

Effect of Computer Assisted Instruction Method of teaching on Achievement in Mathematics

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Abstract

The present study is experimental in nature. The study was undertaken with the objectives of to compare the effectiveness of Computer Assisted Instruction and Traditional Method Teaching on student achievement in Mathematics, to know the relative effect of Computer Assisted Instruction on the rural & urban, male and female students. The study findings of the study revealed that CAT was more effective in teaching the Mathematics concepts than traditional method. The CAT method also found to be more effective on urban students than rural students.

KEYWORDS: Computer Assisted Instruction (CAT), Traditional Method of Teaching (TMT), Mathematics, Achievement.

1. Introduction.

The teaching learning process is one of the important variables which effect directly on achievement of the students. The better teaching strategy helps the students to achievement the educational objectives in a better way. Teaching is considered as the sharing of experiences of the teachers and students in a teaching learning situation. Teaching may become meaningless and unsuccessful if students fail to develop proper concepts in any subject area.

Research studies shown that there is no one particular approach to achieve instructional objectives. Therefore it becomes necessary to think of a number of ways to create the appropriate environment for learning. The teaching of Mathematics is also a challenge for teachers in schools.

A little reflection will show what a predominant role does Mathematics play in our daily life. It is the pivot of all civilization. Everybody has to calculate his income, balance his family, budget etc. Therefore it has been considered as the science of measurement, quantity and magnitude.

It is an expression of the human mind reflects the active will, the contemplative reason and the desire for the aesthetic perfection. Its basic elements are logic and intuition, analysis and construction, generally and individually.

Hence teaching of this slightly differs from the teaching of other subjects. So to teach the subject effective teaching methods can be adopted other than the traditional method. The computer assisted method (CMT) is one of the method which provides opportunity for individual learning and students are not passive listeners and teachers acts as guides in comparison to Traditional Method of Teaching(TMT). The pupil involvement and participation will be more, enabling the educator to be aware of the individual's capacity for thinking, grasping and application of knowledge.

Dudley (1974) and Anandan (1998) found its effectiveness in teaching economics..

Computer assisted instruction was found to be significantly useful in teaching as well as learning English grammar (Shanmugasundram & Stella1990, Mahajan 1994, Verghese 2001) and for improving reading skills in English (Mahajan 1994).

Using innovative approach Burleson (2000) studied web based teaching of history lesson and explored the effects of content and interactive screen design.

Rangarajan & Ilangovan (2001) found that CAT to be more effective in teaching solar and lunar eclipse. It is also effective in teaching the chemistry (Vasanti & Huma 2003)

Computer Assisted Instruction was effective in enhancing creativity, elaboration, and originality of students in comparison to traditional teaching of mathematics (Fatemi, M & etal, 2010).

Ragasa. Y. C (2008) compared Computer-Assisted Instruction and the Traditional Method of Teaching Basic Statistics and found that the computer assisted instruction is effective in enhancing the achievement in statistics.

As the computer-aided instruction is effective in enhancing the achievement of students in mathematics, it should be integrated into the teaching of mathematics at the primary level. Grade 4 level in the area of study (Lashley L, 2017).

A substantial body of empirical studies found that the computer media has significant advantage in achieving traditional goals of instructional delivery. The studies done at the abroad highlight the effectiveness of computer instructional medium, however in the Indian content much of the potentiality of computer as a modern medium of instruction needs to be tested against empirical findings.

The present study is one of the efforts towards finding out the effectiveness of computer assisted method of teaching the Mathematics which will enhance the effective application of the technology in the field of education. In this background the study is entitled as follows.

2. Statement of the Problem.

“Effect of Computer Assisted Instruction method of teaching on Achievement in Mathematics”

3. Objectives

1. To study the effectiveness of computer Assisted Instruction (CAT) on student achievement in Mathematics.
2. To study the effectiveness of CAT on achievement in Mathematics among rural & urban, male and female students.

4. Hypotheses.

In accordance with the objectives of the study the following hypotheses were formulated in null form for statistical analysis.

1. There is no significant difference between pre mean score of experimental and control group.
2. There is no significant difference between achievement scores of male and female students of experimental group in Mathematics.
3. There is significant difference between achievement scores of rural and urban students of experimental group in Mathematics.

