study results which indicated the effective use of multimedia compared to the traditional methods of teaching, the study recommends the following:

- Using multimedia in theoretical faculties.
- Expansion in using multimedia in teaching other theoretical curriculums and stressing the use of computer as an educational tool in teaching.
- Giving training courses to computer teachers regarding the use of multimedia in teaching educational subjects provided that these courses will be available over the academic year.
- Conducting more studies on using multimedia in the academic curriculum in the University atmosphere.

References

Abdul-Majid, d. Ahmed Sadek, 2002. The impact of a proposed program using multimedia enhanced computer in the teaching of analytic geometry on the achievement of knowledge and the development of thinking skills divergent and decision-making for students of first grade secondary. South Valley University, College of Education, Sohag.

Abu Nadar, Ayman, 2003. The effectiveness of using a computer program in the development of some basic skills needed to operate the video camera technology among students in education, unpublished Master Thesis. Institute of Educational Studies and Research, Cairo.

Abu Yunis, Alyas, 2005. The effectiveness of multimedia software for teaching engineering in the second row preparatory, unpublished Ph.D. thesis, University of Damascus, Damascus.

Atawaim, Abdullah, 2000. The impact of computer use on the collection of sixth grade students passed the primary rules of the Arabic language, unpublished Master Thesis. King Saud University, Riyadh.

Algerioy, Abdul Majid, 1999. The impact of multimedia on the collection of first-grade students in secondary mathematics in Riyadh, unpublished Master Thesis, King Saud University.

Aloraini, Sara Ibrahim, 2005. Distance learning. Alretha Press, Dammam, Kingdom of Saudi Arabia.

Allen, D., 1998. The effect of computer – based multimedia lecture presentation on comment college microbiology students achievement, attitudes and retention D.A.I., August, 448-A.

Alfar, Ibrahim, 2009. Preparation and production of interactive multimedia software, second edition. Delta Computer Technology, Tanta, Egypt.

Ameen, Zeinab Mohamed, 1995. The impact of the use of Alheiber-media on academic achievement and attitudes of students , unpublished Ph.D. thesis, Egypt, Faculty of Education, Minia University.

Beichner, Robert J., 1994. Multimedia Editing to Promote Science Learning. Journal of Computers in Mathematics and Science Teaching (3), 55–70.

Callaway, Judith Ann, 1997. An interactive multimedia computer package on photosynthesis for hi school students based on matrix of cognitive and learning styles. D.A.I-A 57/07, P2951.

Da'alj, Maha, 2008. The impact of the use of software decision math produced locally on collection of the average second grade students in Riyadh , Unpublished Master Thesis, King Saud University, Riyadh.

Fouda, Olft, 2008. Computer Uses in Education, third edition.

Ghazzawi, Mohammed, 2002. Design software learning computerized study of their impact and the impact of variable movement in the collection of sixth grade students the basic concepts of pilgrimage for some, Journal of Educational and Psychological Sciences, Volume III, Issue IV, Bahrain.

Hadmin, D., 2000. The world of Multimedia,http:// vml.hqad-min.doe.gov AQMULTI.html.

Holsinger, Erik., 1995. How do multimedia works. First Edition, Arab Scientific Publishers, Lebanon, Translation by Centre for Arabization.

Ibrahim, Wael Mohamed, 2003. The effectiveness of multimedia in teaching basic computer to collect and the survival of the impact of learning of students at the College of Education Quality. Master, Egypt.

Nasr, Hassan Ahmad, 2005. Study of effectiveness of the use of multimedia technology in the teaching of computer engineering at the third preparatory grade pupil achievement and the development of creative thinking they have, Cairo University.

Obaid, Jamal, 2001. A program using the bags for the development of multimedia skills necessary to prompt the resident high school mathematics, unpublished Ph.D. thesis, Institute of Educational Studies and Research, Cairo.

Qandeel, Abdul Rahman Yasin, 1998. Educational methods and technology education, First Printing, Publishing House, Riyadh.

Salem, Hanan, 2000. The impact of the use of computers as an assistant in the teaching of statistics education on the development of statistical skills among students in third grade secondary trading. Unpublished MA Thesis, University of Ain Shams, Cairo.

Saied, Abdel-Halim open the door, 1997. Employment of Educational Technology, m 2, the Egyptian Society for Technology in Education.

Sterling, J and Gray M, 1991. The effect of simulation software on student's attitudes and understanding in introductory statistics m Journal of Computer Mathematics and Science Teaching, 10 (4), PP. 51–55.

Wilkinson, Jane., 1986. Means in education and research during the sixty years, the translation by Dabbasi & Salah al-Arab, i 1. Science Press and Publication, Riyadh.

Zaitoun, Kamal Abdul Hamid, 2002. Educational Technology in the Age of Information and Communication, the world of books, Cairo.