CHAPTER-III

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3.1. INTRODUCTION

According to John W. Best (1986) the statement of the problem gives direction to the research process and it must be limited enough in scope to make a definite conclusion possible. So the selection of the research topic is followed by refining it into a researchable problem which needs to include definitions of all the terms that could otherwise be misinterpreted. This definition helps to establish the frame of the reference with which the researcher approaches the problem and the logic underlying the investigation and gives direction to the data gathering process.

The researcher must demonstrate why it is worth the time, effort and expense to carry out the proposed research. Therefore, title of the problem, operational definitions of the terms used in the study, objectives, hypotheses, scope, need and importance of the study, limitations and delimitations of the study are dealt with in this chapter.

3.2 TITLE OF THE PROBLEM

“Effectiveness of Computer Assisted Activity Package (CAAP) in Learning Mathematical Concepts by Middle School Slow Learners”

3.3 OPERATIONAL DEFINITION OF THE TERMS USED IN THE STUDY

EFFECTIVENESS

Oxford Dictionary (1975) defines effectiveness as “being able, to bring about the result intended”. The Chambers 21st century Dictionary (1999) defines effectiveness as “having the power to produce or provide a desired result”. According to Cambridge
International Dictionary of English (1996) effectiveness is a “method of achieving something or something that produces the result intended to”. Tang (1999) gives a new dimension of meaning to the term effectiveness.

He defines effectiveness as “the difference between the treated and the control groups in proportion of the events of complete or almost complete overall recovery”. Chambers Twentieth Century Dictionary (1975) defines effectiveness as “being successful in producing a result or effect”.

In this study effectiveness refers to the impressive results in the learning of Mathematical Concepts by Middle School Slow Learners consequent to the treatment of Computer Assisted Activity Package (CAAP). Effectiveness refers to the degree of realization of educational objectives. It also refers to the degree of realization of higher level attainment.

**COMPUTER ASSISTED ACTIVITY PACKAGE (CAAP)**

Computer Assisted Activity Package (CAAP) is basically software programmes developed for self-education, or can be used as a teaching aid. CAAP package is an interaction media play an important role in computer context act as a teacher. CAAP package can provide a more stability presentation. Audience can obtain the message and information in dynamic form through CAAP package. This package will be present in various computer interfaces either in two or three dimension. CAAP package also presents good visual looking with nice graphic and animation. The main objective of this study is to introduce a fundamental of this digital image and a few common methods to process a digital image which have a very wide range of application in learning mathematical concepts. It is a method of learning in which the computer is used by the teacher to facilitate students’ learning.
MATHEMATICS

According to Oxford advanced Learner’s Dictionary Mathematics is a science of numbers, quantity and space, of which e.g. arithmetic is a science of numbers quantity and space, of which e.g. arithmetic, algebra, trigonometry and geometry are branches.

In this study mathematics refers to the selected units prescribed in the eighth standard mathematics syllabus.

LEARNING MATHEMATICAL CONCEPTS

Authentic learning of mathematics through real-world concepts was carried out with a group of students from Eighth standard in middle schools in Tamil Nadu over a series of six one-hour lessons.

Real-world examples related to taxation, foreign exchange, hire purchase, profit and loss, interest rates, and utility bills were introduced as scenarios for discussion and problem-solving of the mathematics questions.

These were infused into the lessons with the teacher skill covering the standard syllabus content. The effectiveness of the authentic learning of mathematics classroom environment was investigated.

**Middle School:** In this study middle school refers to a school at a level between elementary and high school, typically including standards six through eight.

**Slow Learners:** Operationally the term slow learners refers to a child who is doing poorly in school, yet are not eligible for special education is called slow learner. A slow learner is one who does not learn successfully due to general socio cultural problems, language problems, inadequate use of strategies, lack of interest due to family
background, illiterate parents, avoided by parents in early childhood or due to mental weakness etc.

A person who tends to take longer to understand things than the average person or someone who requires multiple explanations before they set a concept can occasionally be wrongly accused.

3.4 OBJECTIVES OF THE STUDY

The major objective of the study is to find out the effectiveness of Computer Assisted Activity Package (CAAP) in learning mathematical concepts by middle school slow learners

SPECIFIC OBJECTIVES

1. To develop a diagnostic test to identify slow learners at middle school level
2. To identify slow learners at middle school level
3. To develop the Computer Assisted Activity Package (CAAP) for teaching Mathematical Concepts to the Middle School Slow Learners.
4. To find out the significant difference between the pre-test mean achievement scores of slow learners of control group students and experimental group students’
5. To find out the significant difference between the post-test mean scores of the control group slow learners and the experimental group slow learners’
6. To find out the significant difference between the pre-test mean scores of the above average students in the control group and the experimental group’

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7. To find out the significant difference between the post-test mean scores of the above average students in both the group

