5.0 INTRODUCTION

The present study was an exploration in the area of Information and Communication Technology. The investigator has developed a multimedia teaching package in Mathematics and studied its effectiveness for class V students by comparing it with traditional teaching method.

A sample of 100 students of class V of high socio-economic status and moderate intelligence studying in urban private schools was drawn. The detail of research tools used for data collection has been given in the chapter third. In the same chapter, the statistical techniques used for analysis of data have also been given. The present chapter deals with the major findings, conclusions, discussion of the results obtained and implications of the research in the field of education.

5.1 FINDINGS OF THE STUDY

Multimedia plays a vital role in the field of education due to its multisensory approach. It offers opportunities for almost all subjects and especially it provides a good ground for complex subject matter like science and mathematics as we had studied in chapter two. The effectiveness of Multimedia Teaching Package in Mathematics over Traditional method of teaching has been established through the present study. Based on the analysis and interpretation of data, a set of findings and conclusions have been drawn which are presented below:

1. OPINION ABOUT EFFECTIVENESS OF MULTIMEDIA TEACHING PACKAGE IN MATHEMATICS

As the investigator collected opinions from subject experts individually, it has been commented by them that it is convenient to use this package in the classroom. It was further asserted by 80% experts that the level of language distribution, arrangements of topics and sub-topics and color combination is really appreciable. Furthermore it is elicited by 90% subject experts that the examples given in the
package were relevant & interesting and the feedback given in the form of MCQs at the end of each lesson captured the attention of students beautifully. The subject experts appreciated the fact that MMTP elaborate complex concept of mathematics in a simple way and is helpful in removing the fear in students for mathematics subject. Overall the content and presentation both were stated as the strong points of MMTP which further highlights the acceptance of multimedia teaching package. The subject experts also suggested that such provisions should be made that MMTP can be used in daily classroom routine. Certain necessary steps like technical training of teachers, arrangement of resources etc. could be made by the management. They were also of the opinion that provision of such capturing sessions would be given space in time table of schools. Help of trained voice can be taken if necessary in some scenes. It can further be concluded that 79.56% of the experts were agreed for the effectiveness of Multimedia Teaching Package, 8.69% of experts disagree and 11.73% experts remain undecided. Thus findings obtained from opinion scale revealed that most of the experts accepted the effectiveness of multimedia teaching package (MMTP). It is also revealed that MMTP is helpful in strengthening the achievement of students as well as in maintaining the decorum in overcrowded classrooms as is the case of today’s education system.

2. **COMPARISON OF MEAN ACHIEVEMENT SCORES OF EXPERIMENTAL AND CONTROL GROUP BEFORE EXPERIMENTAL TREATMENT**

   I. For this mean, S.D., and t-value were computed. It has been found that the there was no significant difference in the achievement level of two groups namely experimental and control before conducting experiment. It leads to the conclusion that there is no difference in the achievement scores of two groups (E & C) i.e. initially experimental group and control group were similar in their performance.

   II. No significant difference was found in pre-achievement scores of boys of experimental group & control group of fifth graders to be taught through multimedia teaching package and conventional method before experimental treatment. It leads to the inference that boys of two groups (E & C) were
similar in their performance on achievement test before giving the experimental treatment.

III. No significant difference was found in the achievement scores of experimental group girls and control group girls to be taught through multimedia teaching strategy and conventional method before experimental treatment. It leads to the conclusion that there is no difference in the achievement scores of girls of two groups (E & C) i.e. initially experimental and control group girls were similar in their performance

2. EFFECTIVENESS OF MULTIMEDIA TEACHING PACKAGE IN TERMS OF ACHIEVEMENT IN MATHEMATICS

I. After comparing the post-test achievement scores of experimental and control group with the help of t-test, a significant difference was found in both the groups. It discloses the fact that students of experimental group have higher achievement in mathematics than the students of control group. It can therefore be inferred that students who were taught Mathematics through multimedia teaching package show significant improvement in their achievement than the students who received instructions through conventional method of teaching.

II. The post-test achievement scores in mathematics of boys of experimental group and control group of fifth graders differ significantly in favor of experimental group boys. This implies that boys who were taught Mathematics through multimedia teaching package show significant improvement in their achievement than the boys who received instructions through conventional method of teaching.

