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TEACHER-PARENTAL SUPPORT, STUDY HABITS, APTITUDE FOR AND ATITUDE TOWARDS MATHEMATICS AS CORRELATES OF MATHEMATICAL ACHIEVEMENT

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Abstract

The present paper includes the study of teacher-parental support, study habits, aptitude for and attitude towards mathematics as correlates of mathematical achievement. Random sampling technique was used to study the present problem. Sample was collected in two stages. At first stage, data was collected for construction and standardization of mathematical aptitude test and attitude towards mathematics scale. At second stage, 756 students of 10+1 class of Arts and Science faculties from different schools situated in rural and urban area of boys and girls of Punjab state constituted the sample of the study. Teacher-parental support scale, study habits inventory, mathematical aptitude test and attitude towards mathematics scale were used as a research tools. Major findings of the study are discussed at the length of paper.

Key words: Teachers – parental support, Study habits, Mathematics and Achievement.

1. Introduction

Mathematics is a subject which provides basis, directly or indirectly almost to all the subjects of both Arts and Science streams. Mathematics, as an expression of human mind, reflects the active will, the contemplative reason and the desire for aesthetic perfection. Its basic elements are logic and intuition, analysis and construction, generality and individuality (Courant and Robbins, 1941).

Mathematics has practical utilitarian values. It disciplines the mind; plays an important role in the advancement of culture and civilization; develops all our intellectual powers; teaches truthfulness, honesty, patience, self-control and self-confidence; develops power of reasoning; gives shape and definiteness to the properties of matter. Apart from this, it has aesthetic, psychological, international, social, vocational and research values (Aggarwal, 1986).

The main aim of education is to modify the behaviour of the child according to the needs and expectations of society. One's behaviour, to a great extent, depends upon his attitude towards the things, ideas, persons, objects or his environment. The entire personality and development of the child is influenced by the nature of his attitudes. Jain (1979) found that attitude towards mathematics plays a great role in the mathematical achievement of the students. Rosaly (1992) has found that attitude of high school students towards the learning of mathematics and their achievement in mathematics is highly correlated. He also found that urban boys and girls have more positive attitude towards mathematics than rural boys and girls.

The teacher is the most important resource in any classroom. The teacher's task is to provide sufficient challenging situations and opportunities to the children. A pupil's learning is a function of

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the kind of teaching to which he is exposed. The classroom teacher is vital in the development of child's capacity to think and reason (Dean, 1995). The home accepts the major responsibility for transmitting and translating those aspect of the cultural heritage that have been formalized in school subjects, such as science, mathematics, history etc (Breckenridge and Vincent, 1961). Thus parents are most influential people. Aggarwal (1986) studied that the high achieving group had been getting the higher parental encouragement.

Peter's (1988) study revealed that the children who had his father's support made better progress with achievement in mathematics than those with no father's support. Parental attitudes and support towards school, books and learning affect the children's achievement (Dean, 1995). Rao and Parthasarathy (2000) has pointed out that the level of education the parents want the child to receive and the kind of job the parents like the child to have are the important components of learning environment. Children need some individual attention and if the parents and teachers are able to help them to learn and meet their individual needs, then they will enable them to work creatively and independently. Thus teacher-parental support plays an important role in the education of child.

Often the parents and the teachers are at a loss to understand the reason for the discrepancy between the ability of their children and their actual accomplishment. At least part of the contribution to the condition is likely to come from poor study habits or lack of training in study. Occasionally, a slight change in the way of studying makes an ordinary performance into a superior one. So, there is a reason to believe that many students who fail could succeed if they form effective study habits. Jamaur (1958) conducted an investigation into some of the psychological factors underlying the study habits of college students with the help of Study Habits Inventory. The findings suggested that study habits are positively related to academic achievement. Srivastava (1965) points out that for good academic success, good study habits and positive attendance are important. Bala (1990) in his investigation found that there is a positive relationship between study habits and academic achievement.