5. Methodology.

The study is experimental in nature.

a. Sample

100 students from 9th standard constituted the sample of the study. The students were randomly assigned to two groups, one group consisting of (N=50) 25 boys and 25 girls constituted the experimental group and another consisting of N=50, 25 boys and 25 girls constituted the controlled group.

b. Tools

1. Achievement Test - constructed by investigator.
2. Computer Software Package - to teach with the assistance of computer. The two units, one from Algebra and one from Geometry from the Karnataka Government prescribed textbook of 9th standard was selected.

c. Procedure

The students were assigned randomly to the control and experimental group based on the previous achievement test scores in mathematics and the groups were equated. In the next step the experimental group was taught through computers using software developed on the selected units with the help of the trained teachers. The control group was taught by Traditional Method of Teaching and no special instructions were given through regular subject teacher. Then the post-test in achievement was administered.

6. Analysis and Interpretation.

The data was analyzed using the statistical technique t-test. The analyzed data was tabulated and reported in the vide Table No. 1 and 2.

Table 1: Post test mean scores of experimental and control group in achievement in Mathematics.

Group	N	Mean	S.D	t-value	P-value	Sig
Control	50	16.2000	3.0573	4.7219	<0.01	S
Experimental	50	19.0600	2.9994			

Table 2: Post test mean scores of male & female, rural and urban students of experimental group in achievement in Mathematics.

Group	Mean	S.D	t-value	P-value	Sig
Male	18.9600	3.0887	0.2335	>0.05	NS
Female	19.1600	2.9676			
Urban	19.8684	2.9055	3.8372	<0.01	S
Rural	16.5000	1.5076			

7. Interpretation.

The obtained t-value for the means of post test scores of control group and experimental group in achievement in Mathematics is significant at 0.01 level. Hence the null hypothesis was rejected and it is concluded that there is a significant difference between Experimental and control group in achievement in mathematics. It is inferred that the experimental group found to possess higher level of achievement in Mathematics which has taught through computer assisted instruction than control group. This implies that the computer assisted instruction is effective in enhancing the achievement in Mathematics of students at secondary school level.

The obtained t-value for the Post test mean scores of male & female is not significant at 0.01 level. Hence null hypothesis was accepted and concluded that there is no significant difference between achievement in mathematics of male and female students of experimental group.

The obtained t-value for post test mean scores of rural and urban students of experimental group in achievement in Mathematics is significant at 0.01 level. Hence the null hypothesis was rejected and it is concluded that there is a significant difference between achievement in Mathematics of urban and rural students of Experimental group. It is inferred that the urban students of experimental group found to possess higher level of achievement in Mathematics in comparison to rural students.

8. Results and Discussion.

The findings of the study are as follows.

1. There is a significant difference in the achievement in Mathematics of students instructed through Traditional Method Teaching and Computer Assisted Teaching. The CAT is found to be effective in enhancing students achievement in Mathematics.
2. There is a significant difference in the achievement in Mathematics of rural and urban students instructed through CAT method of teaching. The CAT found to be more effective enhancing the achievement in Mathematics among urban students.
3. There is no significant difference in the achievement in Mathematics of male and female students instructed through CAT method of teaching.

The main objective of the study was to compare the effectiveness of TMT and CAT in terms of students achievement in Mathematics. In all comparisons the performance of students in experimental group was found to be high in comparison to the performance of students in control group.

Further within the experimental group when gender difference compared no difference was observed, but when it is compared with respect to locality of the students, the urban students have higher score in CAT method than TMT. It means that CAT was more effective in teaching the Mathematics concepts than traditional method.

The CAT method was found to be more effective on urban students than rural students. It indicates that the locality is also affects the method of teaching. This is because the rural students do not have any exposure to the new medium of technology, non availability the facilities

9. Educational Implications

the findings of the study implicates that the teachers should adopt and implement the new method of teaching Mathematics as the students feel learning of it as difficult. The teachers should be trained in utilizing advanced technology to the classroom teaching learning process.

The government should take initiatives in organizing training programmes to the teachers and the management of the school should encourage and motivate both headmasters and teachers to implement the new method of teaching.

The teacher training programmes (in-service and pre-service) should concentrate on training the teachers for the utilization of technology.

Conclusion.

In conclusion it may be said that the CAT method of teaching is relatively effective in teaching Mathematics. This method can provide a new environment or learning situation for the students who are passive listeners in traditional method of teaching and which can enhance the individual learning.

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