Interest in Mathematics and Academic Achievement of High School Students in Chennai District

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Abstract:-Mathematics interest is a complex behavioural aspect of mathematics. It has so many characteristics and it can be attributed to as many situations as we discuss in mathematics education. We can use it to study at various educational levels, say primary to post graduate; we can use it to associate with various school subjects; we can use it to relate sex, residence, type of school, teaching and learning situations, and physical facilities and so on. But the present study of scientific attitude is concerned with the high school students at Chennai district. It is also concerned with the gender, type of management, locality of school, community, father's educational qualification, mother's educational qualification, father's occupation, mother's occupation and family monthly income.

Overall the present study of concluded that, there is a significant difference in interest in Mathematics and academic achievement of high school level students in respect of their type of management. Moreover, the students should train and exposed to various problem solving skills as a supportive technique to reinforce the learning of the subject mathematics. So as to bring about a better teaching and learning process in the classroom. Hence it is suggested from the findings that interest in Mathematics and academic achievement of high school level students should be motivated and made genius in the schools for success of the effective classroom.

I. INTRODUCTION

Education is a process of human enlightenment and empowerment for the achievement of a better quality of life that leads to develop harmonious personality and involves all aspects of intellectual, religious, moral and physical of the personality of the Person. Schools are always transitional institutions. They prepare pupils for education or for occupation or for family life and so on. Mathematics in the real sense is a science of space and quantity that helps in solving the problems of life needing numeration and calculation. Mathematics provides opportunities for the intellectual gymnastic of the man's inherent powers. Teaching of Mathematics essentially helps the students in acquiring essential mathematics knowledge, skills, interests and attitudes. Academic achievement has become an index of child's future in this highly competitive world. Academic achievement has been one of the most important goals of the educational process .Achievement encompasses student ability and performance. It is multidimensional and intricately related to human growth and cognitive, emotional, social, and physical development also, reflects the whole child and not related to a single instance, but occurs across time and levels, through a student's life. Mathematics is not enough to impart theoretical learning; that learning must be put into practice. True learning is that which affects behaviour and whereby the learner makes practical use of his knowledge

In India the quality improvement of mathematics education is the greater need of today the quality of education can be measured through achievement .Mathematics interest is a complex behavioural aspect of mathematics. It has so many characteristics and it can be attributed to as many situations as we discuss in mathematics education. The key strategy of mathematics teaching should focus on keeping the students interest on mathematics .If the students are interested in learning mathematics that should be helpful their academic achievement and also teacher tasks becomes easier. The importance of interest in mathematics cannot be overestimated. We are living in a very important time in human history, where people are witnessing more and more advertisements and persuasive communications than ever before. Mathematics Interest is a key interest of psychologists, advertisers, and more to understand what makes people change their beliefs or opinions.

The Literature review of studies conducted on interest in mathematics studied the influence of learning style, intelligence and classroom climate on process outcomes in mathematics (Aruna et al 2004) .Another author attempted to determine whether or not any relationship exists between mathematics problem performance and field dependent-independent learning style, logical reasoning ability, mental capacity, age, gender and academic level and compared the problem solving strategies employed by advanced notices and experts in mathematics (Edward 2012).Some other author conducted a study on "Teacher-Student Relationships, Sense of Belonging, Academic Self-Concept and Academic

Achievement of Students Enrolled and not Enrolled in Small Learning Communities .All of the variables were closely interrelated. Students, who had strong academic self concept, did develop positive relationships with their teachers, and felt a sense of belonging within their learning environment. These findings were positive, although not strong, and consistent across all demographic differences.(Eugenia 2007). The review of the studies mentioned above reveals that no study was undertaken on interest in mathematics and academic achievement of high school students except few studies. As the Intermediate stage is found at risk in terms of activity based learning it is felt that there is dire necessity to study the interest in mathematics of high school students in relation to academic achievement by them. The researcher felt the necessity to analyze the interest and Academic Aspects to have a clear understanding of the interest in mathematics among students. Hence, the topic is titled as study on interest in mathematics and academic achievement of high school students

II.   METHODOLOGY

A. Research Design

The present study attempts to find out the Interest in mathematics and academic achievement of high school students. Since the problem is concerned with "Survey" type, the investigator has selected the normative survey method for conducting the study.