In many spheres of everyday life we usually come across the individual who under similar circumstances excel the other persons in acquiring certain knowledge or skills and prove themselves more suitable and efficient in certain specific jobs. Such persons are said to possess certain specific ability of aptitude**.** Ghuman (1976) conducted a study on a sample of 1948 students of both sexes in Madhya Pradesh. He found over achievers and under achievers did not differ significantly in their aptitudes. Singh (2004) studied the impact of scientific aptitude and study habits on the achievements of XI grade students in science. She found males and urban students had significantly higher scientific aptitude than females and rural students respectively.

2. Objectives

- To study the relationship of teacher-parental support and achievement of students in mathematics.
- To study the relationship of study habits and achievement of students in mathematics.
- To study the relationship of mathematical aptitude and achievement of students in mathematics.
- To study the relationship of mathematical attitude and achievement of students in mathematics.

3. Hypotheses

The following hypotheses are to be tested in the present investigation:

- There would be significant correlation between teacher-parental support and achievement of the students in mathematics.
- There would be significant correlation between study habits and achievement of the students in mathematics.

- There would be significant correlation between mathematical aptitude and achievement of the students in mathematics.
- There would be significant correlation between mathematical attitude and achievement of the students in mathematics.

4. Sample

Keeping in view the design of the present study, different sets of samples were drawn in the following stages:

Stage I

At this stage of sampling, the sub-samples were selected for different steps of standardization of Mathematical Aptitude Test and Mathematical Attitude Scale.

Stage II

At this stage of study, a multi staged randomization technique of sampling was employed. Out of all the districts of Punjab random selection of sample resulted in the selection of 756 students.

5. Tools Used

Following tools were used in the present study for data collection:

- Teacher-Parental Support Scale: This scale was constructed by the investigator herself.
- Study Habits inventory: Study Habits Inventory by Mukhopadhyaya and Sansanwal (1983) was used for data collection.
- Mathematical Aptitude Test: Mathematical Aptitude Test was constructed and standardized by the investigator herself.
- Mathematical Attitude Scale: Mathematical Attitude Scale was also constructed and standardized by the investigator herself.
- The marks of the individual students of 10^{th} class in mathematics were simultaneously collected on the same sheet of the questionnaire in the given space for it.

6. Statistical Techniques Used

Pearson's Product Moment Coefficient of Correlation was used to find out relationship of teacher-parental support, study habits, mathematical aptitude and mathematical attitude with academic achievement of students in mathematics.

7. Results and Interpretation

Hypothesis - 1: There would be significant correlation between teacher–parental support and achievement of the students in mathematics.

Table–1: The values of coefficient of correlation between independent variables of teacher–parental support and dependent variable of mathematical achievement

Independent Variables	The values of coefficient of correlation with dependent variable of Mathematical Achievement
Teacher - Parental Support	0.157

Teacher-Parental Support and Mathematical Achievement

The variable of teacher-parental support was positively significantly correlated with the dependent variable of mathematical achievement of the students at 0.01 level of significance (r=0.157, vide Table - 1). In other words, the results of present study clearly demonstrate that more is the support of teachers and parents, the more positive is the mathematical achievement of the child.

The reason for this significant positive correlation may be explained on the basis of good and congenial school and home environment, in which the children get the opportunity to think freely and to discuss their difficulties with the teachers and other members of the family in solving their mathematical concepts, facts and formulae.

On the basis of above results, hypothesis no. 1 that there would be significant correlation between teacher-parental support and achievement of the students in mathematics is retained.

Above results were in agreement with the already available empirical evidences by Douglas (1964), Vashistha (1981), Becher (1986), Bala (2001).

Hypothesis - 2: There would be significant correlation between study habits and achievement of the students in mathematics.

Table – 2: The values of coefficient of correlation between independent variables of study habits and dependent variable of mathematical achievement

Independent Variables	The values of coefficient of correlation with dependent variable of Mathematical Achievement
Study Habits	0.05

Study Habits and Mathematical Achievement

Dependent variable of mathematical achievement was found to be insignificantly correlated with the independent variable of study habits due to its insignificant value of coefficient of correlation (r = 0.05, vide Table - 2). In other words, variable of study habits and mathematical achievement are independent of each other.

