Effectiveness of Computer Assisted Instruction in the Acquisition of Mathematical Concepts at Secondary Stage

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ABSTRACT
The present investigation was conducted to find out the Effectiveness of Computer Assisted Instruction in the Acquisition of Mathematical Concepts at Secondary Stage. Sample of 100 students of 9th class was taken randomly from that school which has computer lab. This group was divided into two parts one would be taught by computer Assisted Instruction and other was with traditional teaching method. Computer software package from 9th class syllabus was developed and used as treatment variable by the investigator and Achievement test of mathematics was constructed by the investigator itself. Study revealed significant difference had been found between achievement of students taught through CAI and traditional method.

Keywords— Mathematical Concepts

I. INTRODUCTION

COMPUTER-ASSISTED INSTRUCTION (CAI)
Computer-assisted instruction (CAI) represents a teaching tool that involves the use of a computer program or programs to facilitate the education of a group of students. Its major goal is to provide practical instruction through interactive programs that teach effectively. The method was first introduced in the 1960s. Since then it has evolved so that in the twenty-first century computers are an integral part of the education process in the developed countries.

Even though there are many types of educational computer use, not all are defined as CAI. This term generally refers to educational activities, in which a computer program is used to teach passive students, or to such courses in which the computer acts as a platform for the creation of a personalized and interactive learning environment. CAI can be used alone or in combination with other teaching methods. According to certain studies the combination of CAI and teacher assisted instruction (TAI) is highly effective in bolstering students achievements.

CAI can be applied to all ages and forms of educations from Pre-School to professional school and even in many employment areas. It can be used in a wide range of fields including all the main disciplines in elementary and secondary school. CAI is also applied in the training of nurses, jet engine mechanics, foodservice workers, law students and many more. It can assist with the teaching of people with physical limitations, learning disabilities and language limitations.

As the use of CAI varies depending on the target group and subject, CAI programs never follow a single theoretical model of instruction. In many of them the instruction is organized as interaction between student and a teacher. Others programs seek to create an engaging and motivating environment in a drive to encourage the learning process.

II. SIGNIFICANCE OF STUDY

Mathematics is one of the most important subjects of the academics in secondary level education, because mathematics at secondary level education is the basic mathematics which is the laying stone for the higher education in mathematics. Some students who want to peruse career in mathematics or want to study mathematics at higher level of education, sometime due to complexity of the subjects, students find it difficult to understand the basic concepts of mathematics, which is perhaps due to fault lecture method so some other unfair seen causes. As it is evident from the previous studies like Gasiorowaski, Jeanne Heindel (1998) in his study ‘The relationship between students characteristics and math achievement when using computer spread sheets found that following a computer software technology – rich supplement to regular math instruction, suggest that spread sheets can serve as a valuable cognitive tool for all seventh grade math students in general and for those who have an active learning strength and those will lower socio economic status in particular. Another author, Carter, F.I (1999) in his study found that computer assisted instruction training programs were superior to traditional programs on vocational education among high school students.
Thus we can say that computer assisted instruction can help to understand the complexity of the subjects at each step in very interactive way. One can’t go to the next step of the complexity unless the previous one is understand and applied clearly and correctively. So computer software package provide the better access to understand the complexities of the topic / subjects and create interest among students. Thus will help the students to learn more in sort time and will save the precious time of students. So keeping in view, the importance mathematics concepts especially at secondary stage when students are at threshold of conception of their future stream, the investigator selected the study which aimed not only teach IX class through computer assisted instruction but also determining the efficiency of computer assisted instruction in acquisition of mathematical concepts.

III. STATEMENT OF THE PROBLEM

“Effectiveness of Computer Assisted Instruction in the Acquisition of Mathematical Concepts at Secondary Stage”.

OBJECTIVE OF THE STUDY

To study the effect of strategies of Teaching on acquisition of mathematical concepts.

HYPOTHESIS OF THE STUDY

There is significant difference in mean scores of acquisition of mathematical concepts of students taught through traditional strategy and computer assisted instructional strategy.

SAMPLE OF THE STUDY

The population for the study was students of 9th class enrolled in different secondary school in Abohar Tehsil. Two samples were raised from the above mentioned population: one for developing achievement test and other for conducting experiment.

Cluster sampling technique was employed to raise the sample. For conducting the experiment, sample size was 100 students of 9th class.

RESEARCH TOOLS

1. Computer software package from 9th class syllabus was developed and used as treatment variable by the investigator.
2. Achievement test of mathematics was constructed by the investigator itself.

STATISTICAL TECHNIQUES

Statistical techniques i.e Mean, SD and t-ratio were employed to analyze the raw data.

IV. RESULT AND DISCUSSION

<table>
<thead>
<tr>
<th>Groups</th>
<th>N</th>
<th>Mean</th>
<th>SE_D</th>
<th>t-ratio</th>
<th>Level of Significance</th>
</tr>
</thead>
<tbody>
<tr>
<td>Experimental Group</td>
<td>50</td>
<td>36.05</td>
<td>0.90</td>
<td>2.72</td>
<td>Significant</td>
</tr>
<tr>
<td>Control Group</td>
<td>50</td>
<td>33.6</td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

Table shows that t-ratio between Experimental Group and Control Group is 0.90 The t-value to be significant at 0.05 and at 0.01 level is 1.96 and 2.58 respectively since calculated t-ratio is greater than both these values therefore it is significant.

Hence the hypothesis, “there is significant difference in mean scores of acquisition of mathematical concepts of students taught through traditional strategy and computer assisted instructional strategy” is accepted.

V. CONCLUSION

There was significant difference in mean scores of acquisition of mathematical concepts of students taught through traditional strategy and computer assisted instructional strategy.

REFERENCES

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