COMPARATIVE STUDY OF COMPUTER ASSISTED INSTRUCTION TECHNIQUE (CAI) AND CONVENTIONAL TEACHING (CT) ON THE ACHIEVEMENT OF PUPIL TEACHERS IN METHODS OF TEACHING ENGLISH LANGUAGE

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Educational Technology has made a significant contribution to education by taking into consideration the individual differences of learners and catering to their needs. The emerging trend the world over is towards more individualized and flexible forms of learning with an emphasis on individualized methods of instruction. This paper is based on an experiment to study the effect of a new teaching methodology i.e. Computer Assisted Instruction Technique (CAI) in comparison to Conventional Teaching (CT) on the achievement of pupil teachers in methods of teaching English language. In this study, instructional material was developed for both methods of instructions i.e. CAI as well as for Conventional Teaching (CT). The instructional material for both the methods was developed and validated by the researcher. The experiment was carried out on the pupil teachers of B.Ed. class of a College of Education. Pretest- Posttest Control Group design was used. Results of the experiment showed that CAI was found effective in terms of the achievement of pupil teachers in methods of teaching English language at post-test stage. However, no significant difference was found to exist between the experimental group and control group at the pretest stage.

KEYWORDS: Computer Assisted Instruction, English Language, Conventional Teaching.

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INTRODUCTION

The main aim of education is to preserve, transmit and advance knowledge. In the past, this aim was achieved with the help of teachers, books and some audio visual aids. But a number of problems were encountered in the promotion of education. These include problems of large classes, heterogeneous classes with individual differences, lack of textbooks and source materials etc. These problems have made the present education system as highly group oriented. Normally a class consists of 40 to 50 pupil teachers who are grouped together and taught by traditional method irrespective of their individual differences. Moreover, due to information explosion the objectives of Education have become multidimensional. It is difficult to achieve those objectives by using lecture method only. There is a need of some flexible methods of teaching. The solution of these problems can only be tackled by the use of technology in the education system.

The concept of Educational technology has been developed during the last few years. The National Policy on Education (1986) has also emphasized the application of Educational Technology to improve the quality of education at all the levels. Educational Technology has given a significant contribution in education by taking into consideration the individual differences of the learners and catering to their needs. The emerging trend all over the world is towards more individualized and flexible forms of learning with an emphasis on the individualized methods of instructions. It has laid a special emphasis on using computers in the teaching and learning process specially for providing instructions in the classroom situations. It has specially emphasized on computer literacy. The entry of computers in the classroom has changed the entire scenario. The computer is now regarded as the super-teaching machine. Its use in education has been tried as an innovation and it has also proved its teaching efficiency in different subject areas.

The rapid developments in the instructional technology are Programmed Instruction (PI), Computer Based Instruction (CBI), Computer Based Learning (CBL), Modular Approach, Web Based Learning (WBL) and Computer Assisted Instruction (CAI). These can be used to take care of the individual differences. All of these methods can be adjusted to the individual's pace of learning and useful for imparting individualized instructions. Among these self-learning methods Computer Assisted Instruction (CAI) has influenced the teachers to use it for teaching. Now-a-days, CAI is being used for providing instructions to the students at different levels to update their knowledge.

CAI is one of the most useful methods of providing individualized and self paced instructions to the learners in classroom situations. It covers a wider range of individual differences. It is used for presenting the instructional material automatically to the learners. CAI provides more freedom to students to make mistakes without the fear of ridicule or personal embarrassment. CAI

is an interactive instructional method that uses a computer to present the instructional material, track learning and direct the user to meet his or her individual needs. It allows learners to progress at their own pace and work individually. It provides immediate feedback to the students if the answer is correct or not. If the answer is not correct, the program indicates to read the frame again and make a choice again. This process goes on till learner gives the correct answer. In this study, Computer Assisted Instruction (CAI) is used to provide individualized instruction for Teaching methods of English language to the pupil teachers of B.Ed.

REVIEW OF RELATED LITERATURE

Computer Assisted Instruction (CAI) has been proving an effective medium of education in the advanced countries for formal and non-formal education at all the levels. The use of computers in the classroom has boomed since the 1980s but studies within the past 15-20 years have focused on the relationship between CAI and academic achievement in many different subject areas. Number of studies has been carried out to find the effectiveness of CAI at different levels. Some of these are:-

Dalton and Hannafin (1986), Richardson (1986), Price (1989), Roberts and Madhere (1990), Rha and Bedell(1998),Hsiao(2001) and Raninga(2010)carried out the studies to find out the effectiveness of CAI in teaching learning of Mathematics at different levels. They found a good increase in scores of the learners by using CAI. It was found that secondary students exposed to CAI showed higher academic achievement than the students exposed to traditional instructions.