B. Sample

Nine schools are selected through Stratified random sampling technique. The sample for the present study consisted of 300 high school students in Chennai District. The students of both sexes coming from both rural and urban areas were included in the study.

Tools used in the Study: The data are essential for carrying out research investigation. The data are collected with the help of the special apparatus called as tools. The success of a research must be received by selecting a proper tool for the research. So, that the investigator used the following tool. Such as 1) Interest in mathematics 2) Academic Achievement Inventory Description of the inventory: Interest in Mathematics tool was designed by L.M.DUBEY.Academic Achievement tool is constructed and standardized by a researcher Scoring procedure: (I) Interest in mathematics tool consists of as many as 40 statements. Each statement has two responses i.e. 'YES' or 'NO'. The maximum score for this scale is 80 and 40 is the minimum score. (II) Academic achievement tool consist of as many as 30 statements. Each statement has multiple choices. The maximum score for this scale is 30 and 0 is the minimum score There is no time limit to complete the research.

C. Data Collection

In Chennai district, the investigator selected three government schools, three government aided schools and three self-financed schools using stratified random sampling technique. A set of management students from each school was selected in a random manner. Thus the researcher used stratified random sampling technique for collection of data from the vast area of Chennai district.

III.   DATA ANALYSIS

The data of the present study collected from 300 high school students have been analyzed using the following statistical techniques;

- Percentage Analysis
- Descriptive Analysis
- Differential Analysis

All objectives and hypotheses formulated in this study were tested and testing of hypotheses was used on the result obtained through analysis of the data using the statistical procedure and the level of significance for rejection or acceptance of the null hypothesis has to be decided in advance. In the present study, only 5% level of significance has been taken into account.

Objective test conduct the level of interest in mathematics of high school students in respect of their gender. That 21.1% of the male students have low level, 71.8% of them average level and 7.1% of them have high level of interest in mathematics and 22.3% of the female students have low level, 66.9% of them average level and 10.8% of them have high level of interest in mathematics .The level of interest in mathematics of high school students in respect of their type of management It is inferred that 23.5% of the government school students have low level, 61.2% of them average level and 15.3% of them have high level of interest in mathematics and 17.8% of the government aided school students have low level, 63.6% of them average level and 18.6% of them have high level of interest in mathematics and 14.4% of the matriculation school students have low level, 61.9% of them average level and 23.7% of them have high level of interest in mathematics. The level of interest in mathematics of high school students in respect of their locality of school. It is inferred from that 17.6% of the rural area school students have low level, 59.2% of them average level and 23.2% of them have high level of interest in mathematics and 17.1% of the urban area school students have low level, 61.1% of them average level and 21.8% of them have high level of interest in mathematics.

Objective test conduct the level of academic achievement in mathematics of high school students in respect of their gender. It is inferred from that 9.4% of the male students have low

level, 74.7% of them average level and 15.9% of them have high level of academic achievement in mathematics and 7.7% of the female students have low level, 77.7% of them average level and 14.6% of them have high level of academic achievement in mathematics. The level of academic achievement in mathematics of high school students in respect of their type of management. It is inferred from that 17.6% of the government school students have low level, 64.7% of them average level and 17.6% of them have high level of academic achievement in mathematics and 10.2% of the government aided school students have low level, 67.8% of them average level and 22% of them have high level of academic achievement in mathematics and 8.2% of the matriculation school students have low level, 66% of them average level and 25.8% of them have high level of academic achievement in mathematics. The level of academic achievement in mathematics of high school students in respect of their locality of school. It is inferred that 17.6% of the rural area school students have low level, 59.2% of them average level and 23.2% of them have high level of academic achievement in mathematics and 17.1% of the urban area school students have low level, 61.1% of them average level and 21.8% of them have high level of academic achievement in mathematics.

A. Hypothesis Testing

Difference between male and female students of high school level in respect of their interest in Mathematics .Found that the calculated't' value 1.373 is less than the table value 1.96 at 0.05. And their achievement in mathematics that the calculated't' value 1.632 is less than the table value 1.96 at 0.05. Level of significant Hence it is found that, there is no significant difference between male and female students of high school level in respect of their interest and their achievement in Mathematics and therefore the null hypothesis is accepted.

