Everybody says that Mathematics is an abstract of science. The learning of Mathematics needs logical thinking and special skills like manipulation. The teaching of Mathematics also needs special attention towards analysis, synthesis and interpretation. The invention of computer is a gift to human functions and abilities, now every individual can compute complex mathematical operation very easily with computers. Owing these facts the researcher felt that there is an need to know the effectiveness of teaching Mathematics through Mathetics style of programmed learning material and instructional software package thereby to help the teaching – learning of Mathematics (Arithmetic units) more effectively and more meaningful. Hence the researcher has made an attempt to achieve the following framed objectives, they are: 1. To analyze and finalize the content for developing the material. 2. To develop mathetics style of programmed learning software material in arithmetic achievement in mathematics. 3. To finalize the developed software material for a final tryout. With several approaches with the software designer, the researcher developed the software material and the same were finalized with the experts. Afterwards the same material is used for group tryout.
1. INTRODUCTION

“Mathematics is the science of numbers and their operations, interrelations, combinations, generalizations and abstractions and of space configuration and their structure, measurement, transformations and generalizations.” - Webster’s Dictionary.

**Arithmetic** or **arithmetic’s** (from the Greek arithmos, "number") is the oldest and most elementary branch of mathematics. It consists of the study of numbers, especially the properties of the traditional operations between them—addition, subtraction, multiplication and division. Arithmetic is an elementary part of number theory, and number theory is considered to be one of the top-level divisions of modern mathematics, along with algebra, geometry, and analysis. The terms arithmetic and higher arithmetic were used until the beginning of the 20th century as synonyms for number theory and are sometimes still used to refer to a wider part of number theory. Arithmetic is an integral part of the Mathematics curriculum both at the high school as well as the early college level. At these levels, it is often called 'General mathematics' which is an introduction to a wide variety of fundamental concepts that enable the student to acquire tools and skills useful at the advanced levels, whereby Arithmetic is invariably studied in any of its various sub-disciplines.

2. NEED AND SIGNIFICANCE OF THE STUDY

Everybody says that Mathematics is an abstract of science. The learning of Mathematics needs logical thinking and special skills like manipulation. The teaching of Mathematics also needs special attention towards analysis, synthesis and interpretation. During the last two decades researchers became increasingly aware of the important role of teachers play for students achievement (Lagrange et al., 2003, p.257). The invention of computer is a gift to human functions and abilities, now every individual can compute complex mathematical operation very easily with computers. Owing these facts the researcher felt that there is an need to know the effectiveness of teaching Mathematics through Mathetics style of programmed learning material and instructional software package thereby to help the teaching – learning of Mathematics (Arithmetic units) more effectively and more meaningful.

3. REVIEW OF RELATED LITERATURE

**Sharma Sumita (2005): Title of the study:** “To prepare instructional package to teach environmental studies to students of Std. VII”. This study determines the effectiveness of the instructional package in promoting better understanding of the environment. The instructional package was found effective in promoting a better understanding of the environment. The analysis of the responses of the students through the interview schedule revealed an increased sensitivity towards environmental concerns of the environment.

**Dr.Neelam luthra and Shivani mahajan( 2012) Educational Research Vol.X,ISSN 0976-9994:** Title of the study: “Effectiveness of instructional programme in spoken English for class IX students”.

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**Dr. Nagaratna S :: Design of Mathetics Programmed Software Material in Teaching of Arithmetic in Mathematics**
Nagaratna S (2016): Conducted study on development and validation of mathetics style of programmed learning material in arithmetic for 10th standard. The investigator has detailed out the steps for developing mathetics programmed material. After suggestions and several reviews the researcher finalized the material in arithmetic and the same were validated with their suggestions. The Mathetics style of programme on arithmetic units was developed and validated by researcher. The programme material has been an effective instrument for making the students of 10th standard to learn arithmetic in mathematics. Mathetics style of programme material is very useful in the field of teaching Mathematics.

4. OPERATIONAL TERMS DEFINED

⇒ Mathetics style of programme: (MSP) : The word mathetics has been derived from the Greek word ‘Mathein’ which means to learn. In the MSP the students are first given the demonstrated exercise and then prompted exercise and finally released exercise. Thus in the MSP the students learn, but at their own pace. In this programme the researcher made the form of educational programme for teaching arithmetic units by the means of frames. The MSP included the user manual, unit test and the answer key.

⇒ Mathetics as Computer assisted instruction (Software): The mathetics style of programmed learning software prepared in arithmetic units of X std. CBSE English medium in Mathematics. The software includes user manual, unit test and the answer key.

⇒ Arithmetic: Arithmetic contains many concepts. In the present study included all the concepts of arithmetic of 10th Std. CBSE syllabus will be selected for instructions. The word arithmetic suggests arithmos means “number” it is oldest and most elementary branch of mathematics. Arithmetic’s was the content to teach the concepts in detail.

⇒ Impact: It may be defined as a formal process used to predict the MSP package. MSP package development impacts such as arithmetic achievement.

⇒ Mathematics: According to International dictionary of Education, “Mathematics is a science of magnitude and number.” For the present study, the word mathematics means: one of the compulsory subjects which as taught to the students of 10th std. prescribed by CBSE textbook.

5. OBJECTIVES

[1] To analyze and finalize the content for developing the material.
[2] To develop mathetics style of programmed learning software material in arithmetic achievement in mathematics.
[3] To finalize the developed software material for a final tryout.

6. DEVELOPMENT OF DESIGN IN MATHETICS STYLE OF PROGRAMMED LEARNING MATERIAL
The researcher created the flow chart and then prepared the software with the help of software experts. The flow chart showing the details of mechanism of validated programmed learning material as shown below:

**Development of platforms of software:**

**Screen shots of mathetics style of programme learning software**

This is the first view after software CD installation by the student.
Screen shots -1: Login page for users/students.
Once it is installed, login page in which user name and password need to be provided to login for the student.

Just after logging the student would be able to see this page in the software.

Screen shots -2: Instruction screen.

Screen shot-3: Instructions for the students.
Screen shot-3: this screen provides instructions, after reading instructions student click the contents button the next screen will be opened.
Dr. Nagaratna S :: Design of Mathetics Programmed Software Material in Teaching of Arithmetic in Mathematics
In this way student learn mathetics style of programmed learning software.

7. LIMITATIONS OF THE STUDY

1) The mathetics style of programme learning material and software is confined to 10th std. CBSE school students.
2) Only Arithmetic units is considered for the present study.
3) A comparative study can be conducted to find the effectiveness of various self-learning strategies with that of conventional method of teaching.

8. CONCLUSION

Researcher came to know through this study that traditional method of teaching Mathematics will not be effective to the students. Modern methods like CAI and programmed instruction method should be adopted. The programme software material has
been an effective instrument for making the students of Xth standard to learn arithmetic in mathematics. Mathetics style of programme software is very useful in the field of teaching Mathematics.

9. REFERENCES


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