In different studies carried out by Stern and Repa (2000), Drake (2001) and Hema and Vasanthi (2003), it was concluded that CAI has positive effects in learning social skills, literary activities as well as in learning chemistry in comparison to conventional method.

The effects of CAI on achievement of secondary school students in Sciences were also studied by Vessel (1988), Arragwal (1995), Rangaraj (1997), Chang (2002), Tabassum (2004), Saini (2008) and Sheetal (2008) in different researches. They found that students taught through CAI showed better results in sciences than those taught through traditional method. In an another study conducted by Uplane, Sonawanae and Padmini (2011) on secondary school low achievers, CAI was found as an effective instructional method in teaching Physics to low achievers.

The effectiveness of CAI has been proved over traditional method in teaching different aspects of English language in the studies conducted by Yates (1988), Powell-Hart (1992), Peak and Dewalt (1993), Mahajan (1994), Bedell (1998), Chang (2000) and Beaired (2007).

In a study, Srinivasan (2010) constructed and evaluated a CAIP in Education Psychology for the trainees of DTE in Tamil medium. He found that pupil teachers who participated in the CAIP were self-motivated and showed higher achievement.

SIGNIFICANCE OF THE STUDY

Although a large body of work exists pertaining to the use of CAI in teaching learning process in the developed countries but in developing countries like India, it is in an embryonic stage particularly in the field of teaching foreign languages i.e. English language. Further, a very few research studies have been conducted for developing material for self learning techniques in Teaching of English language at pre-service training level. So, new researches are required to study the effect of Computer Assisted Instruction for teaching & learning of the language. The development of CAI material in teaching of English can help to meet the challenges of teaching English language in Indian situations. So the present study was planned to compare the effect of CAI and Conventional Teaching on the achievement of pupil teachers in teaching methods of English language.

OPERATIONAL DEFINITIONS

Computer Assisted Instruction (CAI)

CAI is an interactive instructional technique where a computer is used to present the instructional material and also to monitor the learning of the learners. It provides individualized and self paced instructions to the learners. In this study, the instructional material was designed in such a way which was learnt by the pupil teachers at their own pace by using computers. The instructional material for CAI was prepared in the form of frames followed by multiple choice questions.

Conventional Teaching

Conventional Teaching is the most common method of teaching used by the teachers for carrying out the teaching learning process in the classroom situations. In this method, the teacher talks more or less continuously to deliver the facts and ideas worth remembering but the class does not converse with the teacher. This implies that it is one of the autocratic teaching strategies. In this study, the instructional material was prepared for the conventional teaching also. It was prepared in the form of lesson plans for teaching methods of English by the researcher.

Achievement

Achievement means accomplishment of performance in a given skill or body of knowledge. Achievement signifies performance carried out

successfully. In the present study, achievement stands for the scores obtained by students in the criterion-referenced test after giving instructions through CAI and Conventional Teaching (CT).

Pupil Teachers

The students of pre-service teacher training courses like B.Ed. or D.Ed. are called pupil teachers. In this study, the pupil teachers of B.Ed. were taken as the sample. All of these pupil teachers were having English as one of their teaching subject.

Teaching Methods of English language

Teaching methods of English language are the ways and means used by the teachers to teach English language to the students. The pupil teachers of B.Ed. class are taught different teaching methods of English language. In this study, three methods i.e. Translation Cum Grammar Method (TCGM), Direct Method and Bilingual Method were taught through CAI as well as Conventional Teaching to carry out the comparison of their effectiveness on the achievement of the pupil teachers.

OBJECTIVES OF THE STUDY

The objectives of the study are :

- To develop and validate the instructional material for CAI for teaching methods of English language.
- To develop instructional material in the form of lesson plans for Conventional Teaching for teaching methods of English language.
- To develop and validate the CRTs for measuring the achievement of pupil teachers' in teaching methods of English language.
- To compare the effect of CAI and Conventional Teaching on the achievement of pupil teachers in teaching methods of English language.

HYPOTHESIS OF THE STUDY

In this study, directional hypothesis was framed.

There exists no significant difference in the achievement scores of pupil teachers exposed to CAI and Conventional Teaching (CT) for teaching methods of English language.

METHODOLOGY

The present study was an experimental study. Pre-test and Post-test Control Group design having experimental and control group was used.

