

Effectiveness of Computer Animated Package in Learning Mathematics among the Ninth Standard Students in Thootukudi District

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Abstract

The present study found out the effectiveness of computer animated package in learning mathematics among ninth standard students in Thoothukudi District. The study was conducted to develop an computer animated package for the selected topics in mathematics and experimenting the same with a set of students studying in the ninth and finding out its effectiveness over the conventional method of teaching. Two equivalent group experimental-designs are employed for this study. The investigator has chosen 46 B.Ed. trainees for the study. According to the scoring of pre-test, 23 students were chosen as control group and 23 students were chosen as experimental group. Finally the investigator concludes that; (a) There was significant difference between control and experimental group students in their gain scores. That is the experimental group student is better than control group students in their gain scores. (b)There was significant difference between control and experimental group students in their gain scores for attainment of the knowledge, understanding, and application objectives.

KEYWORDS: Computer Animated Packages, traditional method, Ninth standard, students, Mathematics, etc.,

INTRODUCTION

The present study has its importance because in the traditional method of teaching mathematics pupils acquire knowledge or information with practically no opportunity to develop understanding application and skills. The traditional method also fails to draw the total attention of the learner towards learning mathematical skills and abilities. Students will learn the general technique of animation that is common to all media. Also students will explore the relationship between Mathematics and animation by creating and modifying points, lines, curves and closed figures on the coordinate plane both on paper and electronically. Students will learn how geometry/math can help to improve their artwork by drawing the underlying shapes (that the human body). Computer Animation is one of the recent techniques in the educational technology. In this computer animation way of instruction is learner centric. Computer Animation as products, of e-learning which are electronically recorded e.g. CD/DVD – ROMS. These products bring solutions to facilitate quick and efficient development in Mathematics education. To maintain standard or quality in Education one should make use of computer animation in teaching-learning process at mathematics. So the investigator has selected the topic “EFFECTIVENESS OF COMPUTER ANIMATED PACKAGE IN LEARNING MATHEMATICS AMONG THE 9th STANDARD STUDENTS IN THOOTUKUDI DISTRICT”.

DEFINITION OF THE TERMS

The investigator wants to give explanations for the terms used in the title of the study.

Effectiveness: It refers to the adequacy to accomplish a purpose as well as producing the result intended or expected results. This study measures the effectiveness in terms of the achievement scores of the students if the computer Animated package in learning is used in learning Mathematics. In this study, describe the use of computer Animated package in learning Mathematics at the 9th students level.

Computer Animation: It is a subset of both computer graphics and animation technologies. It is the creation of moving images (animation) using computer technology. Computer animation is broken down into two categories. Computer generated animation where the animation is designed solely on the computer system using animation and 3D graphics software and computer assisted animation where traditional animations are computerized.

Mathematics: Mathematics is a collection of symbols, notations and numbers.

9th Students: The students those who are studying 9th standard in school are referred as 9th students.

OBJECTIVES OF THE STUDY

- To develop computer animated package for 9th students and to develop an achievement test in Mathematics at 9th level based on the selected topic.
- To study the effectiveness of computer animated in Mathematics for the 9th students.

HYPOTHESES OF THE STUDY

1. There is no significant difference between control and experimental group trainees in their gain scores.
2. There is no significant difference between control and experimental group trainees in their gain scores for attainment of knowledge, understanding and application objectives.
3. a) There is no significant difference between pre-test and post-test scores of the control group trainees in their attainment of knowledge, understanding and application objectives.
b) There is no significant difference between pre-test and post-test scores of the experimental group trainees in their attainment of knowledge, understanding and application objectives.
4. There is no significant difference between pre-test and post-test scores of control and experimental group students.

METHODOLOGY

Two equivalent group experimental-designs are employed for this study. To find the effectiveness of Computer Animated Package, the investigator has chosen Experimental research. Experimental research describes what will be when certain variables are carefully controlled or manipulated. The focus is on variable relationship.

SAMPLE

The sample of the study consisted of 46 B.Ed. trainees studying mathematics as an optional subject from Tuticurin District affiliated to TamilNadu Teacher Education University for the study. According to the scoring of intelligent test and pre achievement test, 23 Mathematics B.Ed., trainees were chosen as control group and another 23 mathematics B.Ed., trainees were chosen as experimental group.

TOOLS USED FOR THE STUDY

The following are the tools used for the present study.

1. An Educational Computer Animated Package developed by the investigator for the methods of teaching mathematics for Ninth Standard Students.
2. An achievement test (Pre and Post test) in mathematics constructed and validated by the researcher.

