# COMPARATIVE STUDY OF EFFECTIVENESS OF COMPUTER ASSISTED INSTRUCTION ON CIRCULATORY SYSTEM FOR IX STANDARD STUDENTS

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***Abstract***

*This paper is focused upon Comparative Study of Effectiveness of Computer Assisted Instruction on Circulatory System for IX Standard Students. The students in the experimental group learned science concepts (circulatory system) through the CAI, whereas the students in the control group were taught the same concepts by the conventional approach. The conventional approach consisted of teaching, discussions and question and answer teaching methods. The results indicated that students that were instructed by the experimental group performed better on the post-test than those instructed by the conventional approach.*

**Key words:** Innovative Methods, Digital Learning, Conventional Technique, Biology

The density of the country is destined in the classroom. The education has a wider meaning now-a-days. The education in the present trend does not mean the mere text book learning. It aims at giving complete life to the pupils. It is more important for the learners to know how to learn rather than what to learn. Computer Assisted Instruction provides greater learning opportunities for children both theoretical and practical. Its use in bringing new kinds of experiences for children in school is really interesting and meaningful. Educational software development and validation is a major research and development activity in the field of education. The major area in educational software is occupied by the instructional software development. The nature and the impact of computer and learning were led to its more significance day by day. The CAI package depends on the electronic device. Further there is need for the subject export, technical expert. Individualized instruction is the one-to-one relationship between learners and the subject to be learnt. This study is designed to see effectiveness of computer-assisted instruction (CAI) and conventional teaching method in biology on senior high school students. In this paper, researcher has elaborated use, utility and importance of CAI in teaching-Learning. To create new approaches and appropriate digital learning environment in the field of education for present and future generation.

**OBJECTIVES**

- To develop a CAI package for self instruction on the unit circulatory system in science for IX standard students
- To verify whether there is any difference in learning level between
  - a) Boys and Girls
  - b) Rural and Urban School
  - c) Government, Government Aided and Unaided Schools

**METHOD**

**SAMPLE**

The investigator has selected six schools in Udumalpet at Tiruppur District which come under the Tamil Nadu State Board of Education. Purposive sampling was used to select sample for this experiment. The sample selected for study consists of boys and girls from rural and urban schools. 300 English medium students of 9$^{th}$ standard were selected from different types of school.

**DESIGN**

The design selected for the study is the pretest-posttest of two groups. Pre test was administrated to measure the dependent variable at initial stage for elimination of novelty factor. Treatment was given to the subjects, to measure treatment effect. Post test

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was administered again for measuring the effect of treatment. Differences attributed to application of the experimental treatment are then determined by comparing pretest and posttest scores.

**MEASURES**

**a) Computer Assisted Instruction Package**

The instructional software package was developed to help the learners through a prescribed form of self instructions. In this study for biology CAI package of Circulatory System for IX standard students was used. This CAI package contains various stimuli such as showing pictures and animation. This CAI was an individualized instructional material.

**c) Performa Sheet**

The investigator himself has developed a Performa sheet to collect necessary information regarding the individuals back ground such as the name, age, sex, name and address of the school, locality, type of school, system of school etc.

**d) Science Achievement Test**

In this present study the investigator has prepared the achievement test based on the IX standard State Board Syllabus. It consists of 40 questions and each has been provided 4 multiple choice options from which the individual is asked to mark the response which he/she feels to be right in their point of view. The answer scripts for the conducted achievement test were collected and scored based on the scoring key. It was decided to give one mark as weight age for each correct answer. Thus it may have maximum of 40 marks, who give correct response for all the items.

**PROCEDURE**

Before the experimentation, the pilot study was conducted on 50 student of IX standard level. In this study, Pre-test-Post-test was given. For conducting the experiment the investigator selected six Higher Secondary School. The study was conducted and materials were distributed to the students after taking prior permission from the heads of the selected schools. The investigator personally visited each school and collected the data. The purpose and intention of the study were briefly explained. The subjects had been repeatedly assured that they could freely express their opinions without and reservation since the purpose was purely educational research. The co-operation extended by the respondents/students was encouraging.

**RESULTS AND DISCUSSION**

The collected data were consolidated, tabulated and analyzed statistically by using the following tests.

- Test of Significance ('t' Test and ANOVA)
- Mean and Standard Deviation

*Table No. 1 : Analysis of 'T' Test Scores of Government Schools Pupil Following the Computer Assisted Instruction*

| Type of school | Source | N | Mean | Standard Deviation | 't' value |
|---|---|---|---|---|---|
| **Government Schools** | Pre-test Score | 50 | 14.300 | 3.2467 | 34.799 ** |
| | Post-test Score | 50 | 32.22 | 3.3030 | |
| **Aided Schools** | Pre-test Score | 50 | 15.44 | 4.6342 | 22.206 ** |
| | Post-test Score | 50 | 29.76 | 4.3451 | |
| **Unaided Schools** | Pre-test Score | 50 | 13.16 | 3.6048 | 33.969 ** |
| | Post-test Score | 50 | 28.98 | 3.1975 | |

****** Significant at .01% level.

It is evident from table no 1 that there is significant difference in pre test scores and post test scores of all the three types of schools, following the Computer Assisted Instruction**.** Calculated t value for all three types of schools (Govt, Aided) is 34.79, 22.20, 33.96 respectively, which is significant at .01 level. So the hypothesis stating, there is no significant difference between the pretest and posttest scores pupil following the Computer Assisted Instruction with respect to type of schools was rejected.

