

The Impression Of Using Animation On Students' Academic Progress Of Directorate Of Education Governed Schools

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Introduction

Modern education faces challenges in all spheres of social, economic, and cultural life, the most significant of which are overpopulation, overabundance of knowledge, changes in educational philosophy and the role of the teacher, the spread of illiteracy, a lack of staff, technological advancements, and the media (Aloraini, 2005, p. 30–32). This motivated the teaching staff to employ modern teaching technologies to address some of the major issues that education and its productivity face by raising the learning level that may be achieved through granting everyone the same opportunities, whenever and wherever they are, while taking into account the individual differences between learners (Wilkinson, 1986, p. 13 & Abd El-Halim Said, 1997, p. 19). Some members of the teaching staff worked to integrate technology into the classroom by creating new teaching strategies and adapting traditional ones (Al-A'ny, 2000).

The pattern that led to an endless number of uses for computer technology was the mainstreaming of technical media inside what is referred to as "Multimedia." The idea behind this technology emerged with the introduction of sound cards, followed by the usage of compact discs, digital cameras, and subsequently video, which turned computers into a crucial teaching tool. These days, multimedia has developed into a distinct field.

Multimedia technology is a broad concept with countless applications; it has a crucial role to play in education in addition to its use in the disciplines of medicine, statistics, and database construction. Additionally, the entertainment industry is one of the industries that uses this technology the most. As most of its applications depend on interaction, interaction is the key component of multimedia technology. As a result, using multimedia programmes rather than each technology separately may result in a more fruitful and influential experiment.

Because it covers the senses of sight and hearing concurrently, the researcher believes that multimedia is one of the finest educational strategies. 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 raise 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. Both the student and the teacher must have access to a computer since they promote the user's work and invention.

The effectiveness of the multimedia programmes in the educational field led the researcher to investigate these programmes in order to determine the best method for presenting and implementing them in a way that ensures their optimization in education.

1.1 Study Problem

The goal of the study is to compare the academic success of students in Directorate of Education Schools to their peers who receive this curriculum through traditional education in order to determine the impact of employing multimedia in teaching computers and its usage in education. The above issue is more specifically stated as follows:

1.2) Study objectives

The aim of the study is to determine how using multimedia affects students' academic performance in the "computer & its use in education" curriculum by comparing the academic performance of students who received lectures using multimedia programmes (the experimental group) and students who received lectures using traditional teaching techniques (teacher, discussion, and dialogue) (the control group).

1.3 Study significance

The following issues are what makes the topic study so crucial:

- It enables the creation of a simpler strategy that the students may readily comprehend.
- It enhances students' academic achievement in computer-related subjects.
- It improves the ability of the educators to teach computer-related courses using multimedia.
- It encourages the use of multimedia in academic settings on college campuses with theoretical underpinnings.
- The primary query addressed by the topic study is resolved:

1.4) Study questions

An answer to the following major questions is provided by the topic study:

What effect does the use of multimedia have on the academic performance of pupils in the "ICT in Education curriculum"?

The following questions can be used to further break down this one:

- 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 students' academic achievement in the "ICT 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 students' academic achievement in the "ICT 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 students' academic achievement in the "ICT in education" curriculum?

1.5) Study limits

The study limits are confined to the following:

- Spatial limits

The category of students who study the “ICT in education” curriculum belongs to classes 6th to 8th comprises 400 of them.

A sample, consisting of 40 students distributed in two classrooms of the curriculum taught in the Directorate of Education governed school.

- Temporal limits

Studying starts by the beginning of the 2019 session & it wraps up by its end. Educational stage School level .

1.6) Study variables

This study has involved the below variables:

- a) The independent variable: represented in using multimedia in teaching the “ICT in education” curriculum to the experimental group.
- b) The dependent variables: represented in the students’ academic achievement.
- c) variables controlled before the experiment:
 - The faculty to which the students belong.
 - The students level (level four).
 - The previous academic achievement depends on the students’ marks.
 - The teaching location used.
 - The teacher.

1.7) Study terminology

1) **Multimedia:** They blend high-quality music, image, video, drawing, and text with an interactive environment to symbolise the consolidation of all technological aspects. ([Fouda, 2008, p. 386](#)).

2) **Student’s academic achievement:** It is the result of what the students discover throughout the educational process.

3) **The “ICT in education” curriculum:** It is one of the obligatory syllabi provided to the students of the Directorate of Education governed schools. This curriculum is designed especially for students to teach them about uses of ICT in education , how to use hardware and software as a tool to complete the task of real life . It is considered a practical entry to the use of computers and software in education. It focuses on how to integrate contemporary computer applications (such text editing software, presentation software, Excel, and the internet) and technology into educational settings on the one hand, and how to use them in the processes of learning and education on the other..This curriculum is also teaching programming from basic level to advanced level for

example in class 6th students are learning LOGO programming and class 10th HTML Language and Scratch. To effectively use the ICT in Education , it is necessary to develop multimedia like audio , video which students are learning through this curriculum.