CONDUCTING THE EXPERIMENT

A) Administration of the Pre-Test: Just before the treatment the entry behavior test was administered and it was found out that all the selected samples possess the entry behavior. The bio-data information was also collected. Then the pupils were made to be seated conveniently and strict invigilation was done to avoid consultation. Pre-test was administered and the results were analyzed. The means of the pre-test scored of both experimental and control group are almost equal. Less difference is seen in the case of standard deviation as well. Hence, the Experimental and Control Group were matched.

B) Administration of the Post-Test : The same pre-test questions were given to the students of both the two groups and their results were statistically analyzed to find out efficiency and effectiveness of e-content way of teaching. While conducting the feedback test strict and effective monitoring and supervision were taken against malpractice.

C) Treatment The Experimental Group sample of 23 students was taken to the computer lab. These students were taught with Computer Animated Package way of instruction. Corrective feedback was given wherever necessary. When any point was not learnt additional time was given and also the media material screened once again wherever necessary. . The treatment has been given for 60 minutes per day. The treatment was given by the investigator through Computer Animated Package content in fifteen days. The investigator developed the Computer Animated Package for the following topics. The topics are Inductive method, Deductive method, Analytic method, Synthetic method, Heuristic method, laboratory method and problem solving method. The control Group sample of 23 students was taken to the regular classroom. These students were taught with traditional method like lecture method. The treatment has been given for 60 minutes per day.

D) Test Administration: Soon after the session was over care was taken not to allow them to consult. They were given the posttest soon after the exposure. After this the control group was taught in the conventional method by the investigator himself. The investigator trained him in such a way that there should not be any experimental bias. Soon after the session was over care was taken not to allow them to consult. They were given the post-test. The posttests were scored objectively and the scores were transferred to the data sheet.

STATISTICAL TECHNIQUES USED

Statistical techniques serve the fundamental purpose of the description and inferential analysis. The following statistical techniques were used in the study:

- ★ Mean (m)
- ★ Standard deviations (SD) and
- ★ ‘t’ test for determining the significance of difference between means of two sub-groups. (Aggarwal, Y.P, 1990)

HYPOTHESES TESTING AND FINDINGS

Null Hypothesis 1

There is no significant difference between control and experimental group students in their gain scores.

Table - 1

Difference between Control and Experimental Group Students in their Gain Scores

Group (N =23)	Mean	S.D	Calculate ‘t’ value	Remarks at 5% level
Control group	5.07	2.91	9.50	*Significant
Experimental group	13.03	3.54		

(*At 5% level of significance the table value of ‘t’ is 2.01)

It is inferred from the above table that there is a significant difference between control and experimental group students in their gain scores. That is, the experimental group students are better than the control group students in their gain scores. Hence, the Computer animated package is effective for the 9th students.

Null Hypothesis 2

There is no significant difference between control and experimental group students in their gain scores for attainment of knowledge, understanding and application objectives.

Table - 2

Difference between Control and Experimental Group Students in their Gain Scores for Attaining the Objectives

Objectives	Control group		Experimental group		Calculated ‘t’ value	Remarks at 5% level
	Mean	S.D	Mean	S.D		
Knowledge	2.10	1.70	4.43	1.69	5.31	*Significant
Understanding	2.47	1.76	2.21	2.20	7.28	*Significant
Application	1.43	1.00	2.40	1.04	3.66	*Significant

(*At 5% level of significant the table value ‘t’ is 2.01)

It is inferred from the above table that there is significant difference between control and experimental group students in their gain scores for attainment of knowledge, understanding and application objectives.

Null Hypothesis 3

There is no significant difference between pre-test and post-test scores of control and experimental group students for attainment of knowledge, understanding and application objectives.

Table - 3

Difference between Pre-Test and Post-Test Scores of Control Students and Experimental Group for Attaining the Objectives

Group	Objectives	Pre-test		Post-test		‘t’ value	Remark
		Mean	S.D	Mean	S.D		

Control group	Knowledge	5.33	1.13	7.36	1.3	6.48	*Sig.
	Understanding	6.54	1.22	8.67	1.74	5.47	*Sig.
	Application	2.40	1.00	3.30	1.14	3.23	*Sig.
	Total	14.27	2.16	19.33	1.86	9.71	*Sig.
Experimental group	Knowledge	5.30	1.66	9.73	1.01	12.46	*Sig.
	Understanding	6.50	1.31	12.70	1.46	17.3	*Sig.
	Application	2.27	.74	4.67	.71	12.81	*Sig.
	Total	14.06	2.63	27.10	2.19	20.83	*Sig.

