IJCRT.ORG ISSN : 2320-2882

INTERNATIONAL JOURNAL OF CREATIVE RESEARCH THOUGHTS (IJCRT)

An International Open Access, Peer-reviewed, Refereed Journal

A STUDY ON EFFECTIVENEES OF MULTIMEDIA INSTRUCTIONAL PACKAGE ON ACADEMIC PERFORMANCE IN MATHEMATICS (SOLID GEMETRY) AT SECONDARY LEVEL

By

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ABSTRACT:

This paper describes the effectiveness of multimedia package on performance of secondary school students in Mathematics (Solid Geometry). This paper argues for the multi-media package for secondary level students ninth class. Further, it has suggested that at school level the various program are made for teachers, students, trainees to integrate ICT and e- learning in the system of education, administration, learning, teaching, management, evaluation controlled by electronic media. As multimedia presentations is an important and use full for the dynamic subject like mathematics, researcher he selected the present research problem for the study. The results reveals that there is positive effect on performance of Mathematics (solid geometry)

Keywords: multimedia package, effectiveness, mathematics, Solid geometry etc.

1. Introduction:

Multimedia can be defined as a technique that supports the physical and logical co-existence and interactive use of heterogeneous media classes such as text, video, audio, animation, simulation and graphics and variety of activities. Vaughn (1993) has defined multimedia as a "woven combination of text, graphic art, sound, animation, and video elements". Also, if the viewer can control the delivery of elements, it is called Interactive Multimedia.

The introduction of multimedia into schools is seen by many as an important step in "technological revolution". The term describes the impact of multimedia; it refers to important changes

in approaches to teaching and learning and not to simplify the particular means by which material is produced. Like many of the tools available in modern classrooms, multimedia technology can be seen as a neutral resource able to support a full range of teaching and learning styles.

2. Role of Multimedia in Teaching and Learning of Mathematics:

Mathematics involves a plenty of abstract concepts in Arithmetic, Two-Dimensional Geometry, Calculus, Sets, etc. The branch like Solid Geometry of Mathematics involves many experiences which the students can only comprehend through visual experiences. So use of multimedia in Mathematics classrooms can equip teachers to help students to concretise abstract concepts.

Multimedia is a very powerful resource that can bring about substantial changes in teaching and learning school subjects, especially Mathematics. Parents, students and teachers can rightfully expect that teaching of all subjects in the curriculum should make the best possible use of multimedia resources, and that means the selection and development of multimedia resources must be made to fit the needs of the subject, and not the reverse.

3. Achievement in Solid Geometry:

In educational system, focus is laid upon student's performance and achievements. Learning outcomes, behavioural change and mental development of students are the main objectives to be measured. The amount of attainment of these objectives is referred by the term "Achievement". This can be measured through a test, "Achievement Test", prepared on the basis of some pre-determined educational objectives. According to Good (1973), „Achievement refers to the standard performance of students in the group under consideration for a test developed to measure curricular outcomes". Achievement is the knowledge attained or skills developed and it is represented in the form of test scores.

4. Significance of the study:

The significance of the present study is as follows:

1) The present research will be use full for all the Secondary of education and it will also contribute to the knowledge of teacher and students.
2) The present research will make teaching & learning more effective.
3) The present research study will increase the curiosity and interest among the teachers. It is also a path for the scholars in this area.
4) The present research is important to increase computer literacy in society.
5) The present research is helpful to increase student's audio and visual competency.
6) It will correlate the study in geography subject, concepts and related day today teaching.
7) The present research also important as the multimedia package, to be used to acquire the knowledge and the interest in geography subject.
8) The system will be helpful for the distance learning mode and in-service training

5. **Statement of the Problem:**

A STUDY ON EFFECTIVENEES OF MULTIMEDIA INSTRUCTIONAL PACKAGE ON ACADEMIC PERFORMANCE IN MATHEMATICS (SOLID GEMETRY) AT SECONDARY LEVEL

6. **Operational Definitions:**

1) **Multimedia E book:** A book designed for and dedicated on multimedia technology. It is an electronic book which includes visual imagery, text, video, sound and animation on the selected concepts of geography learning & teaching.
2) **Mathematics Subject:** A compulsory subject at secondary level.
3) **Secondary Level:** Linkage for primary and higher secondary level.

7. **Objectives:**

1) To study the effectiveness of multimedia package in geographical concept at the secondary level.
2) To compare the effectiveness of traditional teaching method & teaching with multimedia package for geographical concept at the secondary level

8. **Hypothesis:**

1) There is no significant difference between the performance of the students from control and experimental group in pre- test.
2) There is no significant difference between the performance of the students from control and experimental group in post- test.
3) There is no significant relationship between the performance of the students from control in pre-test and post- test.
4) There is no significant relationship between the performance of the students from experimental group in post- test.

