CHAPTER 6

SUMMARY

Introduction

Time and again, a sharp decline has been reported by educationists in mathematics education at primary, secondary and degree levels. Therefore, in the present fast-growing field of education besides teaching students, teacher himself needs learning in order to acquire latest knowledge and techniques of teaching so that he may effectively teach his students making them successful in their future life. A successful teacher believes that effectiveness of teaching can be increased by offering a variety of intellectual challenges to meet students’ needs.

The traditional methods in teaching as well as learning, call for drastic changes in the modern age. The expansion of knowledge and aspirations of generations are fast developing in these years of fast changing world. The equalization of educational opportunities has emerged as vital democratic concepts. Hence, the traditional and authoritarian approach can no longer persist in any democratic institution. These conditions are bound to bring about innovative changes in teaching learning methods.

As evidenced by psychological findings, the quality of education largely depends upon effective teaching and learning methods therefore we have to tune to a strategy of educational methodology evolving new techniques in teaching and learning.

Statement of the problem

Problem of the study has been stated, “Evolving Methodology of Mathematics Teaching at Intermediate Level and Its Validation”.
**Objectives of the study**

The present study has two main objectives. It has been given in the succeeding lines:

1) To identify an effective methodology of mathematics teaching at intermediate level.

Achievement of the objective was based on the following sub-objectives:

1.1) To identify total number of questions and types of questions used by effective mathematics teachers teaching at intermediate level.

1.2) To identify teaching techniques of effective mathematics teaching at Intermediate level.

1.3) To validate the evolved effective methodology by the researcher.

2) To compare the academic achievement of students taught through evolved method and traditional method.

**Hypothesis**

Ho : There is no significant difference in the academic achievement of students taught through identified traditional method and evolved method.

**Delimitation of the study**

Delimitation is a term; its meaning in research refers a boundary or a limit. Delimitation brings precision and minimizes confusion at every step of the research. In succeeding lines the researcher has mentioned the delimitations of her study.
1. The study was delimited to C.B.S.E affiliated senior secondary schools situated in the Faridabad district of Haryana.
2. The study was delimited to intermediate class only.
3. The study was delimited to mathematics lessons taught by effective teachers to intermediate classes.
4. The study was delimited to conic sections.
5. The study was delimited to observation method of data collection.
6. The study was delimited to survey method of research.
7. The study was delimited to purposive sampling technique.

**Research Method**

To hit the problem of the present study the researcher has used the survey method of research.

**Population of The Study**

The population of the present study consisted of all teachers teaching mathematics at C.B.S.E affiliated senior secondary schools situated in National Capital region. So the findings were generalized on mathematics teacher teaching mathematics at C.B.S.E affiliated senior secondary schools regarding mathematics teaching methodology.

**Sample of The Study**

In the present study, the sample was decided in two phases. In the first phase of the sampling, all mathematics teachers with teaching experience five years and above were included in the sample of the study. In the second and final phase of the sample 45 effective mathematics
teachers with 80% and above scores on presage process and 80% and above score on product criterion of teacher effectiveness were selected as sample unit of study. Total number of such teachers formed the sample unit.

**Sampling Technique**

Purposive sampling technique was applied in selecting sample of the study.

**Tools Used**

The researcher has selected following tools from the available tools, which will provide the data that she requires –

a) Teacher’s Profile.

b) Student’s Rating Scale.

c) Manual recordings (Observation) of the classroom teaching with the help of stenographer.

d) Achievement test.

**Statistical Techniques Used:**

Percentage as descriptive statistical technique, mean, S.D and t-test were used in the study.

**Findings of the Study:**

On the basis of the analysis of the data concerning mathematics lessons taught by the mathematics teachers following findings were drawn:

- The highest percentage of teaching method used by teachers of mathematics at senior secondary level is integrated method.
• Teaching methods can be turned into very effective teaching methods only by using the right combination of teaching techniques and skills.

• What teachers do in the classroom affects pupils’ achievement.

• The effectiveness of any teaching method largely depends upon the qualities of the teacher. How the teacher has used the method in her pedagogy. Classroom observation gradually started to find patterns which indicated that more effective teachers tended to actively teach the whole class.

• Effectiveness of a method is associated with a number of general Teacher teaching factors such as:
  ✓ Good subject knowledge
  ✓ Good questioning skills
  ✓ Good teaching techniques
  ✓ Good time management
  ✓ Effective planning
  ✓ Good classroom organization

• The effective teaching components, which make a method effective, are: Structured teaching; covering only one curriculum area at a time; High levels of interaction with the whole class; providing ample, challenging work; High levels of pupil involvement in tasks; a positive atmosphere in the classroom; High levels of praise and encouragement.

