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## Effect of multimedia in teaching mathematics at secondary level in Dindigul district

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### Abstract

**“Mathematics should be taught on a compulsory basis to all pupils as a part of general education during first ten years of Schooling”**

- Indian education commission (1964-66)

The present study intended to find the effect of multimedia in teaching mathematics at secondary in Dindigul District. The study was conducted on a sample of 60 ninth standard students at secondary level. Tools used were multimedia package and mathematics achievement test. The sample divided in to two groups, experimental group and control group. Both groups equated at their previous examination scores or final examination scores of eighth standard in mathematics subject. The students of experimental group exposed to teaching through multimedia package, whereas the students of control groups taught through conventional method of teaching. Pre-test and post-test equivalent groups design was followed for this study. The result show that the multimedia package prepared by the researcher is more effective and joy full learning for the mathematics achievement test of ninth standard students. It was also found that multimedia proved its effectiveness in teaching mathematics at secondary level over the conventional method.

**Keywords:** Multimedia, Conventional Method, Experimental group, Control group, Secondary level, Mathematics subject.

### Introduction

**“Mathematics should be taught on a compulsory basis to all pupils as a part of general education during first ten years of Schooling”**

- Indian education commission (1964-66)

Mathematics is a part of science. It has the four fundamental operations of addition, subtraction, multiplication and division. In secondary school level, mathematics education is very useful to develop the creativity thinking and self confident habit of students and it also helps to develop the problem solving habit. Mathematics is correlated with other subject like as physics, chemistry, biology, history, economics and psychology also. In secondary level students, learning the mathematics with interest it will be most useful to learning other subject.

. Mathematics with its special features and looks has wider applications in daily life and fields of study. For example: banking, marketing, agricultural field, shopping, architecture field, business, and post office also. Mathematics lays the foundation for the study of all other subjects it is too early for secondary students to decide about the profession .Mathematics as a main subject would make the choice of profession very narrow. Mathematics is also scope for many professional carriers through competitive examination. Therefore, Mathematics is a made a compulsory subject at secondary school level.

### Need for the study

Mathematics curriculum is a vast curriculum because; it is the basis of all sciences and much related to daily life. Mathematics teachers mostly have been using the textbook, blackboard in the classroom with lecture method and some of the schools only using geometrical instruments also. The number of failures in mathematics in high school level examination is more as compared to that of other subjects because mathematics is a highly abstract subject. Mathematics subject needs for learning by inductive, deductive, laboratory, project, problem solving and heuristic method also. Teachers need to be equipped not only with subject expertise and effective teaching methodologies.

In secondary level mathematics subject has the characteristics of precision, logical sequence, structure, abstractness and symbolism also. The secondary level students cannot understand the mathematical concept. Therefore, the study selected innovative strategy for teaching mathematics for students and also developing interest habit to learning mathematics.

**Statement of the problem**

In secondary level, Mathematics subject covers topics such as real number system, algebra, logarithms, geometry, mensuration, probability, graphs, and statistics. It has the same samacheer syllabus (term pattern) of Tamil Nadu. The conventional classroom environment in Mathematics has been strongly oriented towards a syllabus based delivery, teacher using control and text book resources. In today's world, teachers need to be equipped not only with subject expertise and effective teaching methodologies but also with capacity to assist students to meet demand of the emerging knowledge based society with new forms of ICT and ability to use that technology to enhance the quality of learning. Therefore, the investigator had planned the statement of the problem "*Effect of Multimedia in Teaching Mathematics at Secondary level in Dindigul District*".

**Objectives**

- To prepare a multimedia package for the teaching mathematics at secondary level.
- To conduct pre-test in mathematics subject before using multimedia package.
- To use multimedia package for teaching mathematics at secondary level.
- To conduct post-test in mathematics subject after using multimedia package.
- To analyze the effect of multimedia package through pre-test and post-test.
- To make the students to utilize multimedia package for learning.

**Hypotheses**

The following null hypotheses were formulated

- There is no significant difference between the control group and the experimental group in the learning of mathematics at the pre-test level.
- There is no significant difference between the control group and the experimental group in the learning of mathematics at the post-test level.
- There is no significant difference between the pre-test and post-test scores as regards learning mathematics by the experimental group.
- There is no significant difference between the pre-test and post-test scores as regards learning mathematics by the control group.

**Sample**

The sample of the study consisted of 60 students in IX standard level under the Samacheer syllabus (term pattern) at secondary level in Dindigul District, Tamil Nadu. The sample included both boys and girls.

**Method**

The investigator followed the experimental study and he had proposed to use random sampling techniques for selecting the sample. The sample divided in to two groups, experimental group and control group. Both groups equated at their previous examination scores or final examination scores of class VIII in the subject of mathematics. The students of experimental group exposed to teaching through multimedia package, whereas the students of control groups taught through conventional method of teaching.

**Tools used**

The following tools were used for the study:

- A multimedia package developed by the investigator for the teaching mathematical concept to students which is included in the IX standard level.
- An achievement test in mathematics constructed and validated by investigator for IX standard students.

**Variables of the study**

In the study teaching mathematics by using multimedia package and conventional teaching are identified as independent variable and achievement of students in mathematics subject is identified as dependent variable.

**Development of multimedia Package**

The multimedia program was developed in Macromedia flash version 6.0. It provided attract sense, easy and joyful learning to students. The mathematics subject contains Geometry and Algebra of 9<sup>th</sup> standard was broken down in to 50 small learning modulus. All the learning modulus were arranged logically based on psychological principles of learning i.e. from easy to hard, simple to complex and known to unknown.

