CHAPTER – V

SUMMARY & CONCLUSIONS

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5.0 INTRODUCTION:

We are in the twenty first century. We called this century as an information age Rapid change in technology changes our life style and values now technology changes our life style and values. Now technology have been changed educational fields. It gives new thoughts, new teaching methods, it provided new teaching aids. This causes evolution in education field.

Modeling and simulation is another area where computers are increasingly used. This has greatly accelerated research in such areas as physical and social sciences, medicine, astronomy etc.

As computer are a bank of variety of information and converse with the users, they are being used as resources in teaching and being used as resource in teaching and learning at all levels of education and training. This process is known as Computer Assisted Learning (CAL).

Computers are also used to manage the learning Process. This is called computer managed learning (CML). Computers can

store students response, value his performance and then admit him to the next learning unit.

5.1 ABOUT THE RESEARCH –

5.1.1 STATEMENT OF PROBLEM

"Development of Text Based Computer Software in Mathematics to teach Algebra for eighth standard of Maharashtra State" – A Study.

In view of above background a systematic study has been planned to use computer to teach Algebra of VIII Standard Students. The suitability of the computer to teach Algebra at high school level will be tested by comparing students taught by traditional method and by computer method.

5.1.2 DEFINITION OF THE TERMS

The operational definition of the terms used in the statement of the problem are defined for the sake of clarity as follows:-

1. **Development –**

The term 'Development' includes planning, designing, constructing and testing the package.

2. **Software –**

A set of program that can run in a computer is called

software. According to dissertation, software is an instructional material based on text book of Algebra of eighth standard.

3. Computer –

Computer is a machine that stores and processes information, performs desired calculations electronically and at a very high rate of speed.

4. Teach –

Teach means to organize experiences together which help students in getting experience.

The study is experimental in nature. The experiment involves the comparison of experimental group and other is the controlled group. The groups are equated as nearly as possible by using the random sampling method. To find out which treatment is better out of the two treatments, the experimental group is exposed to CAI method and the controlled group is exposed to the traditional method. Observations are then made to determining the effect of both the treatments.

In the present work forty students were divided into two groups namely, 'Experimental Group' and 'controlled' Group. The students from experimental group were taught by using the visual basic software for the less of Algebra before teaching the some topic in their school by CAI. The 20 students of controlled

group were taught through traditional lecture method by their regular teacher. For both the groups pre-test were analysed with the help of statistical measures like mean, Sd and 't' test. The sample was drawn from Urban area.

5.1.3 OBJECTIVES OF THE STUDY

1) To analyse the course content of Algebra of VIII standard.
2) To prepare text based software in Algebra for VIII standard.
3) To study the effectiveness of Text Based Software.

5.1.4 HYPOTHESIS TESTED

1. There is no significant difference in the performance of Algebra by two methods.
2. There is no significant difference in case of boys in performance of Algebra by two method.
3. There is no significant difference in the performance in Algebra in the experimental and controlled group.
4. There is no significant sex difference in the ability to learn through computer.

5.1.3 SCOPE AND LIMITATIONS OF THE STUDY

1) The sample comprised of only Marathi medium eighth standard students.

2) Only 40 students have taken at random. In these 20 will be taken up for experimentation.
3) The study is limited to fifth and thirteenth chapter of eighth standard Algebra book of Maharashtra Secondary School Board, Pune, which pertains to Algebra. The name of the chapters are Identities expansion and Identities Factors.