Difference between government and government aided school students of high school level in respect of their interest in Mathematics. Found that the calculated't' value 0.105 is less than the table value 1.96 at 0.05. And their achievement in mathematics that the calculated't' value 0.238 is less than the table value 1.96 at 0.05. Level of significant Hence it is found that, there is no significant difference between government and government aided school students of high school level in respect of their interest and their achievement in Mathematics and therefore the null hypothesis is accepted.

Difference between government and matriculation school students of high school level in respect of their interest in Mathematics. Found that the calculated't' value 2.108 is greater than the table value 1.96 at 0.05. And their achievement in mathematics that the calculated't' value 2.733 is greater than the table value 1.96 at 0.05. Level of significant Hence it is found that, there is a significant difference between government and matriculation school students of high school

level in respect of their interest and their achievement in Mathematics and therefore the null hypothesis is rejected.

Difference between government aided and matriculation school students of high school level in respect of their interest in Mathematics. Found that the calculated 't' value 2.320 is greater than the table value 1.96 at 0.05 .And their achievement in mathematics , that the calculated' value 3.572 is greater than the table value 1.96 at 0.05. Level of significant. Hence it is found that, there is a significant difference between government aided and matriculation school students of high school level in respect of their interest and their achievement in Mathematics and therefore the null hypothesis is rejected.

Difference between rural and urban area school students of high school level in respect of their interest in Mathematics. Found that the calculated't' value 0.680 is less than the table value 1.96 at 0.05. And their achievement in mathematics, that the calculated't' value 0.365 is less than the table value 1.96 at 0.05. Level of significant. Hence it is found that, there is no significant difference between rural and urban area school students of high school level in respect of their interest and their achievement in Mathematics and therefore the null hypothesis is accepted

The data collected related to the study were analyzed and interpreted. It gives the various mathematical analyzes done in order to test the hypotheses. The percentage analysis used to find the relationship between interest in mathematics and academic achievement in mathematics among high school students and t-test and correlation analysis were used to find out the significant relationship between the groups. The findings and conclusions thus obtained from the analyses of this chapter have been summarized and presented along with brief report of the research study and implications of the study

IV. DISCUSSION OF RESULTS

Bagachi (2007) The objective to determine the relationship between the scores of boys and girls on interest and scholastic achievement, and to predict the scholastic achievement of boys and girl students by taking a sample of 689 students of class Xth and found that in case of girls there existed a low and positive relationship between scholastic achievement of mathematics; the regression equation for prediction of scholastic achievement indicates that about 23% of variance of scholastic achievement in life science explained jointly by interest and social disadvantaged group.

Compare with the above study the same result was found. There is a relationship between interest in Mathematics and academic achievement of high school level students.

Dwivedi, R.D (2014) (1) The students from schools with enriched environment had significantly better academic

achievement than the students from poor school environments. (2) The students who were high approval seekers had significantly greater achievement than the students who were low approval seekers. (3) Academic achievement of students of the urban schools was significantly higher than that of students of the rural schools.

Compare with the above study the different result was found. It is found that, there is no significant difference between rural and urban area school students of high school level in respect of their academic achievement in Mathematics.

V. CONCLUSIONS

Overall the present study of concluded that, there is a significant difference in interest in Mathematics and academic achievement of high school level students in respect of their type of management. Moreover, the students should train and exposed to various problem solving skills as a supportive technique to reinforce the learning of the subject mathematics. So as to bring about a better teaching and learning process in the classroom. Special educational programmers must be introduced by the school. Teachers must help them to understand the importance of mathematics in giving out maximum practice. Teacher-Parent association must be maintained to share their ideas to understand the family background and plan together for the betterment of the children. Parents must help the children to feel that they are accepted, loved, understood and respected. Use of mathematics in day to day life must be improved and the children must be taught about the examination process so as to lead peaceful life various types of co-curricular activities should be organized frequently to promote qualities such as co-operation, tolerance, open-mindedness, sharing of responsibilities to enhance their academic achievement. Hence it is suggested from the findings that interest in Mathematics and academic achievement of high school level students should be motivated and made genius in the schools for success of the effective classroom.

