Abstract

The Strength of the nation lies in its commitment and capacity to prepare its people for needs, aspiration and requirements of a progressive technological society. This implies the new creation of opportunities and facilities for training large number of youth in imbibing as much new knowledge as possible. This being generally true of all developing countries, it is more so for India, especially Tripura for accelerating the pace of economic growth and social development. Tripura is a small state of India which is situated at North-Eastern Region of India. Educationally Tripura is a growing state of country. But growth rate is not up to the mark as it is desired. Development in education of a state or a country depends on its basic education. First step of basic education in the sense of public examination is secondary examination (Madhyamik Examination) conducted by state education board (Tripura Board of Secondary Education).

Educationists and psychologists concerned with educational settings are often confronted with students who have above average scholastic aptitude but are very poor in their studies. An important question which often baffles them is raised that why some students succeed in their studies, while others do not. This question is sometimes considered to be closely related to learning than teaching. Janaur (1974) states that efficient learning depends not only on good teaching methods but also satisfactory learning procedures. Christian (1983) is of the view that students fare badly in their academic domain due to some factors other than their low intellectual capacity. Tiwari and Bansal (1994) mentions that a child with high academic achievement is likely to be well behaved as well as well treated in the society and low-achievers are treated as

incapable and are deprived of employment which may lead to maladjustment in their lives.

Academic Achievement

Achievement of pupil in school may be affected by various factors like intelligence, study-habits, aptitude, interest, attitude towards school, different personality traits, socio-economic status etc. The desire of success is derived from individual's definition of himself and is also measured in terms of various incentives in explaining success and failure in the eyes of others. Therefore, a child who sees himself as a top ranking scholar may set his attainment of the highest grade in the class. It had been rightly mentioned that in our society academic achievement more specifically Mathematical Achievement is considered as a key criterion to judge one's total potentialities and capacities. Hence, Mathematical academic achievement occupies a very important place in education as well as in the learning process.

Intelligence

Some distinctions in terminology are warranted at this point. In educational and psychological literature, the terms “intelligence” and “mental ability” are often used in an interchangeable manner (Snyderman & Rothman, 1988).

The concept of intelligence is found in the writings of Greek philosophers, Plato and Aristotle, and it predates the birth of Jesus Christ (Walsh & Betz, 1985).

The term intelligence is vague and ambiguous in its meaning. Psychologists have been interpreting the term in different ways, and are in disagreement with each other on the meaning of the term, ‘intelligence’.

According to Cyril Burt, the word “intelligence,” originally comes from Latin. It was revived by Herbert Spencer and Francis Galton in the mid nineteenth century as a scientific term, which means “innate, general cognitive capacity” (Snyderman & Rothman, 1988). However, it must be noted that several definitions have been suggested by psychologists but no two psychologists agree on a single definition of the term (Chauhan, 1995). In the early days of philosophical enquiry, the term intelligence was mostly considered from the narrower point of view of “abstract intelligence”. The early studies of ‘intelligence’ by psychologists in this century were also concerned with operations of abstract intelligence, or performances of the ‘higher mental processes (Kuppuswamy, 2003).

The term “intelligence” is defined with a wide diversity of meaning, not only by the general public but also by members of different disciplines, such as Biology, Philosophy, or Education, and by psychologists who specialize in different areas. Different scientists have had different ideas concerning the nature of intelligence and how to measure it (Walsh & Betz, 1985), and as to whether intelligence is a general ability or a concatenation of many separate abilities concerning the different theoretical orientations.

The word, socio comes from the word 'social' and refers to people and the ways (level) they fit into the community in which they live. It reflects how well they are educated, have job etc. Economic refers to the financial position of the people within society and include, how much they regularly earn, whether own a house and the assets owned etc. In other words, it is an economic and sociological combined total measure of a person's work experience and of an individual's or family's economic and social position in relation to others, based on income, education, and occupation.

When analyzing a family's SES, the household income, earners' education, and occupation are examined, as well as combined income versus, when their own attributes are assessed. Socioeconomic status is typically broken into three categories, High SES, middle SES, and low SES to describe the three areas a family or an individual may fall into. When placing a family or individual into one of these categories any or all of the three variables (income, education, and occupation) can be assessed. Moreover a 4th variable, wealth is also an important component of determining socioeconomic status.