The reason of above mentioned results may be that the students may have independent study habits and perhaps the students have not formed proper study sets, inventive and critical thinking etc. Secondly, most of the students use guess work to get the same answer given at the end of text book. Thirdly, majority of students depend upon cramming of numerical and if slightest change in the statement is done by teacher, then they are not able to find the correct answer. Therefore, hypothesis no. 2 that there would be significant correlation between study habits and achievement of the students in mathematics was not accepted. The results of the present study were not in agreement with the studies already conducted by Tuli (1982).

Hypothesis – 3: There would be significant correlation between mathematical aptitude and achievement of the students in mathematics.

Table – 3: The values of coefficient of correlation between independent variables of mathematical aptitude and dependent variable of mathematical achievement.

Independent Variables	The values of coefficient of correlation with dependent variable of Mathematical Achievement
Mathematical Aptitude	0.424

Mathematical Aptitude and Mathematical Achievement

The variable of mathematical aptitude was positively significantly correlated with the dependent variable of mathematical achievement of the students at 0.01 level of significance (r=0.424, vide Table - 3) In other words, the results of present study clearly reveal that mathematical aptitude and mathematical achievement of students go hand in hand with each other and mathematical aptitude is a powerful determinant of deciding their mathematical achievement.

The reasons for this significant positive correlation may be explained due to the facts that nature of mathematical aptitude test and achievement test in mathematics may be somewhat similar. The actual differences between aptitude test and achievement test in mathematics are not so clear-cut. Vocabulary influences one's scores on most aptitude tests. Similarly, one's aptitude for learning and test-taking influences one's grades on test of course achievement. Most tests whether labeled aptitude or achievement assess both ability and its development. Distinguishing aptitude and achievement is a practical matter. Aptitude tests are used to predict

future performance and achievement test to assess current performance and hence there is positive correlation between them. In the light of above results, the hypothesis no. 3 that there would be significant correlation between mathematical aptitude and achievement of the students in mathematics was retained. Similar results were found by Deshpande (1967).

Hypothesis - 4: There would be significant correlation between mathematical attitude and achievement of the students in mathematics

Table – 4: The values of coefficient of correlation between independent variable of mathematical attitude and dependent variable of mathematical achievement.

Independent Variable	The values of coefficient of correlation with dependent variable of Mathematical Achievement
Mathematical Attitude	0.242

Mathematical Attitude and Mathematical Achievement

Dependent variable of mathematical achievement was found to be significantly correlated with the independent variable of mathematical attitude of the students at 0.01 level of significance (r = 0.242, vide Table - 4). In other words, the results of present study clearly depicts that more the attitude towards the subject of mathematics the students has, the more is their mathematical achievement.

The reasons for the above mentioned results may be explained on the ground that achievement in mathematics depends upon intellectual reasoning, objectivity, originality, accuracy etc. and mathematical attitude also involves all these components. Another reason for the above mentioned results may be explained on the basis that if we have positive valence towards anything, it helps in creating more interest, leading to more practice and attaining more achievement. So, after viewing the above findings, the hypothesis no. 4 that there would be significant correlation between mathematical attitude and achievement of the students in mathematics was accepted. Above results were in line with the studies by Srinivasan and Sunderarajan (1990) and Rosaly (1992).

8. Suggestions For further research

- The study may be conducted on B.Ed. teacher-trainees who have opted teaching of mathematics as a teaching subject to know their mathematical aptitude/attitude towards mathematics.
- Aptitude and attitude of engineering students towards mathematics may be studied in relation to their teacher-parental support.
- The study may be conducted on mathematics teachers of secondary schools to know their level of aptitude for the subject of mathematics.
- Research scholars doing Ph.D. in mathematics and physics can be compared on their aptitude and attitude in their respective subjects.
- A study of mathematical achievement of senior secondary school students in relation to low average and high mathematical aptitude and attitude may be taken up.
- Instead of taking present variables some other variables e.g. intelligence, emotional intelligence, creativity may be taken up for the study.
- Study may be conducted on mathematical attitude in relation to non- cognitive variables of graduate students or students of senior secondary stage.
- Role of Mathematics Club, Mathematics Exhibitions, Mathematics Fair etc. in developing mathematical attitude of students toward mathematics may be explored.
- A comparative study of mathematical attitude of different types of exceptional children in

relation to mathematical achievement may be taken up.