8. To find out the significant difference between the pre-test mean scores of the average students in the control group and the experimental group’

9. To find out the significant difference between the post-test mean scores of the average students in both the group

10. To find out the significant difference in the performance of the control group slow learners in the pre-test and the post-test’

11. To find out the significant difference between the pre-test and the post-test scores in respect of slow learners in the experimental group’

12. To find out the significant difference in the performance of the above average students between the pre-test and the post-test’

13. To find out the significant difference between the pre-test and the post-test scores in respect of above average students in the experimental group’

14. To find out the significant difference in the performance of the average students between the pre-test and the post-test’

15. To find out the significant difference between the pre-test mean scores of control group students and experimental group students as a whole

16. To find out the significant difference between the post-test mean scores of the control group students and the experimental group students as a whole’
18. To find out the significant difference in the pre-test performance among the control group various categories of students i.e. above average students, average students and slow learners

19. To find out the significant difference in the post-test performance among the various categories of students i.e. the above average students, average students and the slow learners in the control group’

20. To find out the significant difference in the pre-test performance among the experimental various categories of students i.e. above average students, average students and slow learners’

21. To find out the significant difference in the mean gain achievement scores of slow learners of control and experimental group

22. To find out the significant difference in the mean gain achievement scores of above average students of control and experimental group

24. To find out the significant difference in the mean gain achievement scores of average students of control and experimental group

25. To find out the opinion among experimental group students towards computer Assisted Activity Package (CAAP)
ASSUMPTIONS

1. It is possible to develop and apply computer assisted activity package to teach mathematics’ at Eighth standard level

2. Achievement of the slow learners increases when mathematics is taught through Computer Assisted Activity Package (CAAP).

3. Computer Assisted Activity Package (CAAP) is effective to various categories of students but the relative effectiveness may differ from category to category.

4. Computer Assisted Activity Package (CAAP) has distinct advantage over the traditional lecture method.

3.5 HYPOTHESES OF THE STUDY

1. There is no significant difference between the pre-test mean achievement scores of slow learners of control group students and experimental group students’

2. There is a significant difference between the post-test mean scores of the control group slow learners and the experimental group slow learners’

3. There is no significant difference between the pre-test mean scores of the above average students in the control group and the experimental group’

4. There is significant difference between the post-test mean scores of the above average students in both the group

5. There is no significant difference between the pre-test mean scores of the average students in the control group and the experimental group’

6. There is significant difference between the post-test mean scores of the average students in both the group
7. There is no significant difference in the performance of the control group slow learners in the pre-test and the post-test’

8. There is significant difference between the pre-test and the post-test scores in respect of slow learners in the experimental group’

9. There is no significant difference in the performance of the above average students between the pre-test and the post-test’

10. There is no significant difference between the pre-test and the post-test scores in respect of above average students in the experimental group’

11. There is no significant difference in the performance of the average students between the pre-test and the post-test’

12. There is significant difference between the pre-test mean scores of control group students and experimental group students as a whole

13. There is no significant difference between the post-test mean scores of the control group various categories of students i.e. above average students, average students and slow learners

14. There is a significant difference in the pre-test performance among the control group various categories of students i.e. the above average students, average students and the slow learners in the control group’
17. There is a significant difference in the pre-test performance among the experimental various categories of students i.e. above average students, average students and slow learners’

18. There is a significant difference in the post-test performance among the various categories of students i.e. the above average students, average students and the slow learners in the experimental group’

19. There is a significant difference in the mean gain achievement scores of slow learners of control and experimental group

20. There is a significant difference in the mean gain achievement scores of above average students of control and experimental group

21. There is a significant difference in the mean gain achievement scores of average students of control and experimental group

22. There exist positive opinion among experimental group students towards computer Assisted Activity Package (CAAP)

3.6 SCOPE OF THE STUDY
The investigator intended to find out the effectiveness of computer assisted activity package for middle school slow learners in learning mathematical concepts. It is evident that the teachers should develop some innovative instructional package to teach the slow learners. Nowadays, it is very essential for the teacher to update themselves to prepare computer based instructional materials which will be flexible enough to meet out the challenges in educating slow learners. In this technology era computer plays a vital role in the teaching and learning process. Computer based education and computer based instruction are the broadest terms and can refer to
virtually any kind of computer use in educational settings. Computer assisted instruction is a self learning technique which involves interaction of the student with programmed instructional materials. It is an interactive instructional technique whereby a computer is used to present the instructional material and monitor the learning that takes place. The slow learners are those who have the ability to learn necessary academic skills at a rate and depth below average of same age peers. They need more time, more repetition and often more resources from teachers to be successful. Modular instruction proves to e suitable for slow learners. It is conducive to slow learners as it provides unique experience to the learners in respect of the presentation of the content. It caters to the individual differences. It ensure the need of slow learners to learn at their own pace and computer assisted activity package will certainly help the slow learners to proceed on their own speed. Realizing this investigator had intended to introduce the computer assisted activity package for the slow learners. The prime focus of the study is to develop computer assisted activity package for the slow learners. The study also aimed at identifying the slow learners. It also focuses its attention to find out the effectiveness of Computer assisted activity package for slow learners. This study also tried to find out the relative effectiveness of computer assisted activity package for above average and average students. Thus the present study assesses the effectiveness of computer assisted activity package for slow learners at secondary level.