Achievement in Mathematics

In modern world, mathematics is being increasingly used in sciences, technologies, social science, education etc. With the use of computer and other devices there is a more emphasis in the mathematics. Though the world is more mathematically inclined, the majority of students in school feel it as more abstract. Though the teacher can teach it with the help of modern educational technological devices and more advanced effective methods of teaching, there is a poor performance of the students in the mathematics. Hence, there must be some factors like psychological, social and biographical affecting the learner in learning of mathematics at large. In a study considering the factors of achievement in mathematics, one possibly ignores those aspects in which individuals differ from one another. The starting point may be achievement in mathematics itself where wide ranging variations occur from the point of non-performance to the point of outstanding achievement in it. If we consider a group of students, a few students are found to be high achievers on the one hand, and a few are low achievers on the other, while a sizable number of students always appear as moderate achievers. The question arises why such a difference in achievement appears when the school provides more or less uniform instructional and environmental facilities? Is this difference due to certain factors? Does this difference depend upon inherent qualities? or Is there any single factor or host of factors which account for all the differences in mathematics achievement ? These questions often appear in the minds of the Educators, Educationists and the Psychologists, but with hardly satisfactory answers. Various investigators have explored numerous factors which are found responsible for success or failure in the mathematics.

Significance of the Study

Academic achievement (Mathematics Academic Achievement in specific) is mostly studied in the context of intellectual factor and less emphasis is given to other non-intellectual factors such as creativity, locus of control, self-concept, level of aspiration and motivation which can also contribute significantly in predicting academic achievement. The basic problem in education today is the problem of motivating the students to learn at all levels. A high level of aspiration for good education would normally make the individual not only put forth his sustained efforts in getting education but it would also make him/her achieve at high level throughout the course of education.

Many previous studies have only given importance to intellectual factor in predicting academic achievement. Earlier studies have indicated intelligence as the key factor influencing the academic achievement (Douglas, 2006). It was believed that high IQ or strong scientific mind is the main measurement of academic success (Abi-Samra, 2000). This belief had implications for curriculum design, teaching, examination and research efforts.

Literature shows that for many years the study of intelligence as a predictor of success focused mainly on the adaptive use of cognition (Piaget,1972). In the present scenario, our classrooms tend to be dominated by approaches that emphasize principles, facts, theories, generalization and memorization associated with specialization at the expense of generic skills which promote social skills such as creativity, self-concept and motivation.

Thus, intelligence is not the sole factor in determining academic achievement. Individual differences in intelligence cannot be accounted for all the major differences in achievement. The present study attempts to suggest that there are certain other personality and motivational variables which may also play a significant role in determining student's academic achievement.

On the basis of above discussion, it may be inferred that Intelligence, Socio-Economic status of the students, creativity, level of aspiration and achievement motivation might hold the key in examination system. Keeping these variables in view, the present study aims at investigating the relationship between Mathematics Academic Achievement and Intelligence of the students along with different aspects of Socio-Economic Status of the family of the students at secondary school level.

Statement of the Problem

The present study was taken up to find the answer of certain relevant questions like what role does Intelligence and Socio-Economic background of the students play in Mathematics Scholastic Achievement of the students. Again it is also intended to find out whether the Level of the Intelligence and the Socio-Economic background of the Secondary School Students of Tripura state at all related to or may act as contributing factors in their Achievement in Mathematics. Is there any interaction effect of these two variables which might enhance or deteriorate the Achievement in Mathematics of the students?

To find out the answer of the above issues, the present study entitled “Achievement in Mathematics’ in relation to Intelligence and Socio-Economic Status of Secondary School Students in Tripura: A critical Study” was taken up with the following Objectives.

Objectives

1. To find out the achievement of students in mathematics at secondary level.
2. To find out the intelligence of students at secondary level.
3. To find out the socio-economic status of family of students at secondary level
4. To find out the relation between intelligence and achievement in mathematics of students at secondary level.
5. To find out the relation between socio-economic status of family and achievement in mathematics of students at secondary level.
6. To estimate the interrelationship between different levels of three selected parameters (intelligence, socio-economic status, achievement) of the students at secondary level.

Delimitation

Previous studies have shown that Mathematics Achievement is influenced by psychological variables, social variables, biographical variables, instructional variables, and so on. But contradictory findings have been reported and not so sufficient data are available which can indicate relationship between these variables and Achievement in Mathematics. There are few well-planned, well-designed multivariate studies which reveal many variables influencing Achievement in Mathematics. But there is need to subdivide complex variables and find out how each of the sub-variables is related to the success in the Mathematics.

