



“APPROACHES TOWARDS STUDYING MATHEMATICS AMONG HIGHER SECONDARY SCHOOL STUDENTS” - AN ANALYSIS OF PSYCHOLOGICAL AND SOCIOLOGICAL VARIABLES

S. Komalavalli¹, Ph. D. & S. Vijayalakshmi²

¹Assistance Professor & Research Guide, Lady Willington Institute of Advanced Study in Education

²Ph.D Scholar

Abstract

In the present world, technology has invaded almost all aspects of human life. Technological advancements have brought drastic changes in the field of education too. Educationists have started to emphasis quality education. Child - Centered Education have played important role in various aspect of school education. In this studies examine an approach to studying, especially in Mathematics among higher secondary school students plays a very important role in building Problem Solving Ability, improve Attitude towards Mathematics and help to achieve in Academic Achievement. For this purpose, A sample of Eleventh standard students was selected out of which there have been 300 girls and 300 boys belonging to the schools in Chennai.

Key Words: Emphasis, Educationists, Child- Centered Education



Scholarly Research Journal's is licensed Based on a work at www.srjis.com

Introduction

A variety of individual differences associated with students' approaches to studying have been identified, such as self-esteem, age, gender, coping strategies and personality traits. Furthermore, the relationship between student's achievement and attitudes, and their approaches to studying is bidirectional with variations in student's achievement and attitudes leading to variations in their approaches to studying and vice versa. It has been found that persons having intelligence and reasoning ability can solve the complex problems quickly. Therefore, it is necessary that on one hand we try to develop intelligence and reasoning ability and on the other hand we should also develop the Problem Solving ability through education. Achievement tests are useful aids for diagnosing a student's specific learning needs, for identifying his relative strengths and weakness, for studying his progress and predicting his success in a particular curriculum. Of all the different types of tests, achievement tests, achievement tests are used most frequently.

SIGNIFICANCE OF APPROACHES TO STUDYING

This study investigates the association between students' perceptions of learning context and approaches to studying at an individual level. The emphasis of this study thus focuses on individual student differences and, in order to facilitate the analyses presented, a statistical procedure (multidimensional unfolding analysis) has been introduced that is new to educational research of this nature.

The diagnostic value of an unfolding analysis is discussed and it is concluded that the methodology described in this study constitutes a potentially powerful paradigm for improving the quality of student by facilitating intervention in terms of the perception of the context in which learning occurs.

MAJOR OBJECTIVES OF THE STUDY

The present study is based on certain major objectives as follows

1. To establish the relationship between academic achievement and selected variables such as Approaches to Studying, Problem Solving Ability, Attitudes towards Mathematics and Sociological variables.

To ascertain whether there will be gender differences in the influence of

2. Incidentally to find out whether boys and girls in different types of schools, differ in their Approaches to Studying, Problem Solving Ability, Attitude towards Mathematics and Sociological variables.

HYPOTHESIS

The following have been framed in this investigation

1. To find out the relationship between
 - a. Approaches to studying and Academic Achievement
 - b. Approaches to studying and Attitude towards Mathematics
 - c. Approaches to studying and Problem Solving Ability
 - d. Problem Solving Ability and Attitude towards Mathematics
 - e. Problem Solving Ability and Academic Achievement
 - f. Attitudes towards Mathematics and Academic Achievement
2. There is no significant difference between Tamil and English Medium students of XI standard in their
 - a. Approaches to studying
 - b. Attitude towards Mathematics

- c. Problem Solving Ability
 - d. Academic Achievement
3. There is no significant difference between Female and Male students of XI standard in their
- a. Approaches to studying
 - b. Attitude towards Mathematics
 - c. Problem Solving Ability
 - d. Academic Achievement

METHODOLOGY

The researcher employed survey method of research for the study undertaken. Survey method has been adopted in the present study to collect, analysis and interpret the data. Data collected from the sample was scored and subjected to statistical processing for verification of hypotheses.

SAMPLE DISTRIBUTION

In the sample of 600 students, 200 students were drawn from the Government schools, 200 students from the Government Aided School, 200 students were drawn from the private schools.

In the sample of 600 students 300 students are boys 300 students are girls and from the whole sample of 600 students 300 students were from English Medium and 300 students from Tamil Medium.

As the study aims at finding out difference with respect to female and male, types of schools,

Parent's Educational Qualification, Medium of Instruction of XI standard students.

Tools for the study

1. A RASCH measurement model analysis, comprises 56 self-report items designed to measure student approaches to learning in a higher education context. It is assumed that there is an underlying trait that could be called "Approaches to Studying."
2. "Problem Solving Ability Test" tool was specially designed by L.N.DUBEY. It is the frame –work or pattern within which creative thinking and reasoning take place.
3. "ATTITUDE TOWARDS MATHEMATICS" is constructed by ELIZABETH FENNAMA and JULIA A. SHERMAN in the early 1970's.