5.1.5 SIGNIFICANCE OF THE STUDY –

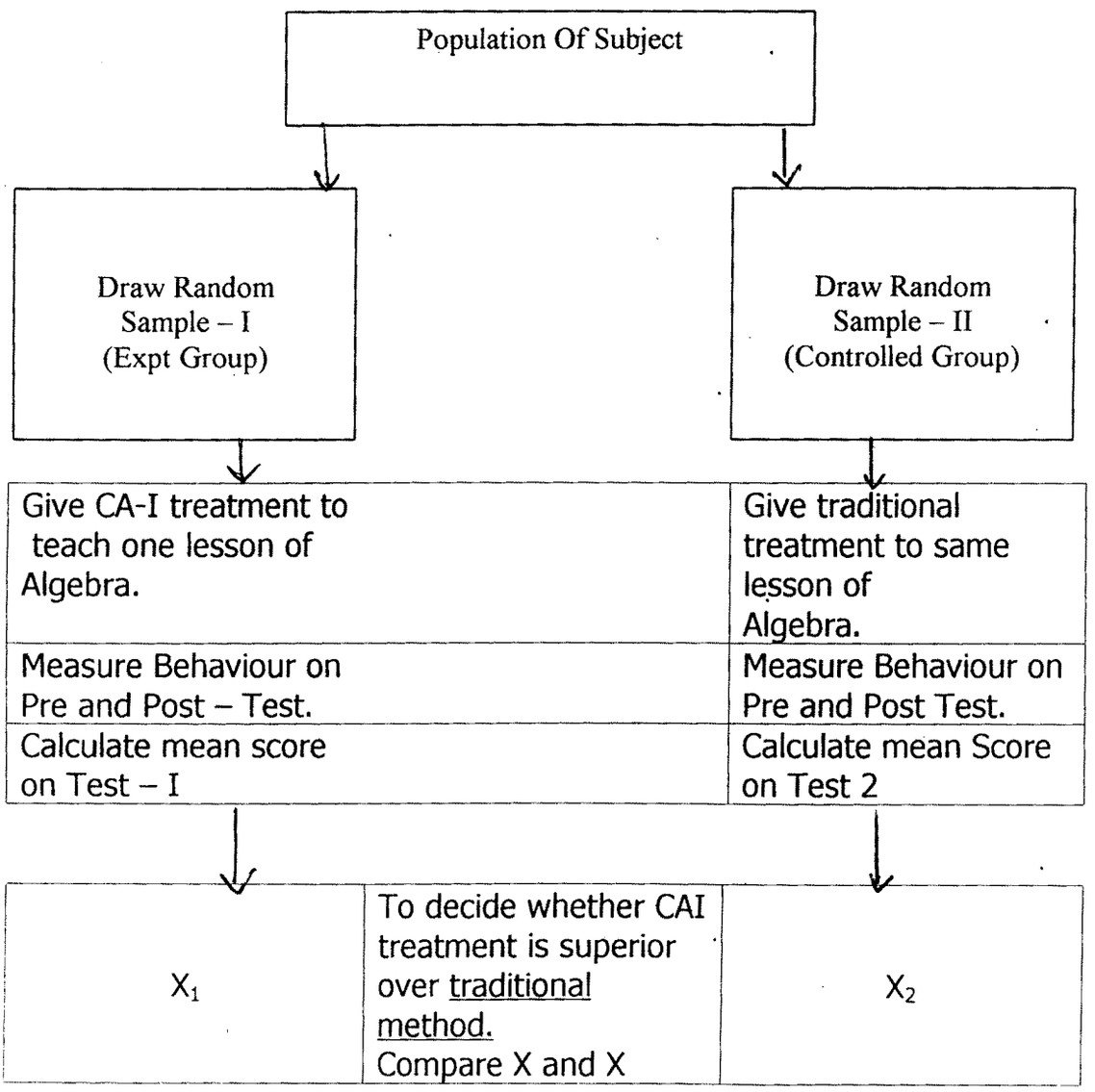
1) It is important to clear the Algebra concepts of the student at high school level which will help in engineering or science education. This will help to understand complex structures.
2) The software is developed in 'Visual Basic' language one concept at a place randomly.
3) Generally the software required are developed by computer experts. There are some deficiencies which teacher will experience while teaching. So, Investigator as a mathematics teacher has developed the software by keeping in mind the process involved in the teaching / learning of Algebra concepts and other classroom problems.

5.2 DESIGN OF THE STUDY

5.2.1 Research Design-

The design procedure of the study is as shown in the following block diagram, where step by step development of the research is given in detail :

BLOCK DIAGRAM TO SHOW DESIGN PROCEDURE



5.2.2 DATA GATHRING TOOLS :- SAMPLE

A random sample of 40 students studying in Eighth Standard of division A of Susanskar High School. Kolhapur constituted the sample of study. Out of these forty students twenty were considered for experimental group and twenty were considered for controlled group and twenty were considered for controlled group Equal number of boys and girls were selected in experimental and controlled group.

5.2.3 DATA GATHRING TOOLS :-

5.2.3.1 PRE – TEST

Pre – Test was administered before teaching the topic and it was paper-pen in nature. It was administered to understand basic Algebra Concepts to the students regarding the Identities equation and Identities- expansion time for the Pre – Test was 45 minutes. The test was of 30 marks. It was objective and descriptive in nature. There were following types of questions namely –

Q. No. 1 Fill in the blanks

Q. No. 2 Match the following

Q. No. 3 Solve the following examples (Any Five)

The question paper of the pre – test was shown to the mathematics teacher of the school and suggestions and opinions

were taken into consideration. The test was conducted by the researcher with the assistance of the teacher in the school. For both groups pre – test was administered at the same time.

5.2.3.2 POST – TEST :-

Post – Test was administered after teaching the topic. For both groups post – test was administered at the same time it was administered to judge the knowledge got by student regarding the topic by using the particular method. Time given for the test was 45 minutes and it was 30 marks. It conceits of questions like

Q. No. 1 Solve the following examples (Any Five)

Q. No. 2 Solve the following examples (Any Four)

Q. No. 3 Solve the following example (Any Two)

5.2.4 TECHNIQUES USED FOR ANALYZING OF DATA :

The data obtained from pre – test and post – test of the "controlled group and experimental group" analysed by using suitable statistical techniques. The average (means) of scores, standard deviation of scores, t-test, f-test were applied for comparison of two groups and two methods.