To make a case, it may be noticed that Intelligence as well as SES which are composite of sub-variables like parents income, father's educational level, mother's educational level, educational facilities available at home etc. has been found to fluctuate under different conditions in its relationship with pupils' success in the Mathematics.

Though an attempt has been made by a few researchers to consider a number of such sub-variables, it is felt that a greater emphasis should be laid on undertaking in-depth studies to analyze the relationship of Achievement in Mathematics to their interactive effects.

It is not possible to study all the relevant variables that might have an impact on Mathematics Scholastic Achievement like Numerical Ability, Achievement Motivation, Study Habit, Self-Concept, Self-esteem, Locus of Control, Emotional stability, Educational & occupational Aspiration, Mathematical Creativity, Interest in Mathematics etc. And only few dimensions of SES and

Intelligence have been considered to study. Moreover in the present study researcher has considered only the west Tripura district but research can be taken in other districts of Tripura. In present study research has taken only secondary level students but research can be done on students at primary level, Upper primary level and Higher secondary level.

Review of Literature

This chapter aims to draw knowledge from the existing literature. The efforts are towards summarizing the empirical knowledge from studies conducted considering different socio-psychological and varied geographical contexts. The work done by social scientists and health professionals focusing the spectrum of students' achievement, education, health and wellbeing and the methodology used for the same will help to understand the existing knowledge available in the field of education and also explain gaps in the literature. This review of studies is organized under following themes:

Section 1: *Studies on Intelligence in relation to Academic Achievement specifically Mathematical Scholastic Achievement*

Section 2: *Studies on Socio-Economic factors in relation to Academic Achievement specifically Mathematical Scholastic Achievement*

Section 2 : *Studies on Intelligence in relation to Academic Achievement specifically Mathematical Scholastic Achievement*

Studies concerning Intelligence and Academic Achievement yield contradictory results. Some report a difference between Intelligent people and not Intelligent people with respect to their

Academic Achievement whereas others do not find any significant differences.

Intelligence and Scholastic Achievement in Mathematics Intelligence occupies a peculiar position in the study of school performance of Mathematics. A vast essay of research literature in Education and Psychology has brought it to common knowledge that intelligence as general ability, is an important contributory factor in the school Achievement. The level of intelligence truly makes a dominant difference in school's Achievement. The Intelligence as an inherent unified and stable characteristic unequally found among the individuals. It is supposed that difference in learning outcomes in the Mathematics can be easily accounted for. It has been argued that more intelligent pupil is inherently capable of performing better in the examination and earns higher grades than less intelligent pupils. It is a common notion that students of high intelligence obtain better score in the Mathematics' test.

Bhushan and Sharma (1981), Annamal (1981) and David and Michal (1984), found that the high intelligence group performs better than the low intelligence group in the Mathematics Achievement, specially in the area of computational skill.

Materlis (1970) found that high intelligence made statistically significant gains in Mathematical Understanding than lower Intelligence groups.

Kaliyan (1997) [Abstract Reasoning, Numerical Ability, Space Relation, Substitution of Symbols], Rajput (1984) and Nagialiankin (1991) [Numerical Ability, Abstract Reasoning, Space Relation], Rajyguru (1991), Lalitha (1992) [Numerical Ability, Abstract

Reasoning, Non-language Reasoning], Setia Seema (1992), Sumangala (1998) [Numerical Ability, Numerical Reasoning, Ability to use Symbols, Spatial Symbols and Abstract Reasoning], Patel (1997), Whang (1997) [Reasoning Ability], Arrieta (1998), Segars (1995) [Student Ability] Glutting Joseph (2006) [Verbal Comprehension, Perceptual Reasoning, Working Memory and Processing Memory], Fernandez (2011) [Brain Hemisphericity] found positive relationship between the Intelligence and specific areas of the Mathematics Achievement. Similarly, Das (1986), Patel (1997), Kasat (1991) and Abdulmajeed (1992) found positive relationship between the Intelligence and the Mathematics Achievement.

