



Effectiveness of Computer Assisted Learning as a Technique of Teaching Online on the Mathematics Achievement of Higher Secondary Students

Vishnubhai M. Patel

Research Scholar,

Faculty of Education,

Kadi Sarva Vishwavidyalaya, Gandhinagar

Dr. Veenaben Patel

Dean & Professor,

Faculty of Education,

Kadi Sarva Vishwavidyalaya, Gandhinagar

Abstract

The present paper is about effectiveness of computer assisted learning as a technique of teaching online on the mathematics achievement of higher secondary students. The method of the present study was an experiment. A self-made power-point programme depended on matrices topic of mathematics for online taught of mathematics to higher secondary students. Also, self-made Achievement Test of Mathematics was used to collect the data from the students. The Gujarati medium higher secondary schools of Gandhinagar district were the population for the study. From them the 3 higher secondary schools were purposive selected as a sample; And divided into equal two groups, as Experimental group and Control group as sample using cluster method. There were 174 students included in the sample. Experiment group was taught mathematics with power-point animation effect programme based on online zoom meeting application and control group was taught with pen and paper conventional method based on online zoom meeting. After used google form application-based Achievement Test of Mathematics and collected the responses data of all sample students has been analysed. effects of independent variables on their mathematics achievements were checked and average, standard deviation, variance and t-value were calculated for null hypotheses. The result has been derived. Power-point animations mathematics program should be implemented for the students who are weak in Mathematics subject by separately taking extra lectures by the teachers, so result of Mathematics subject can be improved for the weak students. Some other important suggestions can be derived from the paper.

Keywords: Microsoft power-point programme, teaching online, Effectiveness, Mathematics Achievement

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Vishnubhai M. Patel

Research Scholar,
Faculty of Education,
Kadi Sarva Vishwavidyalaya,
Gandhinagar

Dr. Veenaben Patel

Dean & Professor,
Faculty of Education,
Kadi Sarva Vishwavidyalaya,
Gandhinagar

1. INTRODUCTION

During covid-19 pandemic, school and colleges remained closed due to lockdown so students and teachers were compelled to use zoom application for education purpose. Teacher used various audio and video teaching aids in order to make their teaching effective. The researcher having found the use of Microsoft power-point animation effect programme based was effective in taught of mathematics of higher Secondary Students, so selected this subject.

2. STATEMENT OF THE PROBLEM

In this research, a study has been done on the 12th standard science stream students studying in Gandhinagar district's higher secondary schools to check the effectiveness of Microsoft power point animation effect programme in online teaching of mathematics based on their gender and Mathematics achievements. The title is...

Effectiveness of computer assisted learning as a technique of teaching online on the mathematics achievement of higher secondary students

3. OBJECTIVES OF THE STUDY

- ❑ To design a program, depend on Microsoft power-point animation programme based on matrices unit of mathematic subject of standard 12th science.
- ❑ To compare the means in mathematical achievement scores of the experimental and control groups of students after taught through online teaching.
- ❑ To compare the means in mathematical achievement scores of the experimental and control groups of students with reference to their gender after taught through online teaching.

4. HYPOTHESES OF THE STUDY

- Ho₁ There is no significant means difference in mathematical achievement scores between the students of experimental and control groups
- Ho₂ There is no significant means difference in mathematical achievement scores between the boys of experimental group and control group.
- Ho₃ There is no significant means difference in mathematical achievement scores between the girls of experimental group and control group.
- Ho₄ There is no significant means difference in mathematical achievement scores between the girls and boys of experimental group.

5. RELEVANCE OF THE STUDY

- Findings of the present study will be helpful for teachers in knowing the Effectiveness of Microsoft power-point programme based online teaching on the Mathematics Achievement for students.
- Present study will be helpful in knowing the students' opinions on the effectiveness of Microsoft power-point programme based online teaching on the Mathematics Achievement
- The effectiveness of Microsoft power-point programme on Mathematics Achievement of students will be known which will be able to guide the teachers to design the teaching syllabus and will be helpful in teaching learning process.
- The findings of this study might help the researchers who are interested in this type of research area.