4. Academic achievement of the sample was obtained from respective school mark register for the XI term half-yearly examination.

Scoring key

1. The Likert Type Approaches Scale is used for Approaches to studying under 4 point scale
2. L.N .Dubey’s Problem Solving Ability test has been standardized over a representative population of 600 students selected from higher Secondary school students.
3. The Likert Type Attitude Scale is used for Attitudes towards studying Mathematics under 5 point scale.
4. For Academic Achievement, Eleventh standard half- yearly examination marks is used as scoring key.

TESTING OF HYPOTHESIS

TABLE-1 SHOWING CORRELATION RELATION BETWEEN APPROACHES TOWARDS STUDYING AND ACADEMIC ACHIEVEMENT

Hypothesis-1 There is no significant relationship between Approaches to studying and Academic Achievement.

Pearson Correlation	r-value	Level of Significance
Approaches to Studying	.726**	0.01
Academic Achievement		

Inference: The hypothesis shows that there is significant relationship between Approaches to Studying and Academic Achievement in Mathematics at 0.01 level. Hence the Hypothesis is rejected.

TABLE-2 SHOWING CORRELATION RELATION BETWEEN APPROACHES TOWARDS STUDYING AND ATTITUDE TOWARDS MATHEMATICS

Hypothesis-2 There is no significant relationship between Approaches to studying and Attitude Towards Mathematics

Pearson Correlation	r-value	Level of Significance
Approaches to Studying	.833**	0.01
Attitude Towards Mathematics		

Inference: The hypothesis shows that there is significant relationship between Approaches to Studying and Attitude Towards mathematics at 0.01 level. Hence the Hypothesis is rejected.

TABLE-3 SHOWING CORRELATION RELATION BETWEEN APPROACHES TOWARDS STUDYING AND PROBLEM SOLVING ABILITY

Hypothesis-3 There is no significant relationship between Approaches to studying and Problem Solving

Pearson Correlation	r-value	Level of Significance
Approaches to Studying	.877**	0.01
Problem Solving Ability		

Inference: The hypothesis shows that there is significant relationship between Approaches to Studying and Problem Solving Ability at 0.01 level. Hence the Hypothesis is rejected.

TABLE-4 SHOWING CORRELATION RELATION BETWEEN PROBLEM SOLVING ABILITY AND ACADEMIC ACHIEVEMENT

Hypothesis-4 There is no significant relationship between Problem Solving and Academic Achievement

Pearson Correlation	r-value	Level of Significance
Problem Solving Ability	.721**	0.01
Academic Achievement		

Inference: The hypothesis shows that there is significant relationship between Problem Solving Ability and Academic Achievement at 0.01 level. Hence the Hypothesis is rejected.

TABLE-5 SHOWING CORRELATION RELATION BETWEEN PROBLEM SOLVING ABILITY AND ATTITUDES TOWARDS MATHEMATICS

Hypothesis-5 There is no significant relationship between Problem Solving and Attitudes Towards Mathematics

Pearson Correlation	r-value	Level of Significance
Problem Solving Ability Attitudes Towards Mathematics	.786**	0.01

Inference: The hypothesis shows that there is significant relationship between Problem Solving Ability and Attitudes Towards Mathematics at 0.01 level. Hence the Hypothesis is rejected.

TABLE-6 SHOWING CORRELATION RELATION BETWEEN ATTITUDES TOWARDS MATHEMATICS AND ACADEMIC ACHEIEVEMENT

Hypothesis-6 There is no significant relationship between Problem Solving and Academic Achievement

Pearson Correlation	r-value	Level of Significance
Attitudes Towards Mathematics	.655**	0.01
Academic Achievement		

Inference: The hypothesis shows that there is significant relationship between Attitudes Towards Mathematics and Academic Achievement at 0.01 level. Hence the Hypothesis is rejected.

TABLE-7 showing the difference between Tamil and English medium students in their Approaches to Studying

Hypothesis-7 There is no significant difference between Tamil and English Medium students in to their Approaches to studying

Variables	Medium	N	Mean	S.D.	S.E.M	t	Level of Significance
Approaches to Studying	Tamil	300	108.2467	5.7518	.3321	70.292	0.01
	English	300	155.1200	10.0160	.5783		

Inference: There is significant difference between Tamil and English Medium students in their Approaches to studying at 0.01 level. The Mean Value of English Medium students are high when compared to Tamil Medium students. Hence the above hypothesis is rejected.

TABLE-8 showing the difference between Tamil and English medium students in their Academic Achievement

Hypothesis-8 There is no significant difference between Tamil and English Medium students in to their Academic Achievement.

