ORIGINAL RESEARCH PAPER

Education

Volume - 7 | Issue - 4 | April-2017 | ISSN - 2249-555X | IF : 4.894 | IC Value : 79.96

Effectiveness of CAI, SIM for Enhancing Performance of Higher Secondary Students

KEYWORDS: Computer Assisted Instruction, Self Instruction Module, Achievement, Economics and Students' Performance

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ABSTRACT

Purpose: The present study was designed to find out the effectiveness of Computer Assisted Modules(CAI) and Self Instructional Modules(SIM) for enhancing Economics performance of at Higher Secondary School boys Students. **Subjects:** For this purpose forty five (N-45) Higher Secondary first year (XI) students studying in the Virams Matric Higher Secondary at Pudukkottai, Pudukkottai District, Tamilnadu, India during the year 2015-2016 were selected randomly as subjects. The subjects were assigned at random into fifteen each (n=15). Group-I underwent Computer Assisted Instruction group, Group-II underwent Self Instruction Module group, and Group-III acted as Control. **Training:** Training period was resisted to three months only on the working days. **Variables:** The dependent variable selected for this study was Economic Achievement Mean Score. **Test:** Economic Achievement Mean Score was assessed by Achievement test tool constructed and by the investigator. All the subjects were tested prior to and immediately after the training for all the selected variables. **Statistics:** Data were collected and statistically analyzed using ANCOVA. Scheffe's post hoc test was applied to determine the significant difference between the paired means. In all the cases 0.05 level of significance was fixed. **Results:** The results of the study showed that there was a significant difference among all the groups namely Computer Assisted Instruction group, Self Instruction Module group and Control group. Further the results of the study showed that Computer Assisted Instruction group was found to be better than the Self Instruction Module group and Control group in Economics Achievement Mean Score.

INTRODUCTION

In recent years, technology has assumed an increasingly important role in every aspect of instructional planning and design. The process began with the use of 'visual aids' in support of instructor-centered teaching, evolving until today, when we frequently see computers in the classroom. "While traditionally good teachers made use of blackboard, pictures, excursions, models, charts, slides, drama and graphs as audiovisual aids to education, along with these the modern teacher makes use of technological advances such as movies, radio, recording devices, television and computers."

Education is the source of knowledge which shows the real way in the various fields of life. Education that is given to students in schools is expected to help them realize their true potential, so that they put it into effective use for their well-being as well as that of their fellow-beings. As there is always a wide gap between expectation and outcome, majority of school-going students never get an opportunity to know or to utilize their true potentials. Since school education has been reduced for coaching students to get through the examinations, the transaction of curriculum in the classroom leaves out a wide range of skills that the students require to master in their subjects.

Although the use of CAI as an instructional strategy is a new concept yet its origin lies in the year 1963 at Satnford University where Patrick Suppes and Richard Atkinson initiated the development of CAI with an objective to impart instructions to students in an individualized way based on one-to-one tutorial system ***(Reiser, 2001; Tucker, 2009).***

Self-Instructional Material (SIM) is a learner-oriented instruction in which learning takes place without requiring the physical presence of teachers. It is based on the principles of programmed learning which in turn are founded on the concept of operant conditioning given by Skinner in 1954. Programmed instruction is a process of arranging material to be learned in a series of small steps designed to lead a learner to through self-instruction from what he knows to the unknown of new and more complex knowledge and principles. Some features of teach self-instructional units which have been derived from the programmed instruction are objectives, division of content into steps, frequent feedback, self-check questions and answers.

METHODOLOGY

The study was conducted forty five (N-45) Higher Secondary first year (XI) students studying in the Virams Matric Higher Secondary at Pudukkottai, Pudukkottai District, Tamilnadu, India during the year 2015-2016 were selected randomly as subjects. The subjects were assigned at random into fifteen each (n=15). Group-I underwent Computer Assisted Instruction group, Group-II underwent Self Instruction Module group, and Group-III acted as Control. Training period was resisted to three months only on the working days. The dependent variable selected for this study was Economic Achievement Mean Score. Economic Achievement Mean Score was assessed by Achievement test tool constructed and by the investigator. All the subjects were tested prior to and immediately after the training for all the selected variables.