Section 2 : *Studies on Socio-Economic factors in relation to Academic Achievement specifically Mathematical Scholastic Achievement*

- **Parental Educational Attainment and Student Academic Achievement**

Dornbusch, Ritter, Leiderman, Roberts, and Fraleigh (1987) purport that parental education level affects parenting style which, in turn, affects children's academic success. Dombrusch et al. added that families with higher educational levels are likely to be more permissive and less strict in parenting. According to Mullis and Jenkins (1990) and White (1982), parental education shows a strong correlation to students' academic achievement.

Other researchers have debated the correlation of parents' educational attainment and students' academic achievement. DeBaryshe, Patterson, and Capaldi (1993) argued that parental education is directly related to styles of parenting and not student's academic performance. In their study, parents with lower educational attainment used coercive strategies for discipline which, in turn, predisposed their children to antisocial and abnormal behaviors. Such children performed poorly in the lower grades (DeBaryshe et al.).

Melby and Conger (1996) found that a mother's and father's educational attainment link positively to parenting and adolescents' academic performance. Stevenson and Baker (1987) reported that well-educated mothers who have a predisposition to information about school are more likely than less educated mothers to discuss their child's school performance. The same study showed that well-educated mothers' expectation levels are higher and they have more demands of academic achievement for their children.

Smith (1989) examined the difference between paternal and maternal influence on students' academic performance and educational goals, and concluded that 6th, 8th, 10th grade students were greatly impacted by parental educational attainment. A parent's educational level influenced the realistic expectation and the ideal educational aspiration of the student. The results of this study found that paternal education had an effect only on students' educational expectation.

Parental Influence and Student Achievement

Much interest has been generated regarding the relationship between social interaction and cognitive development (Miller, 1988). Based on extensive study of parent belief and cognition, Miller concluded that the primary concern in the relationship is what parents value as well as their general knowledge.

Do parents' beliefs affect the way they treat their children? It is significant in terms of cultural norms and in terms of how those ideals do or do not affect adolescent educational attainment. Hill (1979) cited that understanding parent/child interaction promotes the most essential insight with regard to the continuity of cultural tradition. The majority of western theories of child development are usually based upon research with suburban White middle class families (Garcia Coll, 1996; Gottfried & Gottfried, 1984; Hewlett, 1992; Laosa, 1977; Ogbu, 1988; Sternberg, 1988). Applying Western theories to other cultures can be problematic because levels and stages in student development are not universal (Dixon, Tronick, Keefer, & Brazelton, 1992; Hewlett, 1992; Sternberg, 1988). Keeping this in mind, it is important to realize the differences between minority and cross-cultural groups and to research this topic with caution.

Family Structure and Academic Achievement

For the purpose of this research, family structure may be defined as the internal make-up of a family unit, which may include a parent and/or parents, a child or children and other family members who interact as a part of the unit, such as a live-in relative(s) (i.e., grandparent(s), uncle(s), cousin(s), etc. Bloom (1964) concluded that most children's basic intellectual development is completed before school age attendance, which stimulates the search from similar features in the home environment that facilitate intellectual performance. Wolf (1964) was able to postulate a number of environmental process variables on the basis of his findings. In his investigation, Wolf (1964) found a multiple correlation of .79 between environmental measures and academic achievement. Meanwhile, Wolf (1964) found a multiple R of .80 for the relationship between environmental process measures and IQ.

Because these results were replicated with highly consistent results, one variable remained clear in both findings. The achievement element refers to the goals and aspirations parents hold for themselves and for their children. It involves the academic achievement standards they hold and their standards of reward for educational achievement. Parental involvement is reflected in the kinds of concrete knowledge they have of the developmental or educational status of their student and the specific plans and preparations they have made to ensure that the educational goals they hold for their student can be attained. Another variable considered to impact academic achievement is the educational and occupational level attained by close friends and relatives.

Socioeconomic Status, Other Influences, and Academic Achievement

Brofenbrenner (1979,1986) noted that student development is not only influenced by the family, but also by systems that exist independently outside the family's control such as parent's workplace, neighborhoods, schools, and available health and daycare services. He also cites macroeconomic forces that cause stressors such as parental unemployment, job, and income. This work concept taps into a body of research within the developmental psychology field that examines an ecological approach that accounts for multiple levels of influences in proximity to the student.

Based on the body of literature that exists on this topic, there are assessments of economic context at the family level, which is the economic environment closest to the student. When financial resources are necessary to obtain physical and material resources that aid in a student's development (e.g., food, books, learning aids, activities), income becomes the core analysis of family economic context (Coleman, 1988; Entwisle & Astone, 1994).