SAMPLE

Purposive sampling technique was used for the study. Two samples were selected at two different stages of experimentation. These were:

a. Sample for the development of teaching learning material
b. Sample for final experimentation

Sample for the Development of Teaching Learning Material

Sample for the development of teaching learning material for CAI as well as for CT was taken from NC College of Education, Panipat. First of all, already developed instructional material for CAI as well as Conventional Teaching for each method of Teaching of English was given for the individual try out. After the individual try out, the developed material for each method was given to 5 to 6 pupil teachers of B.Ed. class. After the modifications suggested by them, small group try out was carried out with 8-10 pupil teachers who opted English as one of their teaching subjects. The suggestions given by them were also adopted by the researcher and required changes were made in the teaching learning material. Then 30 pupil teachers who were having English as one of their teaching subjects from LCRT College of Education were selected as the sample for field try out. The achievement scores of the field try out were interpreted for the evaluation of the developed teaching learning material.

Sample for Final Experimentation

This sample was taken up from Nalwa College of Education, Panipat. The sample for final experimentation of the study comprised of 80 pupil teachers in the beginning who were having Teaching of English as their teaching subject for B.Ed. class. But at the end of the study, the sample size was reduced to 70 due to sample morality.

TOOLS USED

Tools are the devices which are used to collect information. In this study, two types of tools were used. These are:-

A. Instructional Tools
B. Measuring Tools

Instructional Tools

Instructional tools were developed to impart instructional material to the pupil teachers. These were:

Software Packages for CAI

The software packages for CAI were developed which were self instructional, self paced and having specific steps ranging from objectives to evaluation. These software packages were developed in Visual Basic language of computer. Three software packages were developed for teaching three

methods i.e. Translation Cum Grammar Method (TCGM), Direct Method and Bilingual Method. The researcher prepared these software packages.

Lesson Plans for Conventional Teaching

Lesson plans were developed for Conventional Teaching. Lesson plans were prepared for all the three methods of teaching English language i.e. Translation Cum Grammar Method (TCGM), Direct Method and Bilingual Method. These were prepared by mixing Herbart's approach and RCEM approach which is followed up now-a-days for developing the lesson plans for conventional teaching in Indian B.Ed. colleges.

Measuring Tools

The measuring tools were employed to measure the behavior of the pupil teachers. These were:-

Criterion Reference Tests (CRTS) and

Raven's Standard Progressive Matrices

Criterion Reference Tests (CRTS)

In the present study, three CRTS were prepared and used for measuring the achievement of pupil teachers taught through CAI and conventional teaching. One CRT was prepared for one method of teaching English language. The items in the CRT were of fill-in-the blanks type, multiple-choice types, matching type and right or wrong answer type.

Raven's Standard Progressive Matrices

Raven's Standard Progressive Matrices (2005) was used to measure the intelligence of the pupil teachers. On the basis of the scores obtained in the Raven's Standard Progressive matrices, the pupil teachers were matched on three levels of intelligence i.e. high, middle and low. After that they were equally distributed in the experimental and control group for experimentation.

PROCEDURE

The experiment was conducted in two phases. In the first phase i.e. before being exposed to the teaching material, both the groups were pre-tested with criterion referenced test (CRT) prepared on each teaching method of English language. After this, the Pupil teachers were provided orientation and instructions about the treatment to be allotted to them. The purpose of such an orientation was to get over the anxiety and curiosity of the pupil teachers which could hinder the final outcome of the results. The pupil teachers of the experimental group were given a trial of the CAI material so that they might be able to know what they had to do while going through the instructional material. Likewise, the pupil teachers of the control group were made familiar about the objectives so that they might become familiar in the experimental setup.

The second phase of the experiment was concerned with the real execution of the experiment. During this phase, the group designated as experimental group was exposed to computer assisted instructions and the group designated as control group was taught through conventional teaching. After treatment i.e. at the end of each unit both the groups were tested with criterion referenced test to measure their achievements. Then the scores of criterion referenced test were compared in order to assess the effectiveness of two methods of teaching.

ANALYSIS AND INTERPRETATION OF RESULTS

The results of the study are given in Table 1 and Table 2.

Table 1

Significance of Difference Between the Mean Scores of Experimental and Control Group Pre-Test Level (N=35).

Units	Groups				
	Experimental	Control			
Method of Teaching English	Mean	Mean	SED	't'	Level of Significance
Translation Cum Grammar Method	4.51	4.82	0.34	0.91	NS
Direct Method	6.22	5.54	0.72	0.94	NS
Bilingual Method	7.11	6.4	0.48	1.48	NS

Table 1, shows that the t-ratios between the experimental and control group on three teaching methods are 0.34, 0.72 and 0.48 respectively which suggests that these are not significant at both 0.01 and 0.05 levels when pupil teachers were taught through CAI in experimental group and taught through conventional method of teaching in control group. The mean achievement scores of pupil teachers in different teaching methods i.e. Translation Cum Grammar Method (TCGM), Direct Method and Bilingual Method are 4.51, 6.22 and 7.11 in experimental group and in control group mean achievement scores for three teaching methods are 4.82, 5.54 and 6.4 respectively at pre-test stage. Thus, it can be said that two groups i.e. experimental and control groups do not differ significantly in their achievement. This indicates that both groups are found similar in their achievement in all the teaching methods of English language i.e. Translation Cum Grammar Method (TCGM), Direct Method and Bilingual Method at pre-test stage.