9. References

1) Aggarwal, S.M. (1986). *A Course in Teaching of Mathematics*. New Delhi: Dhanpat Rai and Sons Publication. 1-14.

2) Bala (1990). *Relationship Between Study Habits and Students' Academic Achievement*. M.Ed. Dissertation, Punjab University, Chandigarh.

3) Bala, R. (2001)**.** *Attitude Towards Mathematics in Relation to its Values and Teacher-Parental Support.* M.Ed. Dissertation, G.H.G.H. College of Education, Sidhwan Khurd.

4) Becher, R.M. (1986). Parent Involvement: A Review of Research and Principles of Successful Practice in L.G. Katz (Edu.). *Current Topics in Early Childhood Education*, Vol. 6, pp. 85-113.

5) Breckenridge, M.E. and Vincent, E.L. (1961). Influence of the Home and Family. *Child Development*. Philadelphia: W.B. Saunders and Company, pp. 135-151.

6) Courant, R. and Robbins, H. (1941).*What is Mathematics.* Oxford University Press, p.15.

7) Dean, J. (1995). *The Children. Organizing Learning in the Primary School Classrooms.* New York: Prentince Hall, pp.19-25.

8) Deshpande, L.H. (1967). *Preparation of Predictive Battery of Tests for Aptitude for Science for Boys of Secondary Schools*. Ph.D. Edu. Nagpur University.

9) Douglas (1964). *The Home and the School*. London: Tourtane.

10) Gakhar, S.C. (2005). *Teaching of Mathematics*. Panipat: N.M. Publications. 11-174.

11) Garrett, H.E. (1976). *Statistics in* Psychology *and Education*. Bombay: Eurasia Vikas Feffer and Simons Ltd., pp. 10-245.

12) Ghuman, M.S. (1976). *A Study of Aptitudes, Personality Traits and Under Achievers.* Ph.D. Psychology, Ravisanker University.

13) Jain, D.K. (1979). *A Study of Significant Correlates of High School Failures in Mathematics and English with Special Reference to Jammu Division.* Ph.D. Edu., Jammu University.

14) Jamaur, K.K. (1973). Study Habits and Intelligence. *Psychological Study*, Vol.4(1), p. 66

15) Koul, L. (2001). *Methodology of Education Research* (3rd Ed.). IKAS publishing House Pvt. Ltd., pp. 187-206.

16) Good, V.C. (1973). *Dictionary of Education*. New York: McGraw Hill Book Company, p.494.

17) Gronlund, N.E. (1968). *Measurement and Evaluation in Teaching.* The Macmillan Company, New York.

18) Guilford, J.P. (1980). *Educational and Psychological Measurements*. John, Willy and Sons, New York.

19) Karim, S. and Dixit, A. (1985). *Teaching Aptitudes Test Battery.* Agra Psychological Research Cell, Tiwari Kothi, Belanganj, Agra.

20) Koul, L. (2001). *Methodology of Education Research*. (3rd Ed.). IKAS publishing House Pvt. Ltd., pp. 187-206.

21) Peter, M. (1988). *School Matters.* Open Books.

22) Rao, V.N. and Parthasarathy, R. (2000). Family and their Learning Environment. *The Educational Review*, Vol. 106, p.3.

23) Rosaly, A. (1992). *The Relationship Between the Attitude of Students Towards Mathematics and Achievement.* M.Phil. Edu., Madurai University.

24) Srivastava, S.S. (1965). *A Study of the Relationship Between Personality, Adjustment and Achievement.* Unpublished M.Ed. Dissertation, Allahabad University.

25) Srinivasan, K.J. and Sunderarajan, S. (1990). Higher Secondary Students Attitude Towards the Study of Mathematics for their

Achievement in it. *Journal of Progress of Education,* Vol. 64, pp.133-135.

26) Tuli, N.R. (1982). Study Habit as Correlates of Achievement in Mathematics. *Journal of Education and Psychology,* pp. 141-148.

27) Vashishtha, K. (1981). Teacher's Responsibility and its Impact on the Students Academic Achievement. *Journal of Indian Education*, Vol.7(1), pp. 61-62.