



## REVIEWARTICLE

### AREAS OF WEAKNESS IN MATHEMATICS OF THE STUDENTS COMPLETING ELEMENTARY EDUCATION

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#### ABSTRACT

In this age of science and Technology, mathematics now dominates almost every field of one's activities. It has permeated through the human life in such a way that, it has now become every man's everyday concern. Elementary education grooms students to become competent in every aspects of life. India has made a significant investment in its education. Again RTE 2009 guarantees quality mathematics education at elementary level. From this point of view, the present paper investigates the weakness areas of the students at elementary education level in mathematics. The present study was conducted among 400 students in 19 school in rural area of South 24 Parganas District, West Bengal, through self made standardized achievement test in mathematics. It was found that the students faced most difficulties in decimal numbers, and problems of arithmetic and geometry where application of thinking and reasoning are required. Also it was observed that in terms of weakness the boys and girls students go along in the same direction.

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#### INTRODUCTION

According to Nelson Mandela "Education is the most powerful weapon which you can use to change the world. If you want to destroy the future of any nation, no need to wage war with them; defunct their education, they will remain no more live on the map of the world." Education plays a key role in the development of a country. It is a process of learning which aimed to raises people's creativity morally, socially & culturally. Education is essential component for the development and growth of any country. Mathematics is occupying a central position since the ancient period and is very important subject still it has not been of interest to many students and majority of the students have phobia for mathematics. Even though many efforts have been made but in reality our efforts seems to be short to reach the desirable level of performance in mathematical achievement. Rastogi (1991) "In spite of such importance being given to the subject the performance of students in mathematics illustrates that our national performance is quite below the desirable level". Mathematics is a language, and addition subtraction, multiplication, and division are its alphabet. Rastogi (1991) observed that "Mathematics happens to be one of the subjects in which failure rate of Indian students is the highest". Much of the problems of failure of students in mathematics, particularly at the elementary level are due to lack of their mastery of the basic arithmetical operations of additions, subtraction, multiplication and division.

#### Significance of the study

In India, RTE, 2009 became effective from 1<sup>st</sup> April, 2010 in which free and compulsory elementary education is every child's right. Mathematics is an important subject in school curriculum. It is more closely related to one's daily life as compared to other subjects. Except one's mother tongue there is no other subject which is more closely related to one's daily life as mathematics. Mathematics is considered to be the father of all sciences. Napoleon remarked that- "*The progress and improvement of mathematics is linked to the prosperity of the state.*" Mathematics now dominates almost every field of one's activities. In this age of science and Technology, it has permeated through the human life in such a way that, it has now become every man's everyday concern. Mathematics disciplines the mind, systematizes ones' thought and reasoning. The subject has also rich potentialities of affording true enjoyment to its students. Consequently quality mathematics education for elementary education became an emergence to the policy makers, educators, and teachers in India. India has made a significant investment in its education. The Government's flagship programme Sarva Shiksha Abhiyan (SSA) has been successful in ensuring greater access, equity and quality in elementary education. In the year 2000, the programme of National Achievement Surveys (NAS), originally conceived by NCERT as an independent project, was incorporated into the Government's flagship project Sarva Shiksha Abhiyan. NCERT is responsible for planning, developing tools, conducting the surveys and reporting the results under SSA by the Ministry of Human Resource Development (MHRD). (NCERT:

National Achievement Survey ,Cycle 3, Class VIII, 2014). In the report it was observed that achievement in mathematics is quite low with respect to other subjects, namely social science and language in all India level. In West Bengal also the same picture is reflected. Therefore to upgrade the condition for substantiating the guarantee for quality elementary education contained in the RTE, 2009 the author has attempted to find the area of weakness in mathematics at elementary level. Here weakness in mathematics and elementary education are defined as follows.

**Mathematical Weaknesses:** For the present study mathematical weaknesses has been measured with the help of a test formally constructed by author. Here the author has followed the scale of grading system of WBBSE. In this system, a student is described as disqualified level of achievement if he / she scores below 25% score in the constructed achievement test and the areas / items were called weakness area or point. Therefore areas of weakness were observed under that point of view.