Table 2

Significance of Difference Between the Mean Scores of Experimental and Control Groups at Post-Test Stage (N=35).

Chapters	Groups				
	Experimental	Control			
Method of Teaching English	Mean	Mean	SED	't'	Level of Significance
Translation Cum Grammar Method	25.88	22.02	0.55	6.97	0.01
Direct Method	28.71	25.4	0.64	5.14	0.01
Bilingual Method	32.68	28.05	0.77	5.97	0.01

Table 2 shows that t-ratios between experimental and control group on three teaching methods i.e. Translation Cum Grammar Method (TCGM), Direct Method and Bilingual Method are 6.97, 5.14 and 5.97 respectively. These t-ratios are found to be significant at both 0.01 as well as 0.05 levels of significance when pupil teachers were taught through CAI in experimental group and taught through conventional method of teaching in control group. So our hypothesis is rejected. There is significant difference in the mean scores of pupil teachers exposed to CAI and conventional method for learning methods of teaching English language. The table also shows that the mean achievement scores in different teaching methods i.e. Translation Cum Grammar Method (TCGM), Direct Method and Bilingual Method experimental group are 25.88, 28.71 and 32.68 respectively whereas mean achievement scores of control group on three chapters are 22.02, 25.4 and 28.05 respectively at post-test stage. By the comparison of mean scores of pupil teachers in experimental group and control group, it is found that mean scores of experimental group are higher than that of control group. It is proved that CAI was more effective than Conventional Teaching in improving the achievement of pupil teachers in teaching methods of English language at post-test stage.

Thus, to sum up we can say that results of the study indicate that the pupil teachers of the experimental and control groups did not differ significantly in their achievement on learning different teaching methods i.e. Translation Cum Grammar Method (TCGM), Direct Method and Bilingual Method at pre-test stage. Thus, both the groups were found to be equal on the basis of their achievement scores at the pre-test stage. Also t-ratios were found significant at both the level of significance for all the methods of teaching English language at post-test stage. There was significant difference in the mean achievement scores of experimental group taught through CAI and control group taught through Conventional Teaching (CT). It was found that the mean scores of pupil teachers of experimental group were higher than that of control group

pupil teachers. CAI was found more effective than the CT of teaching in improving the achievement of pupil teachers for learning all the teaching methods of teaching English language i.e. Translation Cum Grammar Method (TCGM), Direct Method and Bilingual Method at post-test stage.This finding of the study indicates that pupil teachers exposed to CAI achieved higher scores in Teaching of English than who were taught by Conventional Teaching (CT). The reason of such finding may be that CAI provides chance of active participation throughout each unit. It also gives immediate feedback to the learners about their responses, which motivate them to learn effectively. Such a method of teaching reduces the fear from the mind of learning the foreign language i.e. English language in Indian conditions where it is generally found difficult by the learners.

CONCLUSION

The present study adds to the exiting stock of knowledge especially with regards to the application of CAI. The study can be a boon for the pupil teachers where they are generally taught through the lecture method. The findings of the study show that CAI has positive effects in increasing the achievement of pupil teachers in teaching methods of English language. These findings have direct implications for pupil teachers, teachers, teacher educators, administrators and curriculum planners also. Hence in order to promote the further use of CAI training should be given for developing instructional material for CAI. This step can be helpful for them as well as for the students they will teach in future. Training can also be given to the pre-service as well as in-service teachers for developing instructional material for CAI. Development of CAI material should be made part of teaching subjects and the student teachers should develop computer assisted instructional material for at least one unit of a particular class. The teacher educators should motivate the pre-service as well as the in-service teachers to develop positive attitude towards the application of CAI in teaching learning process. Especially at pre-service level of training, the teachers should be motivated towards the use of computers in teaching learning process. The ability of development and application of CAI can improve their interest in the use of computer technology in teaching learning process. The curriculum planners should also include such chapters in the text books that can be converted into Computer Assisted Instructional Material (CAIM) easily. The teachers should be given special instructions by the administrators to teach those particular chapters through CAI. The administrators should motivate the pre-service as well as the in-service teachers to develop positive attitude towards the application of CAI in teaching learning process. The administrators should also arrange the workshops; seminars for in-service teachers to provide them training to develop material for CAI.

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