9. **Review of related literature:**

1) Krishnan (2013) developed and tested a multimedia package for students at primary level with dyslexia. The findings revealed that the package is effective in reducing the reading miscues. Significant enhancement was seen in the reading attainment scores and reading capacity of dyslexic students after the intervention of the multimedia package.

2) Nirmavathi (2013) conducted a study to test the effectiveness of multimedia for the development of scientific attitude. The sample consisted of Secondary School students of ninth standard. The multimedia package, prepared by researcher for teaching science, was found to be more effective than the conventional method on the scientific attitude of ninth standard students.

3) Taj (2004) conducted a study on the use of activities and multimedia package in enhancing the performance and self-confidence of slow learners through activities and use of multimedia package. The subjects were exposed to the experimental program, which consisted of audios, films, visuals and computer-assisted instruction. In addition, the researcher employed activity method also. The major finding was that there was no significant difference between the experimental and control groups with respect to self-confidence and performance in Environmental Science, indicating that

the slow learners improved significantly both in terms of their achievement and self-confidence following the experimental program, thereby proving its effectiveness.

4) Smith and Krista (2002) carried out a study on the effects of online time management practices on self-regulated learning and academic self-efficacy. The study investigated the use of web-based mechanism that was designed to attempt to influence levels of self-efficacy by engaging participants in an experimental procedure. The process encouraged the participants to monitor their time management behaviours and engage in self-regulated learning process. No significant findings were discovered but many implications regarding the development and implications for future interventions are inferred.

10. Design of the study:

10.1. Research Methodology:

In present research the researcher has been used a survey and experimental method. The researcher made two equal groups for pre- post- test.

Research Procedure:

1) The researcher prepared questionnaire to 120 students in mathematics subject for secondary level.
2) Development and Implementation multimedia package by researcher: The researcher will develop multimedia package with instructional system for mathematics subject of IX STD.

10.2.Research Tools:

Questionnaire, Pre- test, and Post - test.

10.3.Preparation of Tools:

Achievement Test (pre- and post- test) related to mathematics subject: Two tests i.e. pre and post- test prepared by the researcher mathematics subject in the present research. These tests covered basic knowledge in few mathematics concepts for IX STD. Each test consists of 50 items. These items were of multiple-choice types. Each question carries 2 mark for correct alternative and 0 marks for incorrect alternative.

11. Analysis and Interpretation of the Data:

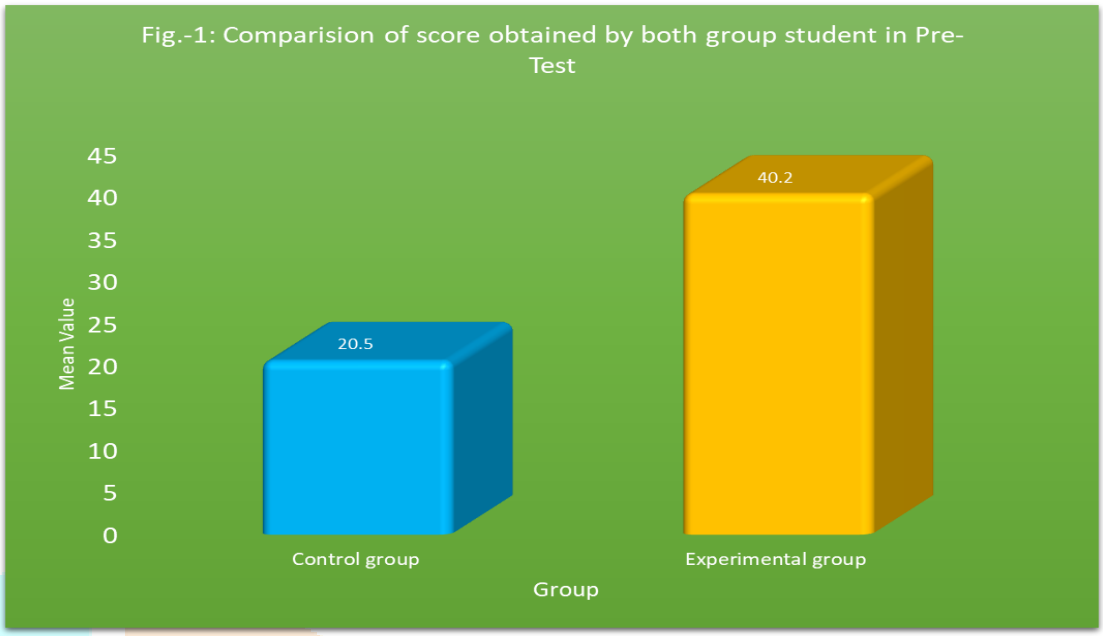
Hypothesis-1: There is no significant difference between the performance of the students from control and experimental group in pre- test.