3.7 NEED ANDIMPORTANCE OF THE STUDY

The computer is one of the most wonderful inventions of the twentieth century. It has significantly changed many aspects of human life. The effects of this invention have also been seen in education. During the 1990s computers took over many significant roles of human life. Ever since their invention, computers have been
utilized for everything from a basic calculator to the most complex of work in the aerospace industry. This is why many researchers considered computers as the best invention of the twentieth century. Computers have not only been playing many roles in different professional fields but have also made many things possible such as: saving huge amount of data, easing communication, easily doing complex calculations, examining artificial intelligence, and even controlling/running huge plants and factories. Their storage capacity and functionality have been ever increasing. A computer can store everything from a news article to a whole three-hour long movie in their internal or external storage devices. A hugely important function of the computer is that it is designed to enable people to access information quickly. It does not matter whether information is stored within a computer or available online – it can be accessed with ease. Computers are popular because they are user friendly. With just a basic level of training anybody may learn to work a computer. Even children may be able to use them comfortably. Because of these qualities, computers have been widely used in the field of education at all levels. The incorporation of computer technology in education has also triggered many kinds of discussion among educators and researchers. What might be the proper role of computers in education and how much instruction might be based on computers are a few of the questions researchers have been studying recently. Recently studies are being designed to answer some of those questions.

Teaching effectively is the most important of all the competencies required of a successful teacher. Since effective teaching deals with the needs, interest and abilities of pupils as individuals, it requires knowledge of the environment in which the pupil lives. The development problem he or she faces and his / her mental abilities. It is more true so when the teacher is dealing with slow learners. It also calls for an
understanding of the learning process essential for creating an environment where learning can take place and for making instruction so stimulating that every pupil will be motivated to learn. Stimulating pupils to think critically, independently and creatively is essential for effective teaching.

Effective teaching in any subject depends largely upon the introduction of newer methods of instruction. There is growing need for trying out newer methods of instruction and establishing their effectiveness in teaching. Now-a-days a teacher cannot depend on any single method of teaching. The teacher has to try out several innovative methods to present the content to the students. When they are taught by innovative methods the students are able to understand the concept, principles and content in an effective manner.

Computer Assisted Activity Package (CAAP) helps to stimulate interest in learning. It economizes time and effort, reduces verbalism in teaching and imparts broad education to pupils. In the era of instructional technology it is not proper to devise any instructional strategy without media application. The impact made by Computer Assisted Activity Package (CAAP) on achievement of students is immense. Hence there is an urgent need to experiment the effectiveness of Computer Assisted Activity Package (CAAP) and to assess their advantages over the Traditional Lecture method. In Indian settings, studies have been made by Ramar (1996) to establish and to measure the effectiveness of Computer Assisted Activity Package (CAAP). Reddy and Ramar (1994, 1995, and 1996) have substantiated the effectiveness of Computer Assisted Activity Package (CAAP) Approach in teaching mathematics, science and social science to low achievers at class V level. But only handful member of studies are undertaken to all the categories of students i.e. slow learners, Average and Above Average students at Upper Primary level. Systematic researches are therefore
necessary to develop Computer Assisted Activity Package (CAAP) programmes to assess their effectiveness in teaching mathematics to the slow learners and also to measure the relative effectiveness of CAAP for other categories of students.

The present study is an attempt to develop Computer Assisted Activity Package (CAAP) of Mathematics concept for slow learners and to measure their effectiveness and also to assess their advantage over the chalk and talk method. Presently this study will help future researchers to get information and conduct further research in the field of Computer Assisted Activity Package (CAAP) in the area of special education which helps them to suit to the different needs of different special children. Using this study, educators will be able to develop ideas on working with computer based instructional materials. This study would be an addition to the knowledge in the field of computer assisted instruction and to the special education.

3.8 DELIMITATION OF THE STUDY

The delimitations of the study are as follows

1. This study is confined to the Eighth standard slow learners’ students studying Mathematics at Government Higher Secondary school, Puthamboor.

2. The sample consists of only 60 students selected on the basis of their performance in half yearly examination.

3. Only the concept of Triangle and its different kinds, Congruence and Similarity from Eighth standard mathematics subject are included for the study.

4. The experiment is conducted for a period of 30 working days at the rate of one hour per day.

The methodology used in this study is presented in the forthcoming chapter.