6. LIMITATIONS OF THE STUDY

The present study has been carried out on the students of higher secondary schools to know their mathematic achievements using the self-made objective posttest in platform of google form application programme. This posttest was the limitations of the present study.

7. DELIMITATIONS OF THE STUDY

- Points as co-factor of determinate, adjoint-Matrix and invers Matrix only were included in Microsoft power-point animation program based on mathematic of the present study.
- The present study was limited only on the students studying online using zoom application in standard 12th science Gujarati medium higher secondary schools.

8. THE VARIABLES UNDER THE STUDY

No.	Type of variable	variable	Degree
1.	Independent variable	Online Teaching Methods	Conventional Method using pen and paper
			Microsoft power-point animation programme based
2.	Minor independent variable	Gender	Male
			female
3.	Dependent Variable	Mathematics achievement	

❑ CONTROLLED VARIABLE

- (1) students studying in std. 12th sciences of Gandhinagar district secondary schools
- (2) Mathematics subject
- (3) syllabus is limited dependent on matrix of mathematics

❑ VARIABLES UNCONTROLLED

Students' grasping power, interest towards subject, their previous achievements

9. POPULATION AND SAMPLE SELECTION

The present study will be carried out in Gandhinagar district. Hence, a group of the students studying in 12th science standard in total 16 higher secondary sciences stream schools of Gujarati medium became the population for this study. the purposive selected 3 schools. All the students of three school were done sample. Selected all the students divided into equal two groups, as Experimental group and Control group as sample using cluster method. There were 174 students included in the sample. In which 102 were boys and 72 were girls.

10. RESEARCH METHOD

The researcher has used the experimental research method in this study

11. PLANNING OF EXPERIMENTAL PROGRAM

In the present study, the researcher taught online Mathematics subject by using methods of Microsoft power point animation programme of experiment group and taught online Mathematics subject by using methods of pen and paper conventional method of control group. after both groups were given the self-made post-test by google form application program to check the effectiveness of Microsoft power point animation

programme based online teaching on the Mathematical academic achievements of the students

12. DESIGN OF THE EXPERIMENTAL PROGRAM

□ AIM

- To build the concepts of mathematics in students.
- To develop the ability to interpret the informational data with the help of mathematics using power point animation.
- To develop the ability to use mathematics practically in students using power point animation.
- To develop the speed of solving Mathematical problems in students.

□ SELECTION OF THE SUBJECT

1) CO-FACTOR OF DETERMINATE

- To find co-factor of determinate Using Microsoft power-point animation effect

$$\Delta = \begin{bmatrix} 1 & 2 & 3 \\ 0 & 2 & 4 \\ 0 & 0 & 5 \end{bmatrix}$$

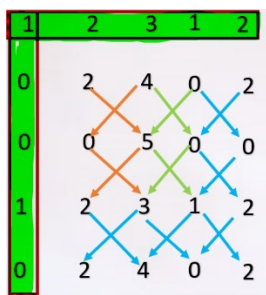
- All three-row write of determinate after first and second row write Second Time Below the third row respectively

$$\begin{array}{ccc} 1 & 2 & 3 \\ 0 & 2 & 4 \\ 0 & 0 & 5 \\ 1 & 2 & 3 \\ 0 & 0 & 5 \end{array}$$

- First and second Colum write after third Colum respectively

$$\begin{array}{ccccc} 1 & 2 & 3 & 1 & 1 \\ 0 & 2 & 4 & 0 & 0 \\ 0 & 0 & 5 & 0 & 0 \\ 1 & 2 & 3 & 1 & 1 \\ 0 & 0 & 5 & 0 & 0 \end{array}$$

- Now remove first raw and first Colum after remain Elements find cross product respectively this is called co-factors of given element of detriment



2) ADJOINT MATRIX

- To find adjoint matrix using Microsoft power point animations effect
- To find co-factors of every element given matrix.
- Write co-factor of every element of matrix instead of every element of matrix respectively.
- To take transpose of co-factor matrix and find adjoint matrix.

