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Comparison of ict based instruction and traditional class room instruction of teaching and learning

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Abstract
The purpose of the study was to investigate the effect of computer based and traditional method of teaching of science subject for high school students. To achieve the purpose of the study, 30 high school students were selected as subjects randomly from Tuticorin District Schools. The selected subjects were divided into two groups of 15 each. The age of the subjects was ranged from 14-15 years. Group I underwent computer-based teaching for six weeks and Group II underwent traditional method of teaching for the six weeks. Both the groups received teaching on the science subject. The selected subjects were tested by using diagnostic test which was conducted before teaching and achievement test which was conducted after teaching. The marks scored from each subject were considered as pre and post test data. Reliability and validity of the written test was tested by using test and retest method. The collected data were statistically analyzed with independent "t" test and Analysis of Covariance (ANCOVA). It was concluded that, both the experimental groups namely, computer assisted instruction and traditional instruction has achieved significant improvement in learning aspects. However, computer assisted instruction was found to be better improvement than in traditional instruction group. Hence it is strongly recommended by the investigator that the teachers and educators to adopt these findings to give computer assisted instruction to the students.

Keywords: Computer instruction, traditional instruction, science, high schools students

Introduction

The computer is an entity that is ever present in our current society. We as humans see the computer being used every day to do even the most basic tasks. The use of the computer for difficult and challenging tasks continues as well. As computers evolve to perform better such challenging tasks, they are becoming more apparent in education. In America, 71% of teachers are assigning some amount of work to be completed using the computer. One-third of those teachers do so on a regular basis (Becker, 2000) [2].

In the past few years, technology has been an integral part in the reformation of mathematics education. Public schools are providing more access to computers. Studies are being conducted to determine if the use of computers can improve learning for students with learning disabilities (Mastropieri, Scruggs, Shiah, & Muschinski Funk, 1995) [4]. It is possible that because today's society may view the computer as being dependable, society believes the computer can be the ultimate and, possibly, the perfect teacher. Many parents believe that if their child has access to a computer, then their child will receive a better education (Armstrong & Casement, 2000) [1].

The growth of technology in the classroom has prompted other ideas towards educating students. If computers can produce diagrams and features that help students learn, then computers should be able to teach them as well. Software designers and programmers have teamed up to produce different applications that can instruct students on material necessary for success (Wilson, Majesterek, & Simmons, 1996) [6].

Statement of the Problem

The purpose of the study was to investigate the effect of computer based and traditional method of teaching of science subject for high school students.

Methodology

Purpose of the Study: The purpose of the study was to investigate the effect of computer based and traditional method of teaching of science subject for high school students.

Need of the Study: Though very few studies were conducted on computerbased instruction, the researcher was very much interested in the multimedia teaching; the researcher was intended to find out the effect of computer based and traditional method of teaching of science

Selection of Subjects: To achieve the purpose of the study, 30 high school students were selected as subjects randomly from Tuticorin District Schools. The selected subjects were divided into two groups of 15 each. The age of the subjects was ranged from 14-15 years.

Selection of Training: Group I underwent computer-based teaching for six weeks and Group II underwent traditional method of teaching for the six weeks. Both the groups received training on the science subject.

Selection of Test: The selected subjects were tested by using diagnostic test which was conducted before teaching and achievement test which was conducted after teaching.

Description of Test: A diagnostic test was conducted on the science subject before teaching. Achievement test was conducted on the same portion for both the groups after the traditional and computer-based teaching completed. Two different types of questions were prepared from the same portion. It consisted of two, five and ten marks respectively. Finally, the researcher value both the test papers and the marks scored from each subject were considered as pre and post test data.

Reliability and Validity of the Test: Reliability and validity of the written test was tested by using test and retest method.

Statistical Technique: To find out the effect of teaching method the collected data were statistically analyzed with independent "t" test and Analysis of Covariance (ANCOVA).

Analysis and Interpretations of Data

The data on selected variables are analysed and the results are presented in Table I & II. Mean values are graphically represented in figure I.

Table 1: The summery of mean and dependent't'-test for the pre and post tests on teaching of computer based and traditional groups

Mean and t-Test	Computer Based Instruction Group	Traditional Instruction Group
Pre test Mean	5.45	5.38
Post test Mean	5.81	5.46
't' test	4.43*	1.87*

Table value required for significance at .05 levels for't' with 28 is 1.71).

