



Problem Solving Ability of Secondary School Students in Relation to Their Attitude towards Mathematics

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ABSTRACT

This study investigated the problem solving ability of secondary school students in relation to their attitude towards Mathematics. The students of class IX studying in secondary schools of Lucknow city constitute the population of the study. The sample consists of 250 students of Class IX from 6 different secondary schools of Lucknow. Null hypotheses were formulated to examine the relationship between problem solving ability and attitude towards Mathematics and to compare the problem solving ability of secondary school students having high and low attitude towards Mathematics. A marginal relationship was found between problem solving ability of secondary school students and their attitude towards Mathematics. It was also found that high or low attitude towards Mathematics has not any impact on the problem solving ability of the students. Therefore it can be concluded that if a student possess high or low problem solving ability, it does not necessarily possesses mean that his attitude towards Mathematics is also high or low.

KEYWORDS

Introduction

Problems are obvious in our life. One cannot escape himself facing the problem in different forms and intensities in his journey of life from birth to cradle. Thus in order to solve the problems in life one must possess the problem solving ability at an adequate level. The problem solving ability is generally developed among students by the reflective level of teaching which is problem centered in nature. It develops the ability to think deeply and originally as well as it also encourages for critical and creative thinking. The ability to solve problems also requires logics in order to derive the exact fending or result on the basis of which valid conclusions can be drawn. Mathematics is a subject of logics which enhances the logical power of the learner. Mathematics has played a decisive role in building up our civilization. It has become a substantial and integral part of an organized society. In today's world one cannot live without Mathematics for a single day. Mathematical thinking is important for all members of modern society as a habit of mind for its use in the work place, business and finance and for personal decision making. It lays the foundation stone to the prospects of national development as it provides tools for understanding science, engineering technology and economics. Mathematics runs in the veins of natural sciences like physics and astrology. This subject is inextricably incorporated with the world and natural phenomenon.

Student's success in Mathematics depends upon attitude towards Mathematics it also influences the participation rate of the learners. Researches conclude that positive attitude towards Mathematics leads students towards success in Mathematics. Problem solving behavior may be said to be a deliberate and purposeful act on the part of the individual to realize the set goals or objectives by inventing some novel methods or systematically following some planned steps for removal of the interferences and obstacles in the path of the interferences and realization of these goals. It is an individual phenomenon and involves the exercise of cognitive abilities of higher order and continuous and persistent struggling on the conscious and unconscious levels. The present study is conducted by the investigator to know the influence of attitude toward Mathematics on the problem solving ability of the secondary school students.

Review Literature

Kumar, L. (1995) conducted a study of attitude towards Mathematics among secondary school students in relation to sex. He found that attitude of male and female towards Mathematics was expressed to the same extent. It means that there

is no difference between male and female in their attitude towards Mathematics.

Ma, X. (1997) studied reciprocal relationship between attitude towards Mathematics and achievement in Mathematics. The finding suggested that the reciprocal nature between attitude towards Mathematics and achievement in Mathematics can substantially modify their causal relationship. A unilateral relationship is likely to overestimate the causal effect between attitude towards Mathematics and achievement in Mathematics.

Chakrabarti (2000) found that reading ability, numerical ability, problem solving ability, arithmetic reasoning and comprehension abilities are directly related to high performance in Mathematics.

Orhun (2007) investigated that whether there is a relationship between gender and learning style, mathematical achievement and attitude towards Mathematics. He found that there were differences among learning modes preferred by male and female students, their mathematical achievements and their attitude towards Mathematics. Mathematical achievements and their attitude towards Mathematics were not dependent on gender.

Singh, S.P. & Imam, A. (2013) examined the effect of gender; attitude towards Mathematics, time spent on daily computer usage, participation in sports activities and time spent on daily television watching on Mathematics achievement of class IX students of South-East Bihar. The study consists of 975 male and 969 female students of thirty-six schools of South-East Bihar. The Mathematics achievement test, Mathematics attitude scale and personal background assessment questionnaire were used for data collection. While t-test, F-test followed by Duncan's Mean test and correlation coefficient were used for statistical analysis. The result showed that male students had better achievement in Mathematics than female students. Further the result showed that attitude towards Mathematics had positive correlation with Mathematics achievement.

