

# An Orientation of Strategy of Mathematical Concepts at Elementary Level

\*Dr. Mohammad Raza Abbas

{\* T.G.T. Mathematics at AM U ABKHS Boys}

## ABSTRACT

The purpose of this Experimental study is to examine the views of elementary school Teachers on the reasons of mathematical Topics. In this qualitative research, 300 elementary school students and 10 mathematics teachers in Delhi Government elementary schools who have 10 years experience of teaching mathematics to class VIII Students. The results show that one-quarter of the students are afraid of mathematics, experience stress as a result of the families impose extreme importance on the course. They are unaware that courses have been trained with the existing innovative Strategy for Experimental group and chalk talk method for Control Group. As an overall conclusion, elementary school students 'levels of math fear, and this is causing math fear of students in general. The parents attribute the greatest importance to mathematics, and teachers need to change their traditional approaches of mathematic teaching to more moderate and democratic one. The suggestions are presented at the end of the paper for best practices to alleviate students' Mathematics phobia and to make the subject much easier and interesting for both the students as well as teachers with some innovative strategies at the school level.

## KEYWORDS

Innovative strategy, Elementary Government School teachers, Experimental group, Elementary students and Control group.

## INTRODUCTION

Today Mathematics is regarded as an important subject at both the junior and senior secondary school curriculum. This importance is largely due to the role it plays in the scientific and technological development of a nation. According to **Abiodun (1997)**, while science is the bedrock that provides the springboard for the growth of technology, mathematics is the gate and key to the sciences. The National Council of Teachers of Mathematics (**NCTM**) has presented a vision of reform mathematics based upon constructivist approaches that has far-reaching implications for teacher practices in the mathematics classroom.

Every student has a unique way of thinking, learning and making sense of what he/she listens or observes. Their active imagination constantly builds new connections and assimilates

new information. If the teacher is an active speaker and persistently uses traditional methods, the learning takes backseat and in the process some faulty ideas can also form and lead to several learning gaps. These learning gaps need to be identified, questioned and corrected before they result into misconceptions. These misconceptions lead to low self-efficacy among students resulting in low performance in the subject of mathematics. However, reducing the role of the teacher to a facilitator and creating an atmosphere of positive interdependence among students, a change in the methods of teaching is an inevitable requirement. In a normal course of teaching mathematics in a classroom, creating such atmosphere as mentioned above is not possible. So, a strategy for teaching mathematics in a different but suitable atmosphere that would transform the position of the teacher to a facilitator of learning from an authoritarian an active speaker's role was the need of the hour. Hence this experimental study was taken up with the following objectives:-

(a) To identify the difficult concepts of mathematics at elementary level as perceived by teachers.

(b) To develop the instructional design to teach difficult concepts of mathematics to class VIII students on the basis of strategy.

(c) To compare the learning outcomes of students of two groups- experimental and control on the following skills:

(i) Verbal skills

(ii) Motor skills

(iii) Intellectual skills

(iv) Cognitive skills

(v) Attitude

(d) To compare the learning outcomes of students under three levels superior, average and inferior on the above five skills.

## **HYPOTHESIS**

There was no difference between teaching mathematics through traditional method of teaching to that of teaching through a innovative teaching strategy for teaching mathematics at elementary level.

## **DELIMITATION**

The study was limited to only private schools' functioning in and around East Delhi Zone and schools governed by State Government and affiliated to CBSE as well. The Students' sample of study was limited to Class VIII students of private Schools of East Delhi District, while teachers' sample was limited to schools functioning in and around East Delhi District.

## **DESIGN OF THE STUDY**

The research design of the study was based on two groups- namely, Control group and Experimental group, each of them having a total of 150 students. The Research Methodology was Quasi Experimental Research Methodology.

A strategy consisting of two methods namely; Activity and Demonstration Methods with aids/models was evolved in a class. The teacher's role was not only a facilitator of learning but also ensured a learning outcome viz., socially relevant.

## **SAMPLE**

For the present study two different samples were chosen namely students' sample and teachers' sample. The students' sample of the study consisted of a total of 300 students of VIII standard of Private Schools of east Delhi and while teachers' sample consisted of 10 teachers (5male and 5 female) of mathematics working in Government Schools in around east Delhi District.

The sample of 300 students was divided into two groups' viz., controlled and experimental group. The two groups were matched on the basis of their marks obtained in class VIII on the basis of sessional test, a criteria being used in all Private Schools' for assessing the performance of students.

The sample of 10 teachers was chosen from government schools of Middle level. All these teachers chosen had, 10 years of teaching of mathematics to class VIII students.

## **TOLLS USED**

In an attempt to achieve the objectives of the present experimental study, five tools were used by the investigator.

1. Questionnaire for teachers.
2. Attitude towards Mensuration scale

3. Pretest
4. Post-test
5. Lesson Plans
  - (a) Based on Innovative strategy.
  - (b) Based on Conventional chalk and talk method (traditional method)

## **STATISTICAL TECHNIQUE USED**

The researcher used the t-test for analyzing the data.