(*At 5% level of significance, the table value of 't' is 1.96)

It is inferred from the above table that there is significant difference between pre-test and post-test scores of the control group students in their attainment of knowledge, understanding and there is no significant difference between the pre-test and post test scores of the control group student in their application objectives.

Also there is significant difference between pre-test and post-test scores of the experimental group students in their attainment of knowledge, understanding and application objectives. Hence, the experimental treatment is very effective.

Null Hypothesis 4

There is no significant difference between pre-test scores of control and experimental group students. There is no significant difference between post-test scores of control and experimental group students.

Table - 4

Difference between pre-test and post-test scores of the Control and Experimental Group Students.

Group / Test	Control group		Experimental group		Calculated 't' value	Remarks at 5% level
	Mean	S.D	Mean	S.D		
Pre-test	8.85	2.64	8.53	2.02	0.33	*Not Sig.
Post-test	15.31	2.46	18.46	1.66	3.83	*Sig.

(At 5% level of significance the table value of 't' is 2.01)

It is inferred from the above table that there is no significant difference between Pre-test scores of control group and experimental group students. But there is significant difference between Post-test scores of control group students and experimental group students.

RESULTS AND DISCUSSION

These findings showed that the two groups of the present study are equal in the pretest, whereas the students of the experimental group performed well when they are taught with the innovative computer animated Instruction. This shows that the computer animated package is effective than the traditional lecture method.

In pretest the students performed equally in all the dimensions irrespective of whether they belong to the experimental or control group.

The **post-test scores** in the control group and the experimental group also showed significant difference. There is significant difference between control and experimental group students with respect to the objective '**Knowledge**'. Since subject contents are presented with the help of pictures animations and sound effects, the acquisition of knowledge is more for experimental group. The computer animated package contained so many visuals before the students (animations & images) that made the effectiveness of their learning is found to be high.

The **post-test scores** in the control group and the experimental group showed significant difference with respect to the objective '**Understanding**'. The mean scores of the experimental group are higher than the control group. This may be due to the presentations designed in the computer animated package was attractive and pulled the attention of the students towards the subject contents. In the computer animated package, the complex matter is simplified and presented according to the student's level. The students understand all the flash content at their own pace. So the students in the experimental group might have shown higher performance in the understanding level.

The **posttest scores** in the control group and the experimental group showed significant difference with respect to the objective '**Application**'. The mean scores of the experimental group are higher than the control group. Because computer animated helps the learner for self-pacing and discovery. Students can take the time they need and choose the path of learning, making learning meaningful and pleasurable.

The students of the experimental group were given exposure computer animated package. The experimental group students had more practice in applying the concepts learnt since it was performed through the self learning. So the students in the experimental group might have shown higher performance in the application level.

In the **control group**, there was significant difference between the pre-test scores and post-test scores with respect to the objectives. This may due to the fact that new teaching staff and students interest to know about the topics from the pretest. Thus the students understood the concept but they had no opportunities for their self learning with animation and sound effects.

The computer animated provides the students the flexibility of, 'anywhere', 'any time' learning. Computer animated can bridge language barriers since audio is not the only means of communication. So the experimental group might have shown higher performance. Thus, the experimental group is better than control group in attainment of their objectives. This may be due to the computer animated package.

EDUCATIONAL IMPLICATIONS OF THE STUDY

- New instructional techniques of assisting students through computers are to be explored by the teachers and researchers continuously.
- New patterns of computer animated way of Instruction and its uses can lead to a new organizational and administrative system for improving the effectiveness of the total educational enterprise.
- The computer animated package is more effective in teaching Mathematics for the 9th students when it is very effective, then it has to be equally effective to either level also.
- Auto-instructional materials like computer animated package can be developed by the teachers as a set of activities integral to the syllabus, textbooks and curriculum complexes.
- The use of computer animated package is found to be valid in enhancing the achievement; it will reduce wastage and stagnation in both secondary and tertiary levels of education.
- As science programmers on the computer prove to be excellent materials for self-instruction, more number of such computer animated materials at various levels is needed.
- Many in-service courses are to be organized on various application of computer by development of education to orient the school teachers for effective use of modern technologies for teaching and learning.

CONCLUSION

This study clearly indicated that the computer animated package developed in teaching Mathematics for 9th students was effective. The effectiveness was found in terms of post-test of the students of experimental group taught through computer animated. All the reviewed studies also have shown that Computer animated strategy was effective than the lecture method. So, we can conclude that the computer animated package was more effective than the traditional way of teaching. Hopefully more teachers will incorporate computer animated in which it will occupy predominant position in the regular classrooms. Hence, technology exposure is essential to make the learning process more successful and fruitful.

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