Incomes exclude other factors required to facilitate development throughout childhood and adolescence. Other factors include human capital, defined as a diverse set of intangible resources (e.g., valuation of education, high education aspiration). These tangible resources are indexed by parental education, and social capital, which involves interpersonal behaviors such as supportive family relationships (i.e., parental attention) and relationships that bridge students to the larger world (Coleman, 1988).

Implications obtained from the review:

The available studies posit that students' intelligence, SES, personality, level of stress, and coping mechanisms have important role in enhancing achievement of Mathematics. But the survey of the literature revealed that no decisive work has been conducted on the relative contribution of Intelligence different aspects of Socio-Economic Status in the development of academic achievement as well as the relationship of these variables with achievement in Mathematics, across the secondary level student population of Agartala, Tripura (W).

On the basis of the above review the following observations can be made:

i) Though several studies have been conducted on Academic Achievement, fewer studies have conducted on Achievement in Mathematics.

ii) There is a series drought of studies regarding the relative contribution of students' intelligence, & SES have important role in enhancing achievement of Mathematics.

iii) Current literature concludes that minority parents are to blame for their children's poor performance. Parents are supposed to be responsible for helping to educate their children. Instead, their children are not motivated and dedicated enough to make the system work for them (Dunn, 1987).

iv) Studies have reported that the lower socioeconomic status (SES) minority parents view their student's teachers as pedagogical experts and are unlikely to confront, question, or interfere in what they view as the teacher's domain (Carasquillo, 1994).

v) The studied showed that complacency of the parent often results in a misleading interpretation by the teacher that minority parents are not concerned about their children's education. In reality, these families are highly concerned and willing to help their children succeed in school, but they are unsure how to help (Delgado-Gaitan; 1990; Goldenberg, 1993; Goldenberg & Gallimore, 1991).

vi) Finally, the chemistry of the knowhow of the contribution of the Intelligence, different dimension of SES taking students' sample of Tripura have not been investigated by previous researches.

The Present Study:

On the basis of the theoretical foundations discussed in chapter-1 and the above review of literature, the present study intends to determine the relative contribution of Intelligence different aspects of Socio-Economic Status in the development of academic achievement as well as the relationship of these variables with achievement in Mathematics, across the secondary level student population of Agartala, Tripura (W).

With the elaboration of relevant studies for each of the selected variables having been done in the present chapter, the following chapter on methodology will help to shed light on the objectives, sample, tools & techniques employed to investigate the research problem.

Types of Research Employed in the Study

The study is *ex post facto* in nature. Here attempts have been made to find out whether there exists any significant difference between the students of High and Low Socio-Economic Status in terms of Achievement in Mathematics.

Here the researcher also tried to find out whether any significant difference exists in the Achievement of Mathematics between the students of High and Low levels of Intelligence.

The researcher also attempts to find out the relative contribution (stepwise contribution) of Intelligence and Socio – Economic Status *(Number of Family Members, Qualification of the Parents, Occupation of the Parents, Source of Income, Monthly Income, Land Area, Category of House and Furniture)* in the development of the power of Achievement in Mathematics among the Secondary Level Students of Agartala, Tripura.

Here Intelligence, and Socio-Economic Status are treated as predictor variables and Achievement in Mathematics as criterion variable. The researcher does not have direct control on the predictor variables because their manifestations have already been occurred or because they are inherent not manipulable.

Inferences about relation among variables have been made, without direct interventions, from concomitant variation of predictor variables (Intelligence and Socio-Economic Status) and criterion variable (Achievement in Mathematics) by appropriate statistical analysis.

Correlational technique has also been used to find out the relationship between Achievement in Mathematics and Intelligence as well as the relationship between Achievement in Mathematics and Socio-Economic Status.

Sample of the Study

Population: Generally, population refers to the group or collection of individual which have similar traits or characteristics. Population is the entire set of individuals or the other entities to which the study findings are to be generalized (Check & Schutt, 2012). In the present study, secondary school students from Agartala, West Tripura district, Tripura, India was selected as target population to generalize the results.

Sample: The Sample comprises of 390 (male and female) Secondary Level Students of Agartala, Tripura. These subjects have been taken from randomly chosen **10 different Schools of West**

<u>Tripura</u>. The subjects have been selected on the basis of the following criteria.