**Experimental Design**

The investigator had followed the design for the study is given below:

Steps	Control group (N=30)	Experimental group (N=30)
Step 1	Pre-test	Pre-test
Step 2	Comparison of pre-test score	
Step 3	Conventional teaching	Multimedia package based teaching
Step 4	Post-test	Post-test
Step 5	Comparison of post-test	
Step 6	Comparison of pre-test and post-test score of both group	

**Testing of hypotheses**

**Hypothesis 1**

There is no significant difference between the control group and the experimental group in the learning of mathematics at the pre-test level.

**Table 1:** Testing of control group and experimental group scores in pre-test

Variables	N	Mean	S.D	t - value
Groups				
Control	30	50	17.34	0.07762*
Experimental	30	49.66	16.56	

**Note:** Not significant at 0.05 level

The above table reveals that the calculated t-value 0.07762 is less than the table value at 0.05 level of significance. So the hypothesis is accepted. Hence there is no significant difference between the control group and the experimental group in the learning of mathematics at the pre-test level.

**Hypothesis 2**

There is no significant difference between the control group and the experimental group in the learning of mathematics at the post-test level.

**Table 2:** Testing of control group and experimental group scores in post-test

Variables	N	Mean	S.D	t - value
Groups				
Control	30	52	16.20	2.7354#
Experimental	30	64.40	18.29	

Note: significant at 0.05 level

The above table reveals that the calculated t-value 2.7354 is greater than the table value at 0.05 level of significance. So the hypothesis is rejected. Hence there is significant difference between the control group and the experimental group in the learning of mathematics at the post -test level.

**Hypothesis**

There is no significant difference between the pre-test and post-test scores as regards learning mathematics by the experimental group.

**Table 3:** Testing of pre-test and post-test scores of Experimental group

Variables	N	Mean	S.D	t- value
Experimental Group				
Pre-test scores	30	49.66	16.56	3.2755*
Post-test scores	30	64.40	18.29	

Note: significant at 0.05 level

The above table reveals that the calculated t-value 3.2755 is greater than the table value at 0.05 level of significance. So the hypothesis is rejected. Hence there is significant difference between the pre-test and post-test scores as regards learning mathematics by the experimental group.

**Hypothesis 4**

There is no significant difference between the pre-test and post-test scores as regards learning mathematics by the control group.

**Table 4:** Testing of pre-test and post-test scores of control group

Variables	N	Mean	S.D	t -value
Control Group				
Pre-test scores	30	50	17.34	0.4618*
Post-test scores	30	52	16.20	

Note: Not significant at 0.05 level

The above table reveals that the calculated t-value 0.4618 is less than the table value at 0.05 level of significance. So the hypothesis is accepted. Hence there is no significant

difference between the pre-test and post-test scores as regards learning mathematics by the control group.

**Findings**

- There is no significant difference between the control group and the experimental group in the learning of mathematics at the pre-test level.
- There is significant difference between the control group and the experimental group in the learning of mathematics at the post-test level. The students learning with help of the multimedia program fared better in mathematics than the students learning through the conventional method.
- There is significant difference between the pre-test and post-test scores as regards learning mathematics by the experimental group. This shows that the multimedia program has helped the students to score more marks in the post –test.
- There is no significant difference between the pre-test and post-test scores as regards learning mathematics by the control group. This shows that the conventional method of teaching will not help the students to learn mathematics. So control group need be the multimedia program for learning mathematics.

**References**

1. Kothari CR. Research methodology (Methods and techniques).Age International (p) Limited, New Delhi, 2002.
2. Best W, Kahn V. Research in Education, Ninth edition. Pearson, Prentics, hall. Limited, New Delhi, 2006.
3. Sharma RA. Essentials of measurement in Education and psychology, Surya publication, Mee, 2005.
4. John Best W, James kahn V. Research in education. New Delhi; Prentice Hall of India private Limited, 1999.
5. Aggarwal JC. Essential of Educational Techonology Teaching Learning Innovations in Education, Bangalore: Vikas publication private Limited, 1997.
6. Meenakshi sundaram A. Eduational innovation and Management, Chinnalapatti, Dindigul; Kavyamala Publishers, 2009.
7. Nagarajan K, Natarajan S. Educational Innovation and Management, Chennai: Ram publishers, 2010.
8. Albion PR. Some factors in the development of self-efficacy beliefs for computer use among teacher education students, Journal of Technology and Teacher Education 2001; 9(3):321-347.
9. Murphy CA, Coover D, Owen SV. Development and validation of the computer self-efficacy scale, Educational and Psychological Measurement 1989; 49:893-899.
10. Oliver TA, Shapiro F. Self-efficacy and computers, Journal of Computer Based Instruction 1993; 20(3):81-85.
11. Vlahapatra BC. Development of software package for teaching Chemistry to class IX students of Madhya Pradesh state, Indian Educational Abstract 1996, 1.
12. Amruth G Kumar, Devika R. Effectiveness of Multimedia learning package in teaching social science

- at secondary level. *Experiments in Education* 2008; 34:139-143.
13. Anboucarrassy B. Effectiveness of multimedia in Teaching Biological Science to IX Standard students. *Edutracks* 2010; 9:37-38.
  14. Babu R, Vimala TS. Impact of Multimedia Method in Accountancy Learning at Higher Secondary Level. *Journal of Education Research and Extension* 2008; 45:51-58.
  15. David MR, Chikte Usuf ME, Halperin, Mitchell L. Development and Evaluation of a Multimedia E-Learning resource for Electrolyte and Acid-Base disorders. *Advances in Physiology Education* 2011; 35:295-306.