LEARNING DIFFICULTIES IN MATHEMATICS OF BACKWARD CHILDREN OF SECONDARY STUDENTS IN WEST BENGAL

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Abstract: Mathematics has originated from Numbers and Number system is a special field of it, by which other branches of Mathematics are developed. Mathematics is mainly an abstract science. Maturation stage of secondary school students remain too below level that concept and ideas of Mathematics do not attract them. To determine the learning difficulties in mathematics of backward children in terms of cognitive domain of secondary school students. The sample constituted two hundred forty backward (sc) students of class IX having 120 boys and 120 Girls from secondary schools identified purposively from District of North 24 Parganas in West Bengal.

Key words: Mathematics, Secondary school student, backward children, cognitive domain etc.

INTRODUCTION:

Mathematics is a very important subject in school curriculum. It is originated in the collective curiosity of man since time immemorial and it attempts to provide a body of knowledge through procedures that are objective. Mere acquisition of arithmetical skills is not sufficient. The advents of automation and cybernetics have clear significance of high importance on Mathematics. Mathematics is essential for the existence and progress of modern world. National policy on Education (1986) has envisaged that "Mathematics should be visualized as the vehicle of communication to train a child to think, to reason, to articulate and to analyze logically. It should be treated as a concomitant to any subject involving analysis and synthesis." Mathematics has originated from Numbers and Number system is a special field of it, by which other branches of Mathematics are developed.

The term 'Mathematics' has been interpreted and explained in various ways. It is the numerical and calculation part of man's life and knowledge. It helps the man to give exact interpretation to his ideas and conclusions. It deals with quantitative facts and relation deals with between magnitudes. It enables the man to study various phenomenons in space and establish various relationships between them. It explains that this science is a by product of our empirical knowledge. From our observations of physical and social environment, we form certain intuitive ideas or notions called postulates and axioms. By a process of reasoning, we move upwards and work out mathematical results at the abstract level. "Mathematics may also be defined as the science of abstract form. The discernment of structure is essential no less to the appreciation of a painting or a symphony than to understand the behaviour of a physical system; no less in economics than in astronomy. Mathematics studies order abstracted from the particular objects and phenomena which exhibit it and in a generalised form." Some definitions are as follows

According to Bertrand Russell, "Mathematics is defined as the subject in which we neither know what we are talking about nor whether what we are saying true."

According to Galileo, "Mathematics is the language in which God has written the universe."

Learning Difficulties in Mathematics of Secondary School Students:

Mathematics is mainly an abstract science. Maturation stage of secondary school students remain too below level that concept and ideas of Mathematics do not attract them. As a result phobia comes off in learning Mathematics. Generally they remain backward in Mathematics. Such a lot of abstract formula of Mathematics is learnt without impersonation and has to apply. The said solution become wrong due to slightest error in any part which does not related in any other subject.

Many students with learning difficulties in the area of mathematics demonstrate specific weaknesses with mathematics reasoning (Griffin & Jitendra, 2009). One aspect of the mathematics curriculum that involves high levels of reasoning is solving word problems. Word problems, sometimes referred to as story problems, are used to give learners a glimpse of how mathematics is used in the real world (Bogomolny, 2009). Word problems consist of a linguistic presentation of hypothetical situations in which problems are posed that can be solved through the use of mathematical equations. Some mathematicians conceptualize word problems as part of a larger problem-solving component of the mathematics curriculum in which students must overcome barriers in order to obtain and explain a solution to a mathematical problem that is not directly apparent (Heddens & Speer, 2001). Based on this conceptualization of solving word problems, the mathematical equations are sometimes hidden within multifarious, complex word usage. Sometimes the numerals and numeric operations are difficult to identify due to unforeseen or unique language structures, especially in the most advanced word problems. This results in high levels of challenge for many students, particularly those with learning difficulties in the area of mathematics.