General Inclusion Criteria

- Age Group: 13 to 16 years
- All were of Indian nationality.
- Minimum Educational Qualification – Class VIII Pass.
- Those who are comfortable with English.
- All are settled in an urban and semi-urban environment.
- The sample considered in this study consists of only those who are by birth a permanent resident of Tripura.
- Those who do not have any past or present history of any psychiatric or chronic physical illness or any disabilities.

General Exclusion Criteria

- Individuals with history of any serious physical and / or organic ailment or who are not willing to answer all the questions.
- Individuals having history of any psychiatric illness.

Selection of Sample

Purposive Sampling was followed in this study. Subjects were approached individually and were asked to volunteer for the study and those who agreed and met the criteria defined for the study were included as prospective subjects.

The Final Sample

On the whole 472 data were collected. Data of 82 individuals were eliminated due to incomplete data submission. And in total **390** data were retained of which **198** were Male Secondary Level Students and **192** were Female Secondary Level Students.

Selection of Tools

After designing the hypotheses, tools were selected for the present study.

- Personal Information Schedule
- Raven's Advanced Progressive Matrices developed by J.C. Raven, J.H. Court, and J. Raven **[**1977, Revised in 1998**]**
- Socio-Economic Status Scale Revised (SES Scale) **[**T.N.Pan, (2012)**]**
- Mathematics Achievement Test **[**Developed by the Researcher, (2015)**]**

Description of the tools

The selected tools for the present study need to be discussed in details.

Personal Information Schedule

A specially designed information schedule was prepared for collecting necessary background information about the subjects and their family. Moreover, certain basic information like Age, Education, Occupation, Locality / Area of Residence, Community, Marital Status, Family Monthly Income and Presence of any (past/ present) mental or physical illness or any kind of disability, Information regarding parents and the like were attempted to elicit through the schedule. The items of the information schedule were prepared earlier and were approved by experts of this field. The personal information schedule has been attached in Appendix I.

Raven's Advanced Progressive Matrices developed by Raven, J.C., Court, J.H. and Raven, J. (1977, Revised in 1998)

There are varieties of intelligence test which measure the intellectual ability of subjects. Ravens Advanced Progressive Matrices is a first non-verbal and culture free tool in order to get an index of the IQ of the subjects without consideration of language. The main purpose of construction of the Advanced Progressive Matrices (APM) was to find out the intellectual efficiency among the intellectually below average, average, above average and even superior ability students. The investigator wants to know the superior ability of the students and it should be free from any cultural effects.

Socio-Economic Status Scale Revised (SES Scale) by T.N. Pan, (2012)

The socio-economic status scale (SES) which was used by researcher was constructed by Prof T.N. Pan. The SES scale was also validated by the author of the scale. The reliability of the scale was estimated with reference to its validity. As per opinion of the author of the scale both content and construct validity was estimated during the construction of the scale based on the opinion of the experts in this field. It was initially constructed in two parts. First part for general information and second part for socio-economic status of the person, which include educational status of the family, the living condition of the family, academic status of the family, house hold condition, properties belonging of the family etc. The scale was revised from time to time to maintain the parity with the social situation. The language of the scale is in Bengali and items are very cleared, precised and to the point. Therefore the scale is having necessary and sufficient characteristics. The scale is comprehensive in nature and does not discriminate between male/female subjects. Its reliability is checked by test-retest reliability method, which was found to be r= .82. Validity of the test described in the manual by the author, is also quite satisfactory.

The researcher used the scale with proper permission from the author and duly acknowledged the author for granting the scale to administer to the study area. Therefore the researcher is very thankful to the author of the scale.

The different subscales of the test are as follows:

- Number of Family Members
- Qualification of the Parents
- Occupation of the Parents
- Source of Income
- Monthly Income
- Land Area
- Category of House
- Furniture

Data Analysis and Interpretation

The data obtained from the subjects were systematically arranged and properly tabulated. The presentation of the data has reflected the measures of the selected research variables and their statistical distributions on the basis of which suitable statistical techniques were applied to analyze and find out necessary information to serve the objectives of the study. Keeping in mind the objectives of the present research study, it is essential to address whether there is any question of resemblance or difference existing between the so called Intelligent and not so Intelligent secondary school students or economically stable and not so stable group of students of Tripura state in terms of their Achievement in Mathematics.