Objectives

1. To examine the relationship between problem solving ability and attitude towards Mathematics of class IX secondary school students.
2. To compare the problem solving ability of class IX secondary school students having high and low attitude towards Mathematics.

Hypotheses

1. There is no relationship between the problem solving ability and attitude towards Mathematics of class IX secondary school students.
2. There is no significant difference in the problem solving ability of class IX secondary school students having high and low attitude towards Mathematics.

Need and Significance of the Study

The present study is conducted by the investigator to verify the influence of attitude towards Mathematics on the problem solving of the secondary school students the problem solving ability as a dependent variable depends upon so many factors like attitude, parental education, socio-economic status, personality traits, interest, motivation etc, Mathematics holds a boring and unbreakable position as compared to other school subjects. Therefore it is more stable and important subject than other school subjects. Mathematics is a logical subject which is based on logical thinking students of Mathematics are generally performed well and considered to be more logistic and able to solve problems more efficiently.

Thus, the present study is conducted in order to find the degree of correlation between attitude towards Mathematics and problem solving ability. This study may help in bringing about of quantitative as well as qualitative improvement in teaching learning process, which would enhance the quality and level of educational products. The investigator has also sought to focus on the factors which are helpful in developing the problem solving ability of the students.

Methodology

The method adopted for this study was descriptive and statistical in nature. The secondary school students of class IX of Lucknow city (capital of the state of Uttar Pradesh, India) constitute the population of the study. The sample consists of 250, IX standard male and female students from 6 different secondary schools of Lucknow city. The sample was drawn by using simple random sampling. Null hypotheses were formulated and tested statistically school wise sample distribution.

School Wise Sample Distribution

S.No.	Name of the Schools	Number of Students
1.	Career Convent Inter College, Lucknow	43
2.	Karamat Girls Inter College, Lucknow	52
3.	Shri Shiv Chandra Public Inter College, Lucknow	10
4.	St. Merry Public Inter College, Lucknow	50
5.	Islamia Boys Inter College, Lucknow	45
6.	Ghyasiban Public Inter College, Lucknow	50

Tools Used

In this study Mathematics Attitude Scale developed by Dr. Ali Imam and Dr. Tahira Khatoon and Problem solving ability test developed by L. N. Dubey are used.

Results & Analysis

Data analysis is performed using SPSS (Statistical Package for Social Sciences) version 15 of statistical analysis software. The formulated hypotheses are verified by the application of required statistics and the results are tabulated in the following manner.

Table-1

Relationship between the problem solving ability and attitude towards Mathematics of class IX secondary school students-

Correlation Coefficient (r)	Problem Solving Ability
Mathematics Attitude Scale	0.059
N	250

The correlation coefficient between problem solving ability and attitude towards Mathematics is 0.059. It shows a positive, but very low correlation between problem solving ability and attitude towards Mathematics. Therefore, the hypothesis stating that there is no relationship between problem solving ability and attitude towards Mathematics of class IX secondary school students is rejected. This result indicates that there is a relationship between problem solving ability and attitude towards Mathematics, but it is not significant and the relationship is marginal.

Table-2

Comparison of the problem solving ability of class IX students having high and low attitude towards Mathematics

Attitude towards Mathematics	N	Mean	SD	t-Value df = 134	Significance
High	68	7.04	3.55	0.625	Not Significant
Low	68	6.71	2.69		

Table-2 shows that the total number of students having high attitude towards Mathematics is 68 (27% high achievers of total number of students) and the number of students having low attitude towards Mathematics is also 68. The mean score of the problem solving ability of students having high and low attitude towards Mathematics are 7.04 and 6.71 respectively. The calculated t value at 134 degree of freedom is 0.625 which is lower than the critical ratio of t at 0.05 and 0.01 level of significance. Hence, the hypothesis which states that there is no significance difference in the problem solving ability of class IX secondary school students having high and low attitude towards Mathematics is accepted. It means that the problem solving ability of class IX secondary school students having high and low attitude towards Mathematics does not differ significantly. So, the attitude towards Mathematics does not influence the problem solving ability of the students. It indicates that there may be some other psychological and other factors that can influence the problem solving ability of the secondary school students.

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