1.8) Previous studies (literature review)

It is crucial to read past studies in order to provide some scientific information that supports the current investigation. The impact of multimedia use on students’ academic performance and attitudes was a topic of interest for many researchers. The most notable studies are listed below.

Ila Mariss (1980) conducted a study entitled “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. An 80-student sample was employed in the study, which was done using an experimental methodology. The sample is split into two groups: an experimental group and a control group. The achievement assessments that created were employed by the researcher (together with diagrams, recordings, and programmed films). The most notable findings are that employing the multimedia group increased the experimental group students’ average academic accomplishment since there were statistically significant changes in their average academic achievement in their favour.

[Sterling and Gray \(1991\)](#) conducted a study on the impact of the computer simulation programs on the students’ tendencies and their response to the statistics course. The experimental group, which consisted of 40 students who studied independently using the stimulation software, and the control group, which included 36 students who studied traditionally with the help of their teachers, made up the study sample. The two researchers examined the study’s findings and discovered that the experimental group had significantly higher levels of cognitive achievement than the control group.

[Beichner \(1994\)](#) found out that multimedia has 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 computers 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. One group was designated experimental, and the other was designated control. One of them studied through hypermedia, while the other studied through more conventional means. In regards to the students' scores on the computer attitude scale, the study discovered statistically significant differences between the two groups, favouring the experimental group. Additionally, it discovered statistically significant differences in favour of the experimental group between the two groups on the academic achievement exam.

[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 research revealed a statistically significant difference between the experimental group's and control group's mean marks, which shows the experimental group's use of 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's findings revealed statistically significant differences between the experimental group, which studied using the multimedia method, and the control group, which studied using the traditional method, in terms of academic performance, knowledge retention, and attitude toward computers.

[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 split into two groups, with the experimental group employing multimedia to study independently while the control group used a more conventional approach. The average

achievement of the students in the experimental group and those in the control group in terms of memory, knowledge, and application level were not significantly different, according to the study.

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 arbitrarily split into two groups: one was experimental, with students using educational software called The Astrological Village to learn the fundamentals of astrology as well as some of the industry's current issues. Additionally, before and post tests as well as research hypothesis tests were established. The findings revealed that: discrepancies between the experimental group's average marks and those of the control group's students that are statistically significant in favour of the experimental group.

[Atawaim \(2000\)](#) conducted a study entitled "The effect of using computers on 6th grade primary students in the curriculum of the Arabic language". The purpose of the study is to determine how using a computer in the classroom affects students' ability to learn Arabic grammar, which is taught to Riyadh's primary school sixth-graders. The study sample included two groups of 30 students each: an experimental group that used computers for instruction, and a control group that used the old-fashioned approach. The study found no significant statistical differences in the levels of academic accomplishment and application or the overall test level, but there were substantial statistical disparities in the students' average academic achievement between the two groups in terms of degree of recall.

[Salem's study \(2000\)](#) tackled "The Effect of using computers 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 goal of the study is to determine whether using computers as a teaching tool for the statistics curriculum has any impact on how well third-grade pupils in commercial secondary schools in the Arab Republic of Egypt learn statistical concepts. Thirty students from the

experimental group and thirty from the control group took part in the experiment. In contrast to the control group, which received traditional instruction, the experimental group received instruction through computer. According to the study's findings, after implementing the programme, the experimental group received much higher average grades than the control group.

[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. 300 students, 150 of each gender, were involved in the experimental study sample, which was divided into two experimental and control groups. The experimental group received instruction using a multimedia software package that included the lessons from the Geometry unit designated by the Syrian Arab Republic's Ministry of Education. In the exam that was conducted following the experiment, the results showed that the experimental group had much higher average academic achievement than the control group.

[Obaid \(2001\)](#) conducted a study entitled “A program using multimedia bags to develop the necessary competence of the mathematics head teacher in high schools”. This study intends to evaluate the efficacy of a programme employing multimedia packs to foster the development of 41 essential educational competences for the head of the mathematics department at a high school in the Arab Republic of Egypt. A single experimental group of 30 local mathematics head teachers served as the study's subjects. Before and after the test, the pupils underwent the academic achievement test. The study's findings demonstrated a strong statistical difference between pre and post testing favouring post tests.

[Ghazzawi \(2002\)](#) carried out a study entitled “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 purpose of the study is to develop educational software in accordance with accepted standards and to analyse its effects, as well as the effects of gender and movement variables, on the academic performance of sixth-grade primary school students in relation to some concepts of pilgrimage in Jordan. In order

to achieve this, specialised educational software was created and applied to a sample of 107 male and female students who were split into three processing groups and dispersed across six branches in order to determine the influence of the educational software on students' academic achievement as well as the impact of the variables of movement and gender through a validated achievement test. For post comparison, the associated variance analysis and Neuman-Klotz test were employed.