5.3 FINDINGS OF THE STUDY

1) The pre – test was administered for both the group and it was found that the performance of both group were same. The 't' test analysis supports this statement .

2) The t-test of experimental group and controlled group scores reveled that there is significant difference of scores between the CAI method and traditional method.

3) From the means of both the groups it is obscured that CAI method is more effective than traditional method.

4) There is no significant difference regarding the effectiveness of CAI method between boys and girls of experimental group.

5) There is no significant difference regarding the effectiveness of traditional method between boys and girls of controlled group.

6) A computer programme can be prepared on text of mathematics.

7) Computer can be used as actual of teaching and learning mathematics.

5.4 DISCUSSION AND INTERPRETATION OF THE RESULTS

The sample was drawn from HIGH SCHOOL, KOLHAPUR. The pre-test was carried out to check the basic knowledge of

experimental and control group students regarding algebra. The results of pre-test reveals that both groups are equal regarding their performance in algebra, which indicates that the two groups are of equal ability in the subject.

The post-test was carried out for experimental group and control group which are taught by CAI and regular classroom method respectively. The analysis of post-test was done question wise. The performance of two groups was considered. The performance of experimental group for question on "Identities-Factor" and "Identities-Expansion" was better than control group. The better performance of experimental group may be because of better representation of subject through computer graphics as compared to the traditional classroom method or may be because of learner get experienced according t their own speed.

The overall performance of the experimental group and control group was analysed by 't' test which reveals that the experimental group performs better than the control group which may be understand by question wise analysis.

But in case of experimental group the human interaction between the teacher and the taught is less as compared to the controlled group. But a computer can be used for slow learner who can get experiences according to his / her own speed.

It may be pointed out here that the findings of the study should be verified on a large sample. As this study was confined only Marathi Medium students of Kolhapur the sample happened to be small in number. A study with a large. Sample consisting of Marathi Medium students could not be undertaken due to restriction of time and resources.

It may be further pointed that in this study students attitude towards computer and opinion about the use of this medium (Computer) has not been studied. This calls for further investigation. Since, opinion and attitude effects attention, concentration etc. while learning through electronic medium, the computer

OVERALL PERFORMANCE COMPARISON OF TWO GROUPS

Sr. No.	Level of Significance	't' value related to overall performance performance
1.	0.05	2.861
1.	0.01	3.11

5.5 EDUCATIONAL IMPLICATIONS

Every one does not need to learn programming, yet everybody in education must learn about computers.

Computer literacy is easier to acquire if children begin learning about computers at an early age. The young children can gain familiarity with computer. In addition many elementary schools have successfully taught programming to children, learning to write a simple game program can teach a child some fundamental programming concepts such as selection, branching, interaction and nesting.

Computers in Education is no more equated with learning by programming language. The development in the field enables everyone to use computer and enhance one to use computer and enhance their efficiency and effectiveness.

In the field of Education, computer can be used for-

[A] 1) Revision of difficult topics

2) For slow learners.

3) For remedial teaching and narrowing gap between slow and bright learners.

4) For model of real life examples and experiments can be done with computer.

5) For repetition of experiments such as these can be performed only in real life.

[B] Computers are used in a wide variety of modem system which require different levels of training and specializations therefore educational qualifications for each level must be specified.

[C] The Shortage of teachers with computer training limits both the use and production of CBL materials. Government must provide computer training to teacher in the school. To motivate the teachers they may five some sort of intensive for upgrade themselves in computers.

[D] Computer education should be offered in rural sector. Computer is one of the major instrument for monitoring information. Computer education ha a tremendous effect on the development of thinking algorithm. Indian development can not be isolated from development of rural children (Mukhopadhyay in 1990 Educational Technology, Aug. 1990).

[E] All children must be given computer education and teacher must be giver incentives to train themselves in this field they are by being given increments and at least six months training with slary. (Kulendiar Swamy, Vice chancellor of India Gandhi Open University)

5.6. SUGGESTION FOR FURTHER RESEARCH

While working on any problem, the research worker has some constraints because of which it is not possible to

complete the work in all respects. In the present study the limitation have been mentioned previously which limits the scope of this dissertation. It is very essential to give the footnote for the further study.

1) The study may be repeated involving large number of sample in the form of a research project.

2) The study may be conducted on the rural sample on the same time.

3) While considering the student performance teachers motivation towards computer based education many also be studied.

4) The comparative study may be conducted on the Marathi Medium Students and on English Medium Students to find out whether language has any effect on learning through computers.

5) For the development of software 'C' language may be use for the further experimentation.

If it is found that in each and every subject, learning through computer is more effective than learning through traditional method, by using a computer and floppies of corresponding subjects, students can learn in home, instead of going to

school. By this method students can learn with their own pace and time.