**Table 2:** *Significance of Difference between Pre and Post-tests Scores of Computer Assisted Instruction Group*

| Source | N | Mean | Standard Deviation | 't' value |
|---|---|---|---|---|
| Pre-test Score | 150 | 14.30 | 3.9591 | 47.644 ** |
| Post-test Score | 150 | 30.32 | 3.8831 | |

** Significant at one percent level.

It is evident from table no 2 that there is significant difference in pre test scores and post test scores following the Computer Assisted Instruction**.** **Calculated** t value is 47.64 which is significant at .01 level. So the hypothesis stating, There is no significant difference between the pretest and posttest mean scores of the experimental group following CAI was rejected.

**Table no. 3:** *Comparison of Posttest Performance of Computer Assisted Instruction Group between the Different Types of Schools*

| Type of the School | N | Mean | Standard Deviation | 't' value |
|---|---|---|---|---|
| Government School | 50 | 32.22 | 3.3030 | 12.824 ** |
| Aided School | 50 | 29.76 | 4.6451 | |
| Unaided School | 50 | 30.32 | 3.1975 | |

It is evident from table no 3 that ANOVA test was applied and the calculated ANOVA value is 12.824, which is found to be significant at 0.01% level. So the hypothesis stating, there is no significant difference in posttest performance of Computer Assisted Instruction between the different types of schools pupil was rejected.

*Table no. 4: Comparison of the Post-test Performance of the Experimental Group Following the CAI with Reference to Locality and Gender*

| Gender Group | N | Mean | Standard Deviation | 't' value |
|---|---|---|---|---|
| Urban | 75 | 32.00 | 3.2715 | 5.862 ** |
| Rural | 75 | 28.64 | 3.7331 | |
| Boys | 75 | 29.6667 | 4.0415 | 2.084 ** |
| Girls | 75 | 30.9733 | 3.6279 | |

It is evident from table no 4 that there is significant difference in pre test scores and post test scores of urban and rural students following the Computer Assisted Instruction**.** Calculated t value is 5.86 which is significant at .01 level. It is also revealed from table no 4 that there is significant difference in pre test scores and post test scores of boys and girls students following the Computer Assisted Instruction**.** Calculated t value is 2.08 which is significant at .05 level. So the hypothesis stating, there is no significance difference between posttest performance of Schools Pupil following the Computer Assisted Instruction with respect to locality and gender was rejected.

**REFERENCES**

Aggarwal J.G (1995). *Essential of Educational Technology*; *Teaching Leaning Innovations in Education* New Delhi.

Bloom, B. S. (1956). *Taxonomy of Educational Objective Hand books. The cognitive domain*. Logmas Publication, New York.

Chauhan S.S (1983). *Innovations in Teaching Learning Process, New Delhi*. Coulson S.E (1962), Programmed Learning and Computer based instruction.

David L. (1992). *Innovations in Science and Technology Education*, Edition III, UNESCO.

Henry, E., Percival, F.and Race, P. (2003). *Hand book of Educational Technology*, New Delhi. HemalathaParasnis, An Orientation to Computer Instruction Experiments in Education. July 1989.

Best, J. W. (1963). *Research in Education* Prentice Hall of India Private Limited, New Delhi.

Kulkarni, S.S. (1986). *Introduction to Educational Technology*, New Delhi. Oxford, IBH Pub. Co.,

Rao, B., Anand and Ravishankar. S (1989). *Reading in Educational Technology*. Himalaya Publishing House, Bombay.

Verma, R., Sharma, S. (1998). *Modern Trends in Teaching Technology*, Anmol Publications Pvt. Ltd., New Delhi.

Sadha and Singh (1982). Methodology of Educational Research, Prentice Hall of India.

Sampath and Pannerselvam (1994). *Introduction to Educational Technology*, Sterling Publishers, New Delhi.

Singh, V. (2005). *Practical Approach Educational Technology*, Akansha Publishing House, New Delhi.

Venkataian, S. (2000). *Encylopedio of Contemporary Education Series Science Education*, Anmol Pub.

Yadav, M.S. (2000). *Modern method of teaching sciences*, Anmol Publisher, Delhi.

Zaidi, S.M. (2004). *Modern method of teaching Science*, Anmol Publisher, New Delhi.