[Abdul-Majid \(2002\)](#) has conducted a study on “The effect of a proposed program using enhanced multimedia along with computers 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 Neda Secondary School for Boys and Girls in Sohag was used as the research sample, and two classes of first-graders were included. The findings 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.

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 means that both groups are equivalent in terms of specialty, academic level, teacher and teaching location and the two groups have undergone pre and post academic achievement tests.

3) The study population and its sample

The study population was the students of the Directorate of Education governed schools whose curriculum is ICT in Education and they were 400 students. The sample was chosen at random from the study population, where two divisions from the fourth-year curriculum of the Faculty of Education were chosen. The researchers divided them into a control group and an experimental group. The experimental group was given a lecture on “ICT” 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 “ICT” and the presentation included sound, images and video clips, it is worth mentioning that the researchers are experienced in teaching that curriculum. In order to gauge the various degrees of academic achievement—rather than memorization—the researchers used a pre- and post-test that covered every area of the subject.

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 chose 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 appropriateness for pupils and the simplicity of its format (the arbitrators were teachers of the curriculum). After knowing their views and suggestions, a few questions were modified and the test came out in its final form.

5) The study application process

The section of “ICT” was selected from the computer curriculum and its uses in teaching as an experiment. An instructor from the department was chosen to teach both the control and experimental groups and to disprove the influence of a different teacher on the study, taking into account that using multimedia to teach will not change the

traditional method of instruction because this could lead to an incorrect interpretation of the study's effects on the two groups.

To counter the influence of the location variable on the study, the same teacher was assigned to the control and experimental groups.

Ensuring the students’ academic achievement of the given lecture in both groups (control and experimental) (ensuring quality).

Before starting the study, a pre test lasting 15 minutes was given to the control and experimental groups.

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 students of the two groups are from the same faculty, all of them are on the same 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 “ICT”, the subject which will be taught in the study.

6) Statistical Processing

The Statistical Package (SPSS) was utilized by the researchers in the following statistical analysis to examine every procedure:

- Calculating the median.
- The standard deviation's calculation.
- T-test to investigate the performance disparity between the experimental and control 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 students’ academic achievement and the results were as follows:

- **Results related to the first question**

Question (1): What is the impact of using multimedia on the students’ academic

achievement in the curriculum of “computer and its uses in education”?

After analyzing the statistical data from the pre- and post-tests of academic achievement conducted on the experimental and control groups, it was evident that the use of multimedia had a positive impact on the teaching of the 250-unit "ICT in Education" curriculum. The experimental group also performed better academically in the sciences than the control group, which is evidence that using multimedia in education is a successful strategy for improving learning.

● Results related to the second question

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

- The pre-academic achievement test results for the experimental and control groups' median and standard deviation were retrieved in order to provide an answer.
- The pre-academic achievement test results for the experimental and control groups' median and standard deviation were retrieved in order to provide an answer.

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 1 shows that, at the significance level of 0.05 in the pretest, there are no statistically significant differences between the experimental and control groups, proving the equality of the two groups.

● Results related to the third question

(3) Does the average grade of the experimental and control groups on the post-academic achievement test for students taking the course "Computers and Their Uses in Education" differ statistically from one another?

In order to respond to that query, the post-academic achievement test's standard deviation and median were computed for both the control and experimental groups, as shown in Table 2.

Table 2 shows the outcomes for the experimental and control groups from the post-academic achievement test.

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 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.

● Results related to the fourth question

Question 4:- In the course "ICT in Education," did the experimental and control groups' average grades in the pre- and post-academic achievement exams differ statistically significantly from one another?

The standard deviation and median for the experimental and control groups in the pre- and post-academic achievement assessments were compared in order to respond to that question, as shown in Table 3.

Table 3 shows a comparison of the outcomes of the pre- and post-achievement assessments for the experimental and control groups.

	The median	Standard Deviation	The median	Standard deviation	value	differences
Experimental	5.95	1.316	10.00	1.239	11.522	0.000
					–	

Both the control and experimental groups show statistically significant differences between the pre and post achievement test at the significance level of 0.05. It has been noted that the experimental group's growth in academic achievement has outpaced that of the control group. This stresses the effective use of multimedia in presenting computer lessons.

8) Study recommendations

The study suggests the following in light of the findings, which showed that multimedia is more effective than conventional teaching methods:

- Using multimedia in theoretical faculties.
- Expansion in using multimedia in teaching other theoretical curriculums and stressing the use of computers as an educational tool in teaching.
- Providing computer teachers with training sessions on how to incorporate multimedia into their lesson plans, provided that these sessions are accessible throughout the academic year.
- Additional research should be done on the integration of multimedia into academic programmes at universities.

9) Reference

Table 2 shows the outcomes for the experimental and control groups from the post-academic achievement test.

Significant differences :

Group Pre achievement test Post achievement test Student T- Significant

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