REFERENCE

[1]. Adelman, C. (2006). The toolbox revisited: Paths to degree completion from high school through college. Washington, DC: U.S. Department of Education. Availableat www.ed.gov/rschstat/research/pubs/toolboxrevisit/index.html.

[2]. Blackwell, L., Trzesniewski, K., & Dweck, C. (2007). Implicit theories of intelligence predict achievement across an adolescent transition: A longitudinal study and an intervention. Child Development, 78(1), 246–263.

[3]. Chatterjee.S. Mukherjee.M and Mitra, S.K. Higher secondary science achievement as related to scientific interests and attitude, ISI. Calcutta.

[4]. Chitins, S. and Naidu, U, "Identify of scheduled caste students". Tata institute of social sciences, Monograph 1981.

[5]. Cooley, W.W and H.B.Reed,Jr.(1961) "The measurement of science interest: An operational and multidimensional approach". Science education, 45,320-336,1961.

[6]. Dweck, C. S. (2002). Messages that motivate: How praise molds students' beliefs, motivation, and performance (in surprising ways). In J. Aronson (Ed.), Improving academic achievement: Impact of psychological factors on education (pp. 37–60) New York: Elsevier Science.

[7]. Elizabeth fennema, Jullsa Sharma (1947) "Sex related differences in mathematics achievement; spatial visualization and affective factors'. American education journal, Vol.14, No. 1, 1947.

[8]. Gokhar, S.C. (1981) "Identification of a variable of educational environmental as related to the acquisition of mathematical concepts as the secondary stage; "Doctoral dissertation, Panaras university, 1981.

[9]. Hanson, O.E, (1975) "An investigation in to factor affecting science interest of secondary school students". Journal or Research in science teaching 1975, vol.2.No.3 ,pp.225-261.

[10]. Hasan, O.E., (1975) An Investigation into factors affecting science interest of secondary school students. Journal of Research in science teaching, 1975 Vol.2.no.3pp.255-261.

[11]. Hilary L.Schofield: "Sex Grade level, and the relationship between mathematics attitude and achievement in children. The journal of Education Research.

[12]. Kolesnick, T., (1960) "Comparison of academic achievement of school boys and girls "Journal of education research, vol. 9. NO.5, 1970.

[13]. Lucien Blair Kinney and C. Richard Purdy, (1960) Teaching mathematics in the secondary school, Holt, Rinehart and Winston, New York, 1960.

[14]. Marks, H. M. (2000). Student engagement in instructional activity: Patterns in the elementary, middle, and high school years. American Educational Research Journal, 37(1), 153–184.

[15]. Meyer, G. (1970) clarified that research on interest in science seems to be related to sex, science achievement, science attitude, mechanical and abstract reasoning abilities and practiced hobbies.

[16]. Michaels and Karnes, (1978) "A comparative study of the achievement in mathematics of urban and rural students of standard IX in some of high schools of Coimbatore", M.ED., Thesis, Madras, university, 1978.

[17]. Neverach (1992) found the effect of co-operative mastery teaching strategies on mathematics achievement. The stated that there is no difference between boys and girls in mathematics achievement.

[18]. Ray .Skinner, Jr, and R.S.Bercikowoski, (1973) "Measuring specific interests in Biological, physical and Earth Sciences intermediate Grade levels". Journal of Research in science. Teaching, 1973.

[19]. Roth man, A "Teacher characteristics and student learning Journal of Research in Science Teaching "1696,6,340- 348".

[20]. Simpson, Ronals, D. (1978) Relating students feelings to achievement in Science:. In many Bull Rowe (Ed) what Research says to the science Teacher. Calgary Alberta: National Science Teachers Association, 1978 pp.40-45.

[21]. Stevens, J.T and R.k. Atwood "Interest scores as predators of science process performance for junior High students" science education, 62(3):303-308, July, September.

[22]. Yadav.M. (1984) "Classroom learning behaviour of pupils of different SESD and their achievement in science" Ph.D education Meerat University 1984.