Frequency distribution of total score obtained by students in the pre and post - test regarding effectiveness of multimedia package is as follows:

Table No.-1: Total score obtained by all student in Pre-Test Observation and Interpretation:

Measure	Control group	Experimental group
Number of Student (N)	60	60
Mean (M)	20.50	40.20
S.D.	6.35	4.56
D- Mean	19.7	
t value	5.251*	
Df	118	

The findings are stated on the basis of null Hypothesis, there is no significant difference between two groups so null hypothesis should be rejected as the value is greater than the value at 0. 01 significance level is remarkable. The above data can be represented by the bar diagram as follows:



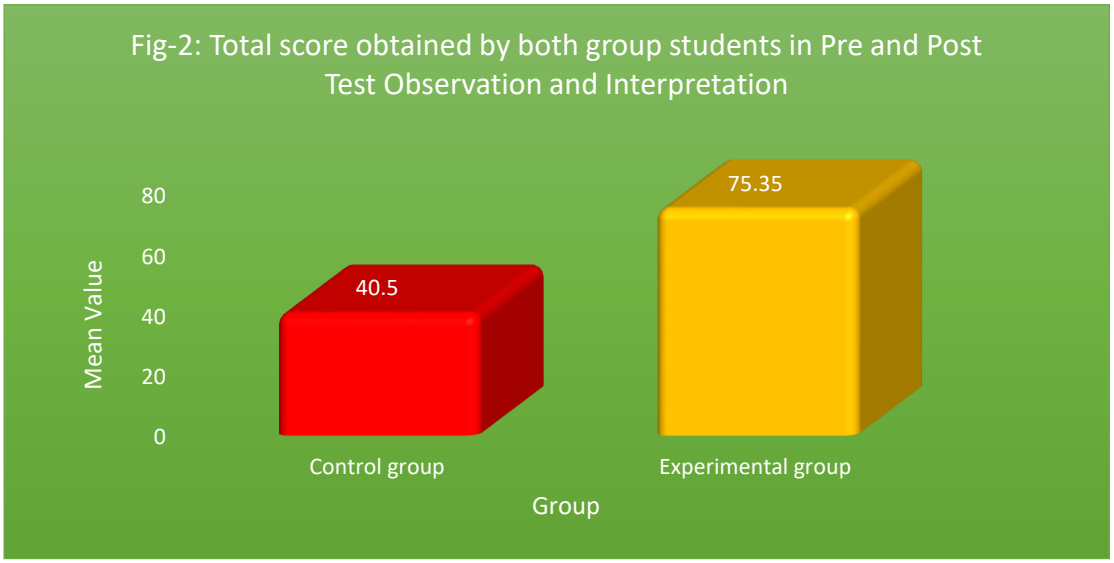
Hypothesis-2: There is no significant difference between the performance of the students from control and experimental group in post- test.

Frequency distribution of total score obtained by students in the pre and post - test regarding effectiveness of multimedia package is as follows:

Table No.-2: Total score obtained by all student in Pre and Post Test Observation and Interpretation:

Measure	Control group	Experimental group
Number of Student (N)	60	60
Mean (M)	40.5	75.35
S.D.	6.35	4.56
D- Mean	34.85	
t value	8.786*	
Df	118	

The findings are stated on the basis of null Hypothesis, there is no significant difference between two groups so null hypothesis should be rejected as the calculated value (8.786) is greater than the table value (2.640) at 0. 01 significance level is remarkable. This shows that the multimedia instructional Package effects on performance of ninth standard students in Mathematics subject (Solid Geometry)



Hypothesis-3: There is no significant relationship between the performance of the students from control in pre-test and post- test.

Hypothesis-4: There is no significant relationship between the performance of the students from experimental group in post- test.

Frequency distribution of total score obtained by students in the pre and post - test regarding effectiveness of multimedia package is as follows:

Table No.-3: Total score obtained by all students of both groups in Pre and Post Test Observation and Interpretation:

Measure	r-value	r-value
Number of Student (N)	60	60
Control group	Pre-test	0.765
	Post-test	
Experimental group	Pre-test	0.986
	Post-test	

The findings are stated on the basis of null Hypothesis, there is no significant relationship between the performance of the students from control group in pre-test and post- test so null hypothesis should be rejected as the calculated value (0.765) is greater than the table value (0.231) at 0. 01 significance level is remarkable.

The findings are stated on the basis of null Hypothesis, there is no significant relationship between the performance of the students from experimental group in post- test so null hypothesis should be rejected as the calculated value (0.986) is greater than the table value (0.231) at 0. 01 significance level is remarkable

This shows that the multimedia instructional Package effects on performance of ninth standard students in Mathematics subject (Solid Geometry)

12. Scope and Limitations:

1) It is related only secondary level.
2) The present research is related only mathematical Solid Geometry concepts at the secondary level.
3) The study is limited to some mathematical concepts from mathematics subject at the secondary level.
4) The present research is limited only IX std. students only.

13. Conclusions:

1) The most of student have below average level of achievement in mathematics (Solid Geometry) subject.
2) The developed multimedia package related to Solid Geometry subject was quite effective.
3) The developed multimedia packages create the curiosity and interest among the learners.