3) INVERSE MATRIX

- To find adjoint matrix using Microsoft power point animations effect
- To find determinate of matrix. If this value is not zero then inverse matrix exist
- To find adjoint matrix
- To find inverse using formula $A^{-1} = \frac{1}{|A|} \text{adj}A$

□ EDUCATIONAL OBJECTIVES

- Students will have the primary concepts of co-factor of detriment, adjoint matrix and inverse matrix topic of mathematics.
- Students will understand the importance of co-factor of detriment, adjoint matrix and inverse matrix topic of mathematics in realistic situations.
- Students will understand the methods of co-factor, adjoint matrix and inverse matrix easy using Microsoft power point animation effect.
- mathematic skills will be developed in students.

13. IMPLEMENTATION OF EXPERIMENT

Microsoft power point animation effect of mathematic program was implemented online by zoom application on the students selected in the experiment group by the researcher for 4 days. control group student was taught online by zoom meeting application with pen and paper conventional method for 4 days. In last day both groups the responses of the students were collected online by google form application program based self-made objective posttest by the researcher

14. RESEARCH TOOL

The researcher designed a “Microsoft power point animation effect of mathematic program” for the factors like co-factor of determinate, adjoint matrix and inverse matrix which are included in the syllabus of 12th science standard Mathematics subject and was implemented of experiment group.

The researcher has used same posttest tool in both groups based on co factor of determinate, adjoint matrix and inverse matrix of the Mathematics. A posttest was prepared 25 marks based on google form application program type of objective to know Effectiveness of Microsoft power-point programme based online teaching on the Mathematics Achievement

15. METHOD OF DATA COLLECTION AND ANALYSIS

The both groups of students were given the objective types posttest based on google form application program and they were told to give their responses on it. After 30 minute the filled tests were submitted from the students after the work being completed on proper time. Then the scores of students on posttest were further classified according to the variables and their degrees and entered into M. S. Office Excel and all the numerical calculations were done using M. S. Office Excel. Then based on the students’ scores of the posttest, the effects of independent variables on their mathematics achievements were checked and average, standard deviation, variance and t-value were calculated.

16. FINDINGS OF THE STUDY

❑ The mathematics achievement of students of experimental group was better than the mathematics achievement of students of control group. So, Microsoft power-point animation program was more affected to pen and paper Conventional method online teaching of mathematics on mathematical achievements of all students of sample, sample of total boys’ students. and sample of total girls’ students.

❑ Boys ‘and girls’ students of experimental group was not found significant difference in mathematical achievement.

17. EDUCATIONAL IMPLICATIONS

❑ This study can be helpful for the principals and Mathematic teachers of secondary and higher schools to separately identify weak students in Mathematics subject and improve their Mathematical achievements through online teaching base on Microsoft power-point animation program effect of Mathematics.

❑ This study can be helpful for school administrators, principals and teachers to speed up the Mathematical achievements of the students having medium and high Mathematical abilities in the subject and to improve the school result of Mathematics subject.

❑ The study can be helpful to the teachers to improve the Mathematical achievements of all the students of standard 12th science for online teaching using Microsoft power-point animation program of Mathematics.

18. GENERAL SUGGESTIONS

❑ Microsoft power-point animation effect program of Mathematics should be designed by the school teachers and should be implemented difficult topics of mathematics. so, the students should get interest in Mathematics subject.

❑ Microsoft power-point animation effect program of Mathematics should be implemented for the students who are weak in Mathematics subject by separately taking extra lectures by the teachers, so result of Mathematics subject can be improved for the weak students.

❑ During covid-19 pandemic, school and colleges remained closed due to lockdown so students and teachers were compelled to use zoom application for education purpose. in this time Microsoft power-point animation effect program is more effected online teaching of students

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