ABSTRACT

Mathematics is a very important subject for human society. It is the subject which has its own culture. Mathematics helps person to develop his logical abilities and so it plays very significant role for development of human civilization. In this technological era, the thinking of teacher is changing from ‘Dispenser of knowledge’ that of an ‘information manager’. Internet has become keyword of this information technological age. In every sphere human being is using computer with internet to get good results in a short period. It has become responsibility of the teachers that he or she tries to update knowledge about computer and use it in his or her classroom teaching. Now today use of internet, mathematical software and other technology in the field of education has become the necessity for learners. It will be beneficial to both the teachers and the students to use mathematical software as a teaching assistance in the field of education. The teaching programme used with the software / model which encourages fluent, flexible and original thinking. It also develops students’ logical thinking. Under this technological approach students will become more and more productive, creative and self reliant. This provided the theoretical support for pedagogical programme by using mathematical software / model. This research study carries out by us is to investigate the impact of mathematical software / model on the second year mathematics slow learner students.

This study, consist of six parts such as; i) To find out slow learners in mathematics at undergraduate level, ii) To collect information of free mathematical software from internet, iii) To develop mathematical model for teaching programme, iv) Implementation of mathematical software and mathematical model on slow learners in mathematics at undergraduate level, v) To verify the efficacy of these mathematical software and mathematical model, vi) To compare self-developed mathematical model with readymade mathematical software. The use of computer, scientific calculator and mathematical software in education has tremendously grown over the last three decades. We have prepared four topics from Linear Algebra, but we focused our study mainly on the students of S. Y. B. Sc. mathematics class from Savitribai Phule Pune University. Mathematical software \textbf{fx-CG20} and mathematical model (Basic Linear
Algebra Software) are used for teaching programme because these software are user-friendly, easy to carry and easily used in regular classroom teaching and in laboratory work. These models and software are useful in urban as well as in rural areas. Mathematical model (Basic Linear Algebra Software) is simple and easy to understand. Mathematical model (Basic Linear Algebra Software) is developed by using Java programming language and basic logical concepts in Linear Algebra, viz. reduced row-echelon form, linearly independent set, row basis & column basis, rank and nullity of the matrix.

As per the objectives of present research study, the post-test-only equivalent-groups design from True experimental design is useful for testing the population mean. This design is one of the simplest and most powerful experimental designs. We have selected 80 slow learners out of the 203 students by diagnostic test for the experiment. These 80 slow learners are equally divided into control and experimental groups. These equal groups made by getting equal pair from score in the diagnostic test. From these two groups one group was selected randomly as experimental group and other as control group. Tools used by us to collect the data are i) Mathematical software fx-CG20 ii) Mathematical model(Basic Linear Algebra Software), ii) Teaching programme developed by the researcher, iii) Teacher made achievement test and statistical tools are mean, variance, S.D., t-test z-test and C. V.

There are two groups under consideration. One experimental group which is taught by using mathematical software / model and other is the control group which taught by without mathematical software / model. Both groups are treated in the usual manner. They are asked to be regular, punctual and neat in their work. Whenever there is an execution of the experiment, students are informed well before. Regular, Sincere and continuous efforts will yield good result and better learning process. During the implementation of teaching programme by using mathematical software/model, we recorded some observations at the time of the experiment. After completion of teaching programme the achievement test in mathematics was administered to both groups under the experiment at the same time.

We analyzed the data in following way:

i) Mean and variance calculate,
ii) The common variance and standard deviation calculate,

iii) The value of ‘t’ calculate,

iv) The value of ‘z’ calculates,

v) The degree of freedom calculates,

vi) To check efficacy of treatment (mathematical software / model) on achievement of different groups,

vii) C.V. of both software and model calculate.

By analyzing data, we observed that the use of mathematical software in teaching programme have significant effect for promoting mathematical thinking among the slow learners at undergraduate level. The effect of area and sex for promoting mathematical thinking was not significant. Furthermore another observation is that the mathematical model (Basic Linear Algebra Software) is better than the mathematical software \(fx-CG20\) for promoting mathematical thinking.

Our recommendation are based on these observations: 1) Mathematics teacher should develop the mathematical model and use them in their teaching and learning processes, 2) Special grants should be provided by the government for the development of the mathematics laboratory well-equipped with software, LCD projector, smart board etc. in all education institutes for all subjects, 3) U.G.C./Government should arrange seminars and workshops on mathematical software for mathematics teachers at district level, 4) A specific curriculum in the form of weight age shall be prescribed as regular syllabus for use of mathematical software and make it mandatory for the students to complete.