Variables	Medium	N	Mean	S.D.	S.E.M	t	Level of Significance
Academic Achievement	Tamil	300	54.1500	10.3119	.5954	22.743	0.01
	English	300	73.2833	10.2955	.5944		

Inference: There is significant difference between Tamil and English Medium students in their Academic Achievement at 0.01 level. The Mean Value of English Medium students are high when compared to Tamil Medium students. Hence the above hypothesis is rejected.

TABLE-9 showing the difference between Female and Male students in their Attitudes towards Mathematics

Hypothesis-9 There is no significant difference between Female and Male students in their Attitudes towards Mathematics

Variables	Medium	N	Mean	S.D.	S.E.M	t	Level of Significance
Attitudes towards Mathematics	Female	300	207.7200	22.8307	1.3181	.860	N.S
	Male	300	206.1133	22.9083	1.3226		

Inference: There is no significant difference between Female and Male students in their Attitude towards mathematics. Hence the above hypothesis is accepted.

TABLE-10 showing the difference between Female and Male students in their Academic Achievement

Hypothesis-10 There is no significant difference between Female and Male students in their Academic Achievement

Variables	Medium	N	Mean	S.D.	S.E.M	t	Level of Significance
Academic Achievement	Female	300	18.8800	2.1790	.1258	1.127	N.S
	Male	300	19.4167	3.2204	.1859		

Inference: There is no significant difference between Female and Male students in their Academic Achievement. Hence the above hypothesis is accepted.

MAJOR FINDINGS

Findings of the correlation between Approaches to studying, Attitudes towards Mathematics, Problem Solving Ability and Academic Achievement in Mathematics with respect to Sample

- There exist significant relationship between
 - a. Approaches to studying and Academic Achievement
 - b. Approaches to studying and Attitude towards Mathematics
 - c. Approaches to studying and Problem Solving Ability
 - d. Problem Solving Ability and Attitude towards Mathematics
 - e. Problem Solving Ability and Academic Achievement
 - f. Attitudes towards Mathematics and Academic Achievement
- There is significant difference between Tamil and English Medium students in their Approaches to studying at 0.01 level. The Mean Value of English Medium students are high when compared to Tamil Medium students. Hence the above hypothesis is rejected.
- : There is significant difference between Tamil and English Medium students in their Academic Achievement at 0.01 level. The Mean Value of English Medium students are high when compared to Tamil Medium students. Hence hypothesis is rejected.
- In Gender wise there is no difference between Female and Male in Attitudes towards Mathematics and Academic Achievement. Hence the hypothesis is accepted.

EDUCATIONAL IMPLICATION OF THE STUDY

The Academic Achievement that has emerged from the study revealing the nature performance among the Eleventh standard student has got vital implications. The three variables namely Approaches to Studying Attitude towards Mathematics, Problem Solving Ability seem to contribute significantly to Academic Achievement. All educational Programmes have their essential ultimate. Approaches to studying and enabling the students to solve problem concerning and problems of life which they are likely for encounter. For slow learners various technique should be followed to stimulate the interest of the students which also promotes self-confidence and self-reliance and a sense of achievement among the students

CONCLUSION

The Present investigation aimed at analyzing achievement in Mathematics as related to Approaches to studying, Problem Solving Ability and Attitude towards Mathematics with reference to some selected variables like Gender, Medium of Instruction, Types of family, Parent's Educational Qualification, Types of School, Family's Income. This study indicated significant difference and relationship among the variables. Teacher should pay individual attention to the children in order to improve them in their studies and mould to become good citizens for the country. The student-teacher relationship should be improved in all aspect, so that the pupils may not leave fear in approaching the teacher to clear their doubts. This study may enrich the educators in the field of Mathematics education and may serve as a data for future.

REFERENCES:

- Kothari, C.R. Winter, (2000),** *Development Positive Attitude for life in the twenty-first century; the 'though power' programme used with teenage student uin Hong Kong school Psychology International*
- Leader, & Forgasz H.J. (2002),** *Measuring Mathematical beliefs a their impact on the learning of Mathematics.*
- Whitelaw, L. Miloselic and Daniels (2000),** *Gender, Behaviour and Achievement a Preliminary study of pupil perceptions and attitudes, Gender and Education.*
- Michael Townsend, and Keri Wilton,(2003),** *Evaluating Change in Attitude towards Mathematics using the 'then-now' procedure in a Learning Programme; British Journal of Educational Psychology, Vol-73, part-4.*
- Tera Stevans, Arturo Olivarex. Jr. William Y. Lan, and Mary, K., Talent (2004) – Role of Mathematics self-efficacy and motivation in Mathematics performance across ethnicity. The journal of. Educational research, Vol., 97 No-4.**