**Elementary Education:** Elementary Education means the education from first class to eighth class. The 86<sup>th</sup> Constitutional Amendment Act, 2002 led to a new Article 21-A in Part III of the Constitution that made Free and Compulsory Education to all children of 6 to 14 years of age, a Fundamental Right. It is imperative to give good quality elementary education to all children in the age group of 6 to 14 years.

**METHODS**

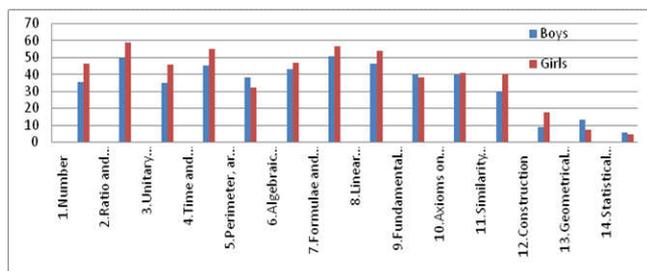
**Objectives of the Study**

This paper aims

- To identify the weakness area of students of class IX in mathematics.
- To compare the weakness graph among boys and girls students.

**Sample and Sampling Technique**

Stratified random techniques were adopted for the study. 400 students (210 boys and 190 girls) were taken from nineteen schools.



Figures 1. Componentwise Comparison Of Wrong Response Among Boys And Girls

**Tools**

An Achievement test in mathematics for class VIII was made and standardized. The researcher has gone through the syllabus of Mathematics upto class VIII of prescribed books of West Bengal Board of Secondary Education (WBBSE), Central

Board Secondary Education (C.B.S.E) and Indian Council of Secondary Education (I.C.S.E.). After analyzing the content the researcher has broken the whole content into fourteen components which is shown in Table 1. The test was comprised of 40 items and the researcher found the reliability by KR-20 method and split half method. Value of reliability by those methods was 0.87 and 0.91 respectively.

**RESULTS**

**Areas of weaknesses in mathematics**

It was observed that 42% students gave wrong answer, 30.42 % students gave no response in a problem sum of arithmetic section. The students had difficulty with the sums involving decimal point whether the sum involved multiplication or division of decimals. Also it was found that students had faced difficulties in application based items. The students got it difficult to arrange the given decimals with same value before decimal and different after the decimal point in ascending order rather they considered them equivalent as whole numbers. Students Conceptual misunderstandings of decimals leads to the adoption of rote rules and computational procedures that often are incorrect.

Table 1. Classification of Components in Mathematics

Component 1	Number
Component 2	Ratio and Proportion
Component 3	Unitary method, Percentage
Component 4	Time and distance
Component 5	Perimeter and area of Plane figure
Component 6	Variable, Algebraic Expressions
Component 7	Identities and factorization of algebraic expressions
Component 8	Linear Equation
Component 9	Fundamental geometrical concept
Component 10	Axioms on straight lines, triangles, polygons etc
Component 11	Similarity and congruence
Component 12	Construction
Component 13	Geometrical transformation
Component 14	Statistical representation

It was found that in unitary method, weighted mean and percentage component percentage of not responding was about 30 % i.e. the students were unable to identify and understand the problem and allied method. Therefore weaknesses subsisted in that component. Also in number system and axioms on straight lines, angles, triangles etc. and in geometrical transformation components weaknesses stayed alive since percentage of not responding was higher than 15 %. It can be said that in arithmetic and geometry groups weaknesses were maximum for both boys and girls students. An identical impact about the areas of weaknesses for both boys and girls students was seen.

**DISCUSSION**

From the analysis set in the previous section it can be assumed that the students have difficulties with application based problem where thinking power of reasoning, skill of computation with decimal fraction, deep understanding of underlying concept of mathematical procedure are required. The students faced most difficulties in the problems of number system and arithmetic. Both boys and girls students had shown the same track in this context.

Therefore, teachers' criticism should not focus on the students being 'wrong'; rather teacher should detect the students' misunderstandings which are displayed 'rationally and consistently'. This is possible if the teachers deliberately find the ways for remedial measures to get rid of the weakness and make a joyful learning in mathematics.

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