Causes of Learning Difficulties in Mathematics:

There are so many causes of learning difficulties in Mathematics. Statable causes are mentioned here. Irregular attendance in school causes learning difficulties in Mathematics. The learners cannot acquire the concepts of Mathematics if previous ideas not related with later ideas. It should not practice Mathematics without make them realize authentic concept. Learners acquire Mathematical concepts aptly but they do not memorize abstract concept due to lack of practices. There happens learning difficulties in Mathematics if teaching not being secondary school student related. It happen learning difficulties in Mathematics if the students bear mental disturbance and physical weakness. Phobia comes off in Mathematics due to conventional renovation. Many times the student became satisfied achieving average performance due to excessive memory and intelligence and effortless is noticed gradually. Hence interest on Mathematics decrease and does not achieve efficiency in Mathematics. The Practical and stable value of teaching of Mathematics are not reflected in method and subject. Resulting the Mathematics became vapid and meaningless subject to learners. Though Mathematics is a abstract subject, it should be taught with TLM to be stable. Unwillingness of many Mathematics teachers is found in this matter. The teacher presented only theoretical aspects before the learners. The Mathematics became absurd and deficient to the learners. Many times individual attention is not possible to provide the learners. They make lesson plan on account of mean learners. They cannot prepare constant teaching lesson. Thus many learners fall behind. The learner became backward in Mathematics due to lack of apt training and apt teaching method. The method of promotion into higher class on the account of result of examination is defective. Thus the learners became behindhand in Mathematics. Attention is not provided to the backward learners in school. Resulting the apathy comes off in learners in Mathematics teaching. There is no understanding among the Mathematics teacher. So there is no possibility to repeat the lesson which is not yet taught. Lack of undated library and laboratory do not increase enthusiasm in Mathematics. It caused punishment due to unwillingly mistake of learners. Resulting apathy begets in learners about the teachers. The learners do not progress in learning Mathematics due to not properly subjugating of Mathematical fundamental concept at primary stage.

REVIEW OF RELATED LITERATURE:

According to **W.R. Borg** – "The literature in any field forms the foundation upon which all future will be built. If we fail to build the foundation of knowledge provided by the literature our work is likely to be shallow and naïve and will often duplicate work that has already been done better by someone else."

According to **Charter V. Good** –"It is the way to the vast storehouse of published literature which may open doors to sources of significant problems and explanatory hypothesis and provides helpful orientation for definition of the problem, background for procedure, and comparative data for interpretation of results. In order to be creative and original, one must read extensively and critically as a stimulus to thinking."

Singh, Mr. R (2011) conducted, "Intervention strategy for removing learning difficulties in Mathematics of standard-I students: He conducted his study of English and Odia medium school on a sample of 250 Class-I students. The objective of the study was to compare the performance of children in English and Odia medium school, after the adoption of the learning strategy. Goel's(1997a) Mathematics booklet for identification of difficulties in learning Mathematics was used as the tool.

Mancl, D. B (2011) conducted "Investigating the effects of a combined problem solving strategy for students with learning difficulties in Mathematics." He conducted his study of Western Canada on a sample of second garders or students in middle school or high school. The objective of the study was to examine the effects of a combined problem-solving strategy (i.e. READER strategy) onward problem performance of students with Mathematics disabilities and students who are at risk to fail in Mathematics.

Linther, J. (2011) conducted "University Mathematics students learning difficulties." He conducted his study of Umeȧ University in Sweden on a sample of first semester university Mathematics students. The finding revealed that the processes of learning Mathematics are immensely complex and we largely lack insights into these processes. This is an especially problematic when it comes to territory Mathematics education, which less been much less researched the primary and secondary Mathematics education.

STATEMENT OF THE PROBLEM:

There is no doubt about the basic importance of the Mathematics in the consideration of social, economic and technical problems were when ever quantities facts and relationship have to be dealt with or when ever questions are faced that involve space and from the Mathematics teacher has a good contribution to make. The significant of this contribution is steadily increasing. Hence the problem is stated as **"Learning difficulties in mathematics of backward children of secondary students in West Bengal."**

OBJECTIVES OF THE STUDY:

- To determine learning difficulties in Mathematics of Backward children in terms of cognitive domain on secondary school students due to gender variation.