## **FINDINGS**

- Innovative strategy of design (teaching through working models) is more effective for teaching of mensuration than conventional chalk and talk method to class VII students of the selected five schools (See raw score list).
- Innovative strategy of design (Teaching through working models) is more effective on that of verbal skills, skills, intellectual and cognitive skills than conventional chalk and talk method.
- Innovative strategy of design (Teaching through working models) helps in developing positive attitude towards learning mensuration than the conventional chalk and talk method.
- Innovative strategy of design (Teaching through working models) is almost equally effective for interior, average and superior learners in the classroom.

## **RESULTS**

The difference within the pretest and post-test of the control group shows that there was a minor difference in their achievement level on mensuration test. The mean and S.D. of the pretest of control group were 43.17 and 7.00 respectively and on post-test mean and S.D. of control group were 45.33 and 6.5 respectively. But a great difference could be seen in the pretest and post-test of the experimental group. The mean and S.D. of the pretest of experimental group were 43.33 and 6.33 respectively and the mean and S.D. of the post-test were 55.33 and 5.44 respectively. And the respective t-test of pretest and post-test scores of control group was 2.77 that were not significant at 0.05 level of significance. While the t-test ratio of pretest and post-test scores of experimental group (15.72), was significant at 0.05 and 0.01 level of significance.

- This shows that Innovative strategy of Instructional design of teaching mensuration is more effective to teach VIII grade students.
- Thus, it can be said that there is no significant difference among the various levels of achievement. In other words, the treatment (Innovative strategy of instructional design) is equally effective for superior, average and inferior achievers.

- Students participated very enthusiastically in all the activities related to mensuration.
- Students used not to share their things (stationary) in initial days but started sharing happily in the experimental group.

## **CONCLUSION**

This experimental study has influence on the initiation of using aids/models in teaching of mathematics at secondary level. As there is need for good strategy for teaching mathematics to improve the result and performance of students in board examinations, the study has thrown light on the use of appropriate strategy that is the integration of two methods of teaching namely activity and Demonstration in laboratory atmosphere. The ultimate result of the study revealed this strategy was more effective instructional paradigm for teaching mathematics as compared to traditional methods of teaching. Furthermore teaching through aids/working models appeared to be a befitting platform for creating positive interdependence as compared to classroom.

The empirical as well as theoretical studies and documents like NCF 2005 have provided us with ample information and intuition, to formulate hypothesis regarding new instructional strategies and testing them empirically. Regarding investigator was, therefore inspired to study and compares the effectiveness of an innovative strategy (teaching through models) which tried to focus on the process of hierarchy of learning with the conventional method of learning still prevalent in our schools.

## **REFERENCES**

1. Aggarwal, S.M. (1994). A course in Teaching of Modern Mathematics Delhi: Dhanpat Rai and sons
2. Ali, S. (2006). A study of Differential effectiveness of Teaching through Visual and process Approaches on science concept Attainment and acquisition of process skills at Elementary level. Unpublished Doctoral Dissertation Jamia Millia Islamia New Delhi.
3. Arora, S. (2006). Effectiveness of Gagne's instructional design in teaching of geometry- an Experimental study. Unpublished M.phil Dissertation Jamia Millia Islamia New Delhi.
4. Best J.W. & Kahn J.V. (2006), Research in Education, New Delhi Prentice Hall.

5. Athipen, C. (2002). Impact of using simple techniques in Mental Arithmetic. An educational Research Review Vol.29 No.1
6. Buch M.B., Fourth Educational Survey (1983-1988), Volume - I, published by NCERT, Ministry of Human Resources Development, Government of India, New Delhi
7. C. Iris, (2004). Conduct a study on the effects of teaching mathematics strategies and keeping mathematics journals to reduce mathematics anxiety. Ph. D. thesis, Walden University.
8. Charles. H.D and Augustine (1979). Multiple Methods of Teaching Mathematics in the elementary school, Harper and Row Publisher, New York.
9. Dave, R.H., & Saxena, R.C. (1965), Curriculum & Teaching of Mathematics in the Higher Secondary Schools, NCERT, New Delhi
10. Fatima. (2002). Development of concept attainment test in Mathematics for Elementary class. Unpublished dissertation Jamia Millia Islamia New Delhi.
11. Joshi S.C. (1994). A Comparative study of effects of Teaching Methods on The development of Mathematical creativity, Indian educational abstracts Vol-1 New Delhi by NCERT.
12. M.H.R.D. Govt. of India National Policy on Education Report (NPE) 1986, New Delhi
13. Ramirez, M. C. (December 7th, 2006). A Mathematical Problem-Formulating Strategy. International Journal for Mathematics, New Delhi by NCERT.
14. Overview of Effective Learning and Study Strategies, Home page Retrieved Aug.08, 2008 From [www.mhhe.com/socscience/education/methods/resources.html](http://www.mhhe.com/socscience/education/methods/resources.html)

15. The effective use of Teaching and Learning Aids physical Retrieved March 02, 2011, From [www.pasd.com/PSSA/MATH/manip.htm](http://www.pasd.com/PSSA/MATH/manip.htm) Math: Use of Manipulative

X-----X