For statistical significance, Mean, Standard Deviation, Homogeneity test were done. For analyzing the relationship among the variables, Pearson's Product Moment Correlation was done. For ascertaining the relative contribution of the different predictor variables to Achievement in Mathematics, the Step-wise Multiple Regression was done. For the analysis, 0.05 and 0.01 levels of significance were considered. The processed data have been reported in different sections as follows.

The results are discussed in the following sections:

Section-1: Test of Homogeneity related to criterion variable among the students of different levels of Intelligence and Socio-Economic Status.

Section-2: Descriptive statistics and inferential statistics among all the variables.

Section-3: Statistics of Correlation between predictor variables and criterion variable.

Section-4: Predictive statistics between predictor variables and criterion variable.

Discussion

Mathematics has a great importance in our everyday life. In the era of science and technology, we cannot proceeds a single step without mathematics. In modern world, mathematics is being increasingly used in sciences, technologies, social science, education etc. The development of a country depends upon mathematical knowledge of the people. It is considered as a basic and compulsory subject up-to the secondary level. Kothari commission has stressed upon the introduction of mathematics as a compulsory subject up to secondary level. With the use of computer and other devices there is a more emphasis in the mathematics. Though the world is more mathematically inclined, the majority of students in school feel it as more abstract. The teacher can teach it with the help of modern educational technological devices and more advanced effective methods of teaching, there is a poor performance of the students in the mathematics. But it is found that students' achievements in mathematics at secondary level under Tripura Board of secondary Education are very poor. Hence, there must be some factors like psychological, social and biographical affecting the learner in learning of mathematics at large.

Whether intelligence and socio-economic status are responsible for poor performance in mathematics? No work in this area has done earlier for the achievements of mathematics at secondary level students in relation to intelligence and socio-economic status taking the students of Tripura at large.

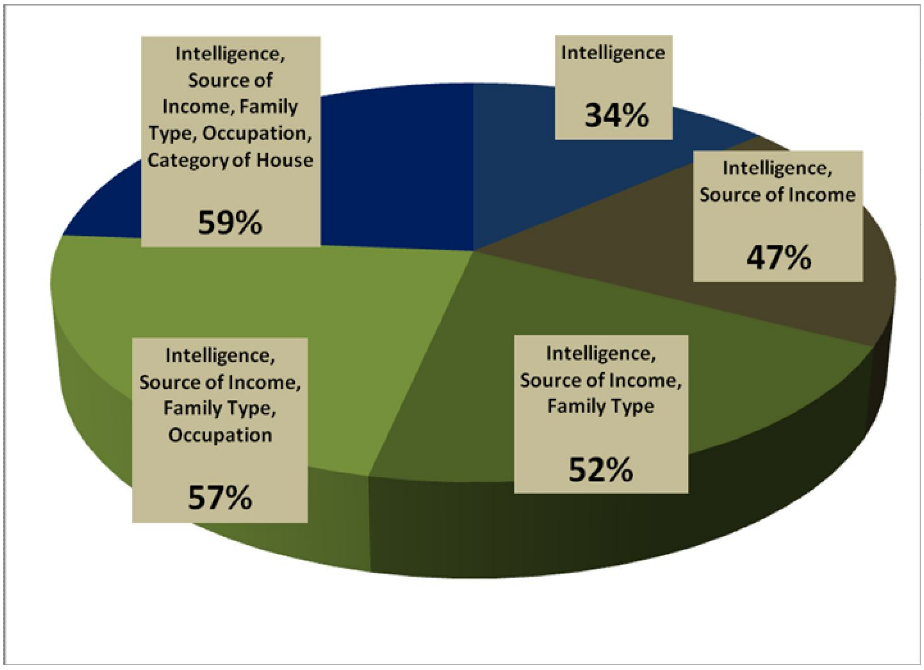
Thus the major thrust of the present research was to study the nature and contributory factors of Achievement in Mathematics of the secondary level students. The study aims to explore the factors that are enhancing as well as deteriorating the Achievement of Mathematics of the students and for this purpose the following important variables have been undertaken: Intelligence, and Socio-Economic Conditions.

For this purpose, a group of 390 secondary level students studying in class IX from the 10 different schools of West Tripura were selected, followed by a purposive sampling technique. Data were collected by using APM and SES Inventories.