FORMULATION OF HYPOTHESIS:

H_1 There exist significant differences of learning Difficulties in Mathematics of Backward children on secondary students' component wise due to gender variation.

H_2 There exist significant differences of learning Difficulties in Mathematics of Backward children on secondary students in remembering components due to gender variation.

H_3 There exist significant differences of learning Difficulties in Mathematics of Backward children on secondary students in Understanding components due to gender variation.

H_4 There exist significant differences learning Difficulties in Mathematics of Backward children on secondary students in Application components due to gender variation.

H_5 There exist significant differences of learning Difficulties in Mathematics of Backward children on secondary students in Skill components due to gender variation.

IMPORTANT TERM DEFINED:

Learning Difficulties: It means there are difficulties in learning in terms of cognitive domain i.e. Remembering, Understanding, Application, and Skill. It occurs due to lack of attention & interest. Lack of motivation & confidence are cause behind learning difficulties.

Cognitive Domain: This domain represents the intellectual component of mental life and is certainly the most basic one from the point of view of education. This domain is related to knowledge outcomes and intellectual abilities and skills.

Secondary School Students: It is one kind of school where class IX & X is being taught. Average age of learners is 15-16 years. At the secondary level students are taken to a still higher level of learning of Mathematics on the basis of their understanding of basic Mathematical concepts and skills learnt at lower primary and higher primary levels. At this level concepts are also introduced. Emphasis is given to application of knowledge and Mathematical skills in solving varieties of problems including problems of calculation and measurements and that are likely to be encountered in actual life situations. Concepts and skills learns at this level provide a firm foundation for further learning of Mathematics at Higher Secondary level /Pre-university and Degree levels. Thus Mathematics finds an essential place in secondary school curriculum. Teacher should give more attention, as far as possible, individual attention, to students learning of Mathematics.

Mathematics: Mathematics is the science in which calculation are prime. We can say that Mathematics is the science of numbers, words; sign. It is a Father of Science. Well skill in Mathematics helps to learn science, social science, and language etc. subjects easily.

Backward children: A **Backward** child as the name indicates is one who falls far behind other children of his age in matters of study. **Backward** children are also called "Educationally Retarded Children" or" Slow **Learner**". **Backward** children are those who cannot keep pace with the class of their age. According to researcher sc students are referred backward students.

METHODOLOGY OF THE STUDY:

The study has been done on the basis of Descriptive Survey Method. So this method has been used for the study and it is follow the scientific way.

Population and Sampling:

The sample constituted two hundred forty backward (sc) students of class IX having 120 boys and 120 Girls from secondary schools identified purposively from District of North 24 Parganas in West Bengal.

Variables of the Study:

(i) Scores of Boys Achievement in Mathematics.
(ii) Scores of Girls Achievement in Mathematics.

ANALYSIS AND INTERPRETATION:

$H_{0.1}$: There does not exist significant mean differences of learning Difficulties in Mathematics of Backward children on secondary students' component wise due to gender variation.

For determining the significant difference if any, learning difficulties of the sub sample boys and girls students 't' ratio was calculated, the result is shown in Table-1.

Table-1: The test significance of difference between the means in learning difficulties in Mathematics of Backward children due to gender variation

Variation	Variable	N	Mean	SD	SE_M	Mean difference	SE_D	t-ratio	Remark
Gender	Boys	120	25.00	3.10	0.40	1.15	0.56	2.03	Significant at 5% level
	Girls	120	23.83	3.19	0.41				

Analysis: On perusal of the above table, it revealed due to gender variation that the calculated value of 't' being 2.05 was greater than the table value of 't' at 238 degrees of freedom at 0.05 level of significant.

Interpretation: Therefore, the null hypothesis that $H_{0.1}$ "There does not exist significant differences of learning difficulties in Mathematics of Backward children on secondary school students due to gender variation" was rejected. From this it may inferred that it differs due to gender variation.

$H_{0.2}$ There does not exist significant differences of learning Difficulties in Mathematics of Backward children on secondary students in remembering components due to gender variation.

