

EFFECTIVENESS OF CAI PACKAGE IN BASIC ELECTRONICS TEACHING

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The study was a pre-test – post-test equivalent- group design, for conducting the experiment to explore the effectiveness of a CAI package developed by the researchers. It was conducted on B.Sc. students. It came out with strategies for improving instruction..

INTRODUCTION

Education is a natural, harmonious and progressive development of man's innate powers. It is a medium through which the society transmits its heritage of past experiences and modifications, system of values and the modes or skill of acquiring it. It provides children, youth and adults with the power to reflect, make choices and enjoy a better life. It is a key ingredient in economic and social development. In the 21st century "Information Explosion" and "Population Explosion" are the major problems in the higher education. Realising the danger of this disastrous situation, India has embarked upon a great adventure; the adventure of putting to use modern information and communication technologies for the delivery of education services. New experiments, creative innovations and appropriate strategies are being developed and tried out to improve education at all levels. To satisfy the needs of the 21st century education must be harnessed with technology and the teachers and learners are to be made familiar with and use ICT tools in their teaching learning process. Computer is now regarded as a super teaching machine. Computer based learning systems integrate seeing, learning and doing and thus making learning more effective. CAI packages of today are much more user-friendly and entertaining, than their predecessors. Students can now work at their own pace regardless of the level at which they are supposed to be. This promotes self-confidence, as it gives the student a feeling of control over what s/he is learning. CAI forces the student to remain focused on the topic at hand. In a classroom, it is easy for the students to simply nod their heads every time the teacher looks in their direction. However, CAI programmes are especially helpful in teaching subjects with which students often have difficulty.

OBJECTIVES

- To study the level of gain scores of experimental and control group students;
- To study attainment of knowledge, understanding and application level objectives in the gain scores;
- To study association between the habit of journal reading and gain scores of students.

DESIGN OF THE STUDY

The study chose the pre-test – post-test equivalent- group design, for conducting the experiment. Pre-tests (O1O-3) were administered before the application of the experimental and control group treatment and post-tests were conducted after the treatment period

Sample

Randomly selected 36 girl students of II year B. Sc Chemistry, Holy Cross College, Nagercoil, Kanyakumari District, were chosen for the study which constituted the total

sample. Cattell's Culture Fair Intelligent test was administered to split the sample into two equivalent groups. Based on the intelligence test score, they were categorised as Experimental and Control group by matched randomisation method. The researchers selected pairs or sets of individuals with identical or nearly identical I.Q scores and assigned one of them to the experimental group and the other to the control group. Hence, there were 18 students in experimental and control groups respectively.

Tools

1. CAI package in Basic Electronics, 2. Achievement test in Basic Electronics, 3. Catell's Culture Fair Intelligent Test, and 4. Personal Data sheet.

Development of CAI Package

The investigators had prepared a CAI package on the topic BASIC Electronics for this study. This topic was part of II year under graduate Physics course. The following steps were used for developing the CAI package.

Validation of the Learning Package

To enhance the quality of CAI Package, the researchers validated the package using expert validation, small group try out and individual try out.

Achievement Test

To evaluate the effectiveness of the CAI package used in the study and to compare the traditional method and the experimental method, an achievement test was prepared by the investigators based on the contents of the CAI package.

Pilot Study

To standardise the tool, a test was conducted to the sample consisted of 18 students in Experimental and Control Group respectively. The test consisted of 80 objective type questions. Each questions had four alternatives. The items that were answered correctly were noted down, and then the difficulty value and discrimination indexes were found. After item analysis, 30 items were deleted and modification was made in the required item. The final form of the test contained 50 objective type questions. This tool was used to conduct the pre and post achievement test for this study. The content validity of the tool was ensured by giving the tool to the expert in Physics of Holy Cross College. The item validity of the test was determined through Item Analysis. The questions having 25% below difficulty value were ensuring content validity and they were taken for the achievement test. Reliability of the tools was found using split – half method and the reliability co-efficient of the test was found out to be 0.85, which indicates that the tool was reliable. There were fifty items in the achievement test. All are objective type questions. For every correct response, one mark was awarded and no mark was reduced for the wrong responses. Before starting the Experimental treatment, pre –test was administered to both experimental and control group students in Second year B. Sc Chemistry, Holy Cross College. After conducting the pre – test to both the control and the experimental group, the experimental group was taught on the topic Basic Electronics using CAI package with LCD projectors. It was conducted around 10 days. The control group was taught the same content using lecture method by the investigators, for the same time period. After conducting the experiment both the experimental and the control groups were given post–test. Their responses were valuated with the help of the scoring key prepared by the investigators. Appropriate statistical techniques were employed.

FINDINGS AND INTERPRETATION

In the experimental and control groups, 22% of the students had high level of gain score. There was a significant difference between the control and the experimental group students in the gain scores. Hence, the experimental group students are better than the control group students in the gain score. It is inferred from the finding that the experimental treatment is effective to the students. There is a significant difference between the control and the experimental group students in attainment of knowledge level objective in the gain scores. Hence, the experimental group students are better than the control group students in attainment of knowledge level objective in the gain scores. There is a significant difference between the control and the experimental group students in attainment of understanding level objective in the gain scores. That is the experimental group students are better than the control group students in attainment of understanding level objective in the gain scores. There is a significant difference between the control and the experimental group students in attainment of application level objective in the gain scores. Hence, the experimental group students are better than the control group students in attainment of application level objective in the gain scores. There is significant association between the habit of journal reading and gain score of control group students. Hence, the control group students gain score and their habits of journal reading are closely associated.

RECOMMENDATIONS

On the basis of findings the following recommendations are offered. Each college /school must have computers and LCD projector. The teachers must be trained to prepare Computer Assisted Instruction package in their subjects. The educational authorities can supply the educational software at free of cost to all the schools and colleges. CAI package can be used in Physics teaching, which helps the students to analyse things systematically and keeps them to actively engage in the class room activity. The school library should provide opportunities to the teachers to use E-resources for their class preparation. The college library must have computers with multimedia kits. Libraries should be equipped with educational software CDs. The teacher training institutions can conduct training on 'Digital library' and use of E-resources in teaching. Students should be trained to use the technology in constructive way. CAI package can be used to teach the distance learners. The teachers who teach the specially challenged children are advised to use CAI packages for the better development. Parents should find time to take care of their children for the proper use of the technology with regard to their education. Government should take steps to enhance technology enrich classrooms. NCERT and SCERT could take up the task of developing Computer Assisted Instructional packages (CAI) and Computer Mediated Instructional Packages (CMI) for all subjects.

CONCLUSION

Teaching is generally considered as an activity which is designed and performed for multiple objectives in terms of changes in pupil behaviour. Pupils on the other hand have multidimensional personalities having different styles. The common implication of both these facts is that the teacher should use different strategies of teaching which match the objectives of teaching on one hand and pupils learning styles and personality dimensions on the others. CAI package in Basic Electronics have revolutionised the whole teaching and learning process. This package would improve the knowledge of both teacher and students.