III. The post test achievement scores of girls of experimental group was found significantly higher than the post test achievement scores of control group. This leads to inference that the girls who were taught through multimedia teaching package show significant improvement in their achievement in mathematics than the girls who received instructions through conventional method.
4. EFFECTIVENESS OF MULTIMEDIA TEACHING PACKAGE IN TERMS OF GAIN ACHIEVEMENT SCORE

I. The mean gain achievement scores in mathematics of experimental group and control group of fifth graders differ significantly in favor of experimental group. This suggests that students who are taught mathematics through multimedia teaching package strategy show significant improvement in their achievement than the students who received instructions through traditional method of teaching.

II. After the comparison of boys of experimental and control group in terms of mean gain achievement scores, it was found that boys of both the groups differ significantly in favor of experimental group boys. It can be revealed that multimedia teaching package is more effective than conventional method of teaching in raising the achievement of boys in mathematics.

III. When girls of experimental and control group were compared on mean gain achievement score it was found that mean gain achievement score of experimental group girls is higher than that of control group girls. This entails that the girls exposed to multimedia teaching package benefited more in their achievement in comparison to the girls exposed to conventional method of teaching.

5.2 CONCLUSION

During the past 10 years, the use of computers in education has increased dramatically and a wide range of educational computer programs are now widely available for individual and classroom use. However, there has been very little research reported on the effectiveness of such use. The purpose of the present study was therefore to ascertain the effectiveness of using multimedia teaching package in mathematics as compared to conventional classroom method. The findings clearly suggest that the inclusion of multimedia teaching package in mathematics for class V students is very effective. It was also found that both the gender i.e. male and female has shown significant improvement in their achievement level after giving experimental treatment with multimedia teaching package. The finding of the study is supported by the findings of previous studies in which students learned academic material (subjects) using multimedia teaching package performed significantly better.
than those taught using the traditional method. Specifically, Semra (2012) demonstrated that teaching mathematics with a computer assisted instruction method increased student success significantly in mathematics lesson. Also, Ada, Faith & Victoria (2012) found that students taught using (CAI) package performed significantly better than their counterparts taught using the conventional method of instruction. Based on the findings it was recommended that Computer-Assisted Programme should be encouraged for teaching and learning of mathematics. In addition, these findings are consistent with Philip, Jackson & Dave (2011), who revealed that computer-assisted instruction (CAI) enhances student achievement, promotes positive attitudes towards Mathematics and instruction, and improves interpersonal relations. Precisely, it can be said that multimedia teaching package (MMTP) provides greater opportunities for the students to learn. It is better than the traditional method of learning. It brings an enhancement in achievement and provides new multisensory learning experiences.

5.3 EDUCATIONAL IMPLICATIONS

Teaching at school as well as higher level mostly concentrates on giving information which is not the sole objective of teaching. Along with giving information, the other objectives are: developing understanding & application of the concepts; developing expression power; developing reasoning & thinking power; development of judgment & decision making ability; improving comprehension, speed and vocabulary and developing tolerance and ambiguity, risk taking capacity, scientific temper, etc. With the present infrastructure, class size, availability of teachers, quality of teachers, training of teachers, etc., it is difficult to achieve all the objectives. Further, most of the teachers use conventional method which does not have potentiality of achieving majority of above mentioned objectives.

The objectives are multi-dimensional in nature, so for their achievement, multiple methods should be used in an integrated fashion. It is a well known fact that not a single teacher is capable of giving up-to-date and complete information in his own subject. The ICT can fill this gap because it can provide access to different sources of information. It will provide correct information as comprehensive as possible in different formats with different examples. Multimedia teaching package also provides online interaction facility. Students and teachers can exchange their
ideas and views, and get clarification on any topic from different experts, practitioners, etc. It helps learners to broaden the information base. Multimedia teaching package provides variety in the presentation of content which helps learners in concentration, better understanding, and long retention of information which is not possible otherwise. The learners can get opportunity to work on any live project with learners and experts from other countries. The package also provides flexibility to learners, which is denied by the conventional method and is a must for mastery learning. On Internet, many websites are available freely which may be utilized by teachers and students for understanding different concepts, improving vocabulary, developing reasoning and thinking, etc. The present study has a wide range of implementation in the field of education. Some of the implications are given below:

- The use of multimedia teaching package (MMTP) leads to positive attitude of teachers as well as students towards ICT. Thus, when taught through MMTP the students feel more involved in studies, which help significantly in raising their achievement.