$H_{0.3}$ There does not exist significant differences of learning Difficulties in Mathematics of Backward children on secondary students in Understanding components due to gender variation.

$H_{0.4}$ There does not exist significant differences learning Difficulties in Mathematics of Backward children on secondary students in Application components due to gender variation.

$H_{0.5}$ There does not exist significant differences of learning Difficulties in Mathematics of Backward children on secondary students in Skill components due to gender variation.

For determining the significant difference if any, learning difficulties of the sub sample boys and girls students in terms of cognitive domain the 't' ratio was calculated, the result is shown in Table-2

Table-2: The test significance of difference between the means in learning difficulties in Mathematics of Backward children in terms of cognitive domain due to gender variation.

Variation	Sub sample	N	Mean	SD	SE_M	Mean difference	SE_D	t-ratio	Remark
Gender in remembering component	Boys	120	5.93	2.83	0.36	0.94	0.46	2.05	Significant at 5% level
	Girls	120	6.87	2.44	0.30				
Gender in understanding component	Boys	120	6.39	2.47	0.31	0.89	0.43	2.07	Significant at 5% level
	Girls	120	5.50	2.47	0.31				
Gender in application component	Boys	120	7.70	2.18	0.28	0.90	0.44	2.04	Significant at 5% level
	Girls	120	6.80	2.65	0.34				
Gender in skill component	Boys	120	5.14	2.48	0.32	0.42	0.41	1.02	NS
	Girls	120	4.72	2.06	0.26				

Analysis: On perusal of the Table-2 , it revealed remembering component due to gender variation that the calculated value of 't' being 2.05 was greater than the table value of 't' at 238 degrees of freedom at 0.05 level of significant.

Interpretation: Therefore, the null hypothesis that $H_{0.2}$ "There does not exist any significant differences of learning difficulties in Mathematics of Backward children on secondary school students in remembering components due to gender variation" was rejected. From this it may inferred that remembering component due to gender variation.

Analysis: On perusal of the Table-2, it revealed understanding component due to gender variation that the calculated value of 't' being 2.07 was greater than the table value of 't' at 238 degrees of freedom at 0.05 level of significant.

Interpretation: Therefore, the null hypothesis that $H_{0.3}$ "There does not exist any significant differences of learning difficulties in Mathematics of Backward children on secondary school students in Understanding components due to gender variation" was rejected. From this it may inferred that understanding component due to gender variation.

Analysis: On perusal of the Table-2, it revealed application component due to gender variation that the calculated value of 't' being 2.04 was greater than the table value of 't' at 238 degrees of freedom at 0.05 level of significant.

Interpretation: Therefore, the null hypothesis that $H_{0.4}$ "There does not exist any significant differences of learning difficulties in Mathematics of Backward children on secondary school students in Application components due to gender variation" was rejected. From this it may inferred that application component due to gender variation.

Analysis: On perusal of the above table , it revealed skill component due to gender variation that the calculated value of 't' being 1.02 was lesser than the table value of 't' at 238 degrees of freedom at 0.05 level of significance. Hence, the 't' was insignificant.

Interpretation: Therefore, the null hypothesis that $H_{0.5}$ "There does not exist any significant differences of learning difficulties in Mathematics of Backward children on secondary school students in Skill components due to gender variation" was accepted. From this it may inferred that skill component do not differ to gender variation.

CONCLUSION:

Mathematics is mainly an abstract science. Maturation stage of secondary school students remain too below level that concept and ideas of Mathematics do not attract them. It is generally believed that the teachers should assume the role of one who can estimate the difficulty of the students of learning. It has to be asked whether the teachers have imbibed new values assimilated them and have developed proper outlook which they can import to the students. A favourable attitude of the teachers towards Mathematics can to a large extent helped implement the syllabus of Mathematics satisfactorily. The teaching of Mathematics is a problem today. At present in India, the fifty percent schools in India situation and to improve teaching the teacher should be innovative. So, it was felt that systemic teaching would help the learner outcome their difficulties in particular subject.

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