In order to execute the objectives (as mentioned earlier) of the present study, on the basis obtained scores, on the scale of socio-economic status, the students were categorized into certain groups as per the different dimensions of SES. Moreover on the basis of the Intelligence Scale, the students are categorized into three groups viz. high, middle and low level of Intelligence status. Further in order to compare them on Achievement in Mathematics, Intelligence and SES scores Two - Way Anova, followed by t-tests were, used, with the help of latest version of SPSS. Pearsons *r* was also calculated in order to find out the correlation among Achievement in Mathematics, Intelligence and SES.

- **Socio-Economic Status and Academic Achievement in Mathematics**
- **Intelligence, Socio – Economic Status and their Interaction Effect on Academic Achievement in Mathematics**
- **Integration of the present findings.**

Pie chart showing the relative contribution of Intelligence, and different aspects of Socio-Economic Status in the development of Secondary level students' Achievement in Mathematics.



Findings

- The students with high socio economic status group is better than the students with low socio economic status group is Achievement in Mathematics.
- The students of small families are well off than the students of big families with regard to achievement in Mathematics.
- The students whose parents are highly qualified are better in Achievement in Mathematics
- The students whose parents are in secure profession are better in Achievement in Mathematics.
- The students whose parents are having a fixed and adequate source of income are better in Achievement in Mathematics.
- The students whose monthly family income is more are comparatively better in Achievement in Mathematics.
- The students who reside in pucca stable house are better in terms of Achievement in Mathematics.

Conclusion

Though the world is more mathematically inclined, the majority of students in school feel it as more abstract. The teacher can teach it with the help of modern educational technological devices and more advanced effective methods of teaching, there is a poor performance of the students in the mathematics. But it is found that students' achievements in mathematics at secondary level under Tripura Board of secondary Education are very poor.

Hence, there must be some factors like psychological, social and biographical affecting the learner in learning of mathematics at large.

The major thrust of the present research was to study the nature and contributory factors of Achievement in Mathematics of the secondary level students. The study aims to explore the factors that are enhancing as well as deteriorating the Achievement of Mathematics of the students and for this purpose the following important variables have been undertaken: Intelligence, and Socio-Economic Conditions.

Through the present study it is apparent that Intelligence is a fundamental factor which can predict mathematical academic achievement in schools, and has an important role in students' future success (Kuncel et al., 2004; Chamorro-Premuzic & Furnham, 2005). It can be concluded that Intelligence and 4 dimensions of SES i.e. Source of Income, Number of Family Members (Family Type), Occupation and House category are the main common predictors of Students Achievement in Mathematics.

Suggestions to Parents and Teachers

- Students with low socio-economic status are comparatively poor in mathematics so students with low socio-economic status should be given special emphasis so that they can overcome the problems in mathematics and can do good results.
- Students with big families are to be given attention by the family members and the teachers so that they improve their achievement in mathematics.

- As the parents educational qualification has a role in achievement in mathematics so the teachers of the school should take care those students whose parent's educational qualification is low.
- Security in parent's occupation has an impact on their children's achievement in mathematics, so those students whose parents occupation is not secured they should be encouraged for good achievement in mathematics.

Areas of Further Research

After a thorough review of the Achievement and its related variables, numerous interesting and useful studies await to be concluded in these areas which basically aimed to relate some other aspects as listed below:-

In present study, the results obtained by the researcher might not cover all the areas of achievement in mathematics, intelligence and socio-economic status of children. Further research may be needed to cover all the population. Hence some valuable recommendation for the further research in this field is recommended. These are –

- In the present study researcher has taken only the former west Tripura district but research can be taken in other two former districts of Tripura.
- In present study research has taken only secondary level students but research can be done on students at

    a) Primary level

    b) Upper primary level

    c) Higher secondary level.

- Achievement in mathematics not only depends on intelligence and socio-economic status so research can be done on the following areas:

  a) Attitude and achievement in mathematics

  b) Interest and achievement in mathematics

  c) Mental health and achievement in mathematics

  d) Drill and practice and achievement in mathematics.

Hence in wide canvas of the present research field it can be said that a few noteworthy points of psychosocial correlates have been traced to add new dimensions of knowledge regarding Achievement in Mathematics. Future effort is needed in the field of education and wellbeing of the students so that the human attribute of positive thinking and efficient dealing can be turned out into the most precious human resource and investments in terms of nurture, cultivation and manifestation to enhance human equipment to phase out inevitable negativities of life.