ANALYSIS OF THE DATA

The data collected from the experimental groups and control group on prior and after experimentation on selected variables were statistically examined by analysis of covariance (ANCOVA) was used to determine differences, if any among the adjusted post test means on selected criterion variables separately. Whenever they obtained f-ratio value in the simple effect was significant the Scheffe's test was applied as post hoc test to determine the paired mean differences, if any. In all the cases 0.05 level of significance was fixed.

The analysis of covariance on Economics achievement mean scores of the pre, post, and adjusted test scores of Computer Assisted Instruction group, Self Instructional Modules group and Control group have been analyzed and presented in Table –1.

TABLE –1 COMPUTATION OF ANALYSIS OF COVARIANCE OF PRE TEST, POST TEST AND ADJUSTED POST TEST ON ECONOMICS ACHIEVEMENT MEAN SCORES OF EXPERIMENTAL GROUPS AND CONTROL GROUP

Test	Computer Assisted Instruction Group	Self Instructional Module Group	Control Group	Source of Variance	Sum of Squares	df	Mean Squares	F-ratio
Adjusted Post-Test Mean	102.91	89.78	68.04	Between sets	9247.95	2	4623.98	399.50*

Volume - 7 | Issue - 4 | April-2017 | ISSN - 2249-555X | IF : 4.894 | IC Value : 79.96

				Within Sets	474.55	41	11.57	

** Significant at 0.05 level of confidence*
Table value for df (2, 42) at 0.05 level = 3.22 Table value for df (2, 41) at 0.05 level = 3.23
(Economics achievement mean scores are in Marks)

Table-1 shows that the adjusted post-test means on Economics achievement mean scores of Computer Assisted Instruction group, Self Instructional Modules group and Control group are 102.91, 89.78 and 68.04 respectively. The obtained 'F' ratio of 399.50 for adjusted post-test scores was higher than the table value of 3.23 for degrees of freedom 2 and 41 required for significance at 0.05 level of confidence on Economics achievement mean scores.

The results of the study indicated that there is a significant difference between the adjusted post-test means of Computer Assisted Instruction group, Self Instructional Modules group and Control group on Economics achievement mean scores.

Since, three groups are compared and whenever the obtained 'F' ratio for adjusted post test is found to be significant, Scheffe's test is used to find out the paired mean difference and it is presented in Table-2.

TABLE – 2 SCHEFFE'S TEST FOR THE DIFFERENCE BETWEEN PAIRED MEANS ON ECONOMICS ACHIEVEMENT MEAN SCORES

Computer Assisted Instruction Group	Self Instructional Module Group	Control Group	Mean Difference	Confident Interval Value
102.91	89.78	---	13.12*	3.16
102.91	---	68.04	34.86*	
---	89.78	68.04	21.74*	

Significant at 0.05 level of confidence.

Table-2 shows that the mean difference values of Computer Assisted Instruction group and Self Instructional Modules group, Computer Assisted Instruction group and Control group, Self Instructional Modules group and Control group are 13.12, 34.86 and 21.74 respectively, which are greater than the confidence interval value of 3.16 on Economics achievement mean scores at 0.05 level of confidence. The results of the study showed that there was a significant difference between Computer Assisted Instruction group and Self Instructional Modules group, Computer Assisted Instruction group and Control group, Self Instructional Modules group and Control group.

The above data also reveal that Computer Assisted Instruction group had shown better performance than Self Instructional Modules group and Control group on Economics achievement mean scores.

The adjusted post mean values of Computer Assisted Instruction group, Self Instructional Modules group and Control group on Economics achievement mean scores are graphically represented in the Figure -1.

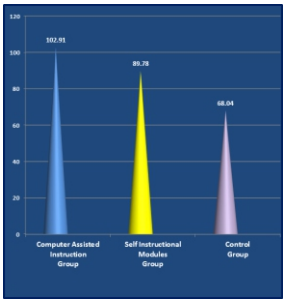

Figure: 1The Adjusted Post Mean values of Computer Assisted Instruction group, Self Instructional Modules group and Control group on Economics achievement mean scores (In Marks)

CONCLUSION

From the analysis of the data, the following conclusions were drawn.

1. Significant differences in achievement were found between Computer Assisted Instruction group, Self Instructional Modules group and Control group in the selected criterion variable such as Economics achievement mean scores.
2. The Experimental groups namely, Computer Assisted Instruction group and Self Instructional Modules group had significantly improved in Economics achievement mean scores.
3. The Computer Assisted Instruction group was found to be better than the Self Instructional Modules group and Control group in increasing Economics achievement mean scores.

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