- With the help of multimedia teaching package, the teacher is freed of the administration burden. They thus, would be able to devote more time to the task of helping students for which they are trained. Moreover, the students will also enjoy their course of study.

- Traditional method of teaching if supplemented with multimedia teaching package can prove to be more effective in enhancing achievement. It would be helpful in enhancing the aspects of teaching through presentation of information in different ways and forms.

- Multimedia teaching package mode of teaching needs to be introduced for teaching mathematics as it significantly enhance academic achievement among pupils.

- ICT used learning sessions in class may act as a source of edutainment (education plus entertainment) as well. The sessions may include games, recreational activities like solving puzzles and riddles, holding group discussions on some general topics to create interest among students. This makes the teacher more resourceful.
Important skills such as critical thinking, creative problem solving and synthesis of knowledge can easily be attained through ICT assisted learning in the classroom.

Quality computer, which include colourful animation, graphics display form a versatile and effective alternative change in instructional strategy. The careful incorporation of computer for teaching mathematics course will help the students to grasp the basic concepts of mathematics.

Psycho motor skills can be learnt better through electronic media and communication technologies because they work as a live teacher and guide the learners more effectively.

Multimedia teaching package if find a permanent place in school time table can be proved as a boon in today’s overcrowded classrooms. With the help of it, pupils can manipulate and make changes to information on computers so that they can develop understanding of the relationship between different types of information.

5.4 SUGGESTIONS FOR FURTHER RESEARCH

In India, the use of ICT in education has remained almost completely unexplored. Very few studies have been conducted in this direction. Based on the findings of the current study, some of the suggestions in the area of multimedia teaching package are identified as follows:

5.4(a) Suggestions for Planners

- Potential of multimedia teaching package should be utilized to enhance quality of education at all the levels of education viz Primary, Secondary and Higher.

- Government should also establish multimedia teaching package portal in various organisations such as Institutes of education and research, curriculum wing, text book boards, curriculum research and development centres, and educational universities. These departments may conduct research studies and make efforts to develop multimedia teaching package software.

- Private organizations can step forward to educational software development if copyright act prevails and a system to check the software piracy is established.
• Government should offer incentives for teachers who increase their proficiency in computer studies and contribute to enhance multimedia teaching package.

• There is a scarcity of literature about multimedia teaching package in the libraries of our institutions. Steps should be taken to meet the needs of the literature. There are a number of multimedia teaching package learning journals, which can be purchased or subscribed for the libraries.

5.4(b) Suggestions for Optimization of ICT

• Teachers should be aware of preparation of ICT, motivate students to use ICT, should have faith in recent innovations in ICT and should actively participate in training related to ICT.

• Personal with expertise in pedagogy and computer programming are needed to benefit from multimedia teaching package. Hence, teacher education institutions are required to introduce courses to prepare teachers equipped with pedagogy and computer programming skills.

• In-service teachers should be given computer literacy training through refresher courses. It is necessary to develop a culture for better utilization of computer in teaching learning process.

• Institutions should have appropriate ICT and good physical facilities for using ICT.

• Free accessibility to educational web sites should be provided to students. Speed of Internet should be increased, more number of educational websites should be created and web space should be provided to researchers to upload their research articles at concessional rate.

• Students should be allowed to use computers with Internet facility and information technology course should be a part of curriculum.
5.4(c) Suggestion for Further Research

- The present study has been conducted only on limited topics of mathematics syllabus; more studies may be conducted involving larger content of the curriculum and different subjects.
- The present study has been conducted on class V. To confirm the findings of present study, it is desirable to investigate the effect of multimedia teaching package on achievement of learners of different grade level and subject area.
- Further research can be conducted to explore the effectiveness of multimedia teaching package on disadvantaged groups such as backward, low achievers, mentally retarded and gifted.
- Effectiveness of multimedia teaching package may be studied in relation to other variables, such as group size, creativity, economic background, age, cognitive style, personality and classroom climate etc.
- The study indicates that multimedia teaching package is an effective intervention for improving student’s academic achievement. Further, research is needed to predict and explain how multimedia teaching package strategy can become more effective instructional tool.
- The study may be replicated on rural, tribal and slum population, where chances of drop outs and failures are high.

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