• Methods which used class interactions and factual questioning as teaching techniques proved to be effective.

• Questioning and answering technique is effective at the senior secondary level in mathematics. The following points make this method more effective:
• When and How Often to Use Questioning
• Eliciting a Student Response
• The Cognitive Level of Questions
• Open and Closed Questions
• Responses to Answers
• Prompting
• What is the Correct Wait Time?

• Good classroom management creates the conditions under which high quality teaching and learning can occur.
• Right momentum can be sustained by good lesson planning on the part of the teacher and avoiding over dwelling.
• Classroom climate is also one of the important aspect of effective teaching. A good learning atmosphere is created through the rules that are set out, the way the teacher interacts with students, and the way the physical environment is set out.
• An important component of effective method is the enthusiasm shown by the teacher. If the teacher him/herself is unenthusiastic about the subject or lesson being taught, this attitude is likely to rub off on students. Teachers who enjoy teaching and their subject and can put their enthusiasm across are more likely to motivate their students.
• The lesson should have a clear structure, so students can easily understand the content of the lesson and how it relates to what they already know. The lesson should be started with review and practice of what was learnt during the previous lesson for example by going over homework, as this will allow the teacher to find out to what extent students have grasped the content of previous lessons, and therefore to what extent this content will need to be
retaught. At the end of the lesson the main points should once again be summarized, either by the teacher, or, preferably by the students themselves, e.g. through asking them what they have learnt during the lesson.

- Pacing of the lesson is an important part of effective direct instruction. For more demanding content the pacing needs to be slower to allow students more time to develop understanding. The proper intonation is also very important aspect to make the lesson clear to the students.

- Interaction between teachers and students, whether for teaching basic skills as part of direct instruction or for addressing higher order skills through scaffolding or open-ended discovery activities is very important.

**Implication of the findings:**

Any research effort goes waste if it does not contribute to the existing knowledge or help the discipline in which it has been made. It must have certain implications and should facilitate the growth of the discipline. The investigator in the following paragraph has made humble attempt to delineate the implications based on the findings of the study.

- Teaching is the most important factor in the whole formal system of education. The findings of the study have implications in both theory as well as practice of methodology of mathematics teaching at senior secondary level.

- The study contributes new knowledge regarding the teaching methodology for competent mathematics teachers. The mathematics teacher educator may also provide of mathematics
teaching to their pupil teachers. Thus, the information about mathematics teaching methodology may be useful for both preservice and inservice teacher for improving their class room teaching.

- The evolved teaching methodology may be used in our class room situations for improving the results of the students.
- The present system of education focuses to the objectives which are to be achieved by the students rather than the content field. From this point of view of interpretation, these evolved methodologies are not only based on the objectives related to the students’ growth but also it is capable of ringing better improvement in respect of classroom teaching.
- The practical usefulness of the research finding is for preparing competent mathematics teacher in teaching education programme. Micro teaching as a feedback device may be used effectively for developing the methodology for preparing mathematics teacher.
- UGC is the regulatory body of higher education. It may organise programs to identify effective teachers of different disciplines. On the basis of method used by the subject teachers of different fields it can evolve unique methodology for teachers of subjects belonging to varied streams. It may improve the quality of higher education.
- The evolved teaching methodology may be used by research scholars for new research studies in different subjects at various levels.
- The study can also be useful for other educators for applying the evolved effective teaching method in mathematics at senior
second level to other levels in the same field or other related fields.

- The evolved methodology can be used by less effective teachers in mathematics to improve upon their teaching methods and skills based on the findings of this study.
- Thus viewed, this evolved methodology accelerates the growth of the students in competitive capacity and provides some basis for sustained growth and development. It may raise academic standard of mathematics teaching.

**Suggestions of further research topics**

On the basis of findings of the study, the experiences and insight of the researcher the following research topics may be conducted.

- Evolving teaching methodology for effective mathematics teaching at primary level.
- Evolving teaching methods for science teaching at secondary level.
- A study of problems of mathematics teachers working in the C.B.S.E affiliated schools or other state boards.
- Evolving a teaching module for mathematics at senior secondary level.
- A study of the effectiveness of e-learning mode of instruction in mathematics at senior secondary level.
- Evolving teaching methods for effective value education teaching at higher secondary level.
- Evolving teaching methods for effective Hindi teaching at secondary level.
• Developing teaching methods for effective sociology teaching at senior secondary level.
• Developing teaching methods for effective chemistry teaching at secondary level.
• Identification of teaching skills and activities of effective teachers at secondary level.
• To study effect of teaching style and competency on students’ achievements.
• Evolving teaching strategy for effective teaching at secondary level.