Table 2: Analysis of Covariance (Ancova) On Teaching of Computer Based and Traditional Groups

S.No	Adjusted Post Test Means		Source of Variance	Sum of Squares	df	Mean Square	F - ratio
1	Computer Instruction Group	Traditional Group	Between	167.73	1	167.73	92.34*
2	31.15	26.39	Within	49.05	27	1.82	

* Significant at 0.05 level (The table value required for significance at 0.05 level with df 1 and 27is 4.21)

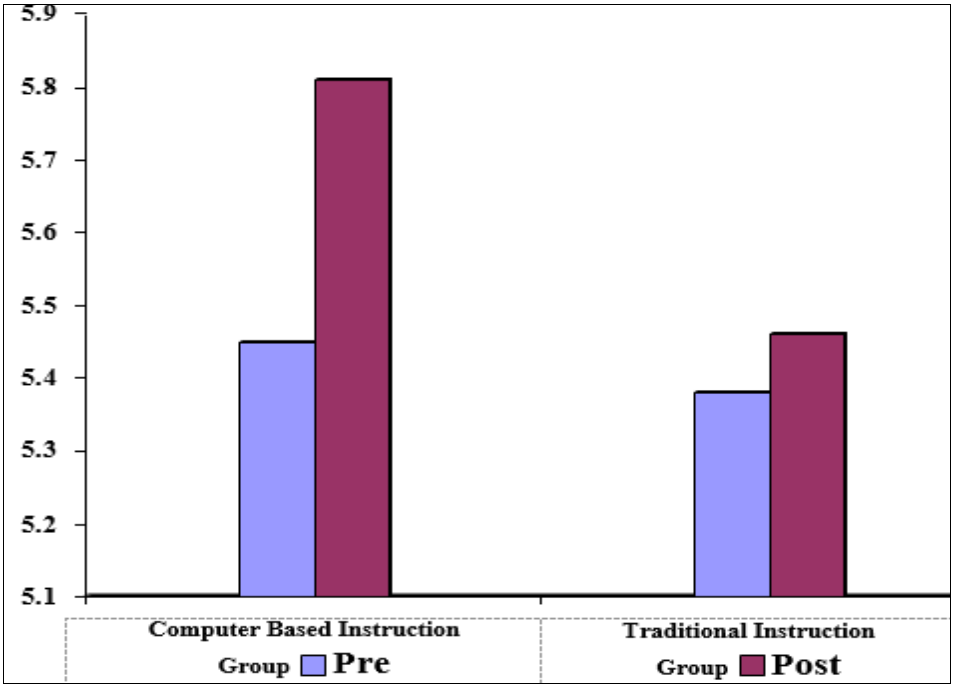

Fig 1: Pre and Post Tests Means of Computer Based and Traditional Istruction Group

Discussion on Findings

Much of the information shows computer-assisted instruction being integrated within daily instruction. Students are using computer-assisted instruction to reinforce skills being taught in the traditional classroom. Computer-assisted instruction is used in this document to refer to instruction that is delivered a computer. Computer-based instruction refers to the general use of computers to instruct students. There have been some studies that focus on computer-based instruction as well as computer-assisted instruction being used as reinforcement for comprehension.

As technology advances, classroom learning is modified. Science becomes more of a "thinking" subject rather than set of techniques used to complete tasks (Heid, 1995) [3]. With this shift towards thinking in science, the teachers must modify their instruction to teach new skills to students. Eventually, there becomes no single solution process to demonstrate problem solving (Heid, 1995) [3].

A fear that arises from the influx of computer use in the classroom is the outcome of student learning. Many people see the computer as a potential substitute for teaching, thus replacing teachers with a machine. In 2000, the Principles and Standards for School Mathematics states that technology should not be used as a replacement for learning (NCTM, 2000) but the teacher should include the technology in their teaching.

In this study discovered that computer-based instruction to be effective, the pictures and important definitions seen in the visual manner this provide contingent and frequent feedback from the students, and be linked to teacher-directed instruction. The reason behind that, special educators are using computer-based instruction is that it allows students to move at their own pace. The student can continuously repeat a lesson with the help of computer until he understands it. Wilson (1996) [6] and other researchers suggest the same findings in their studies.

Hence it is concluded from the results of the study and also the literature cited above, technology does not replace the teacher but the researchers and educators should incorporate technology into everyday instruction. Because, the teacher plays many important roles, one of which is making decisions that affect how students will learn.

Conclusions

It was concluded that,

1. Both the experimental groups namely, computer assisted instruction and traditional instruction has achieved significant improvement in learning aspect.
2. Significant differences were found among two experimental groups in learning.
3. Computer assisted instruction was found to be better improvement in learning than in traditional instruction.

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