Analyzing mathematical attitude of students

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Abstract
This study was undertaken to examine the mathematical attitude of secondary school students. The researcher selected tie 200 students with due representation of the gender. The researcher selected the Attitude towards Mathematics scale developed by Dr. S.C. Gakhar and Rajani. The data has been analyzed with the help of suitable statistical treatment. Descriptive and comparative analysis was used for processing the data. In context to same, the researcher found that male students were found more favourable attitude towards mathematics as compared to female students on all the dimensions viz. wider applicability, development of skills, reasoning, objectivity, intellectual development, non-intellectual development, individual outlook and universal outlook. Thus, impact of gender was found significant on the mathematical attitude of students.

Keywords: mathematical attitude, secondary school students

Introduction
Research on attitudes toward mathematics has a long tradition in mathematics education and developed a range of perspectives and methodologies that deals with the construct of attitudes. In promoting mathematics, educators are eager to find out the factors that affect mathematics achievement among students. A number of instruments to measure mathematics attitudes have been developed in the past. Attitude towards mathematics has been defined by researchers and thinkers in numerous ways and there is no exact definition of it (Rajyaguru, Mahesh. 2014) [16] says it is a liking or disliking of mathematics, a tendency to engage in or avoid mathematical activities, a belief that one is good or bad at mathematics, and a belief that mathematics is useful or useless. According to some point of view the attitude toward mathematics is just a positive or negative emotional disposition towards mathematics Rai, Dona and P.K. Gupta (2014) [15] defines attitude towards mathematics as the behaviours of students, like giving priority for mathematics homework and studying, like continuing with the lessons at home that was taught in school. According to Mandler’s discrepancy theory (1989) a negative attitude is a result of frequent failures or interruptions of planned actions, which were intended to face mathematical tasks. This theory was supported in a study done by Prendergast, M. & O’Donoghue, J. (2014) [14] they further added that these negative attitudes may become relatively permanent. An important aim of mathematics education is to develop in students positive attitudes towards mathematics. The notion of having a positive attitude towards mathematics encompasses both liking mathematics and feeling good about one’s own capacity to deal with situations in which mathematics is involved. Thus, by learning mathematics student can also develop positive attitude towards this subject. Hence, learning of mathematics and students’ performance in mathematics has an undeniable significance in academics. Positive attitude can be considered as the main cause in learning and perceiving mathematics and acquiring good grades in exam. Similarly, unfavourable attitude towards the subject may cause failure in the subject. Attitude of students towards mathematics may differ in boys and girls and so their achievement. Secondary level students might not have similar attitude towards mathematics to that of students of junior level and higher secondary level. Attitude of student toward any subject is supported or hampered by other factors too viz. school and home environment, teacher’s attitude and beliefs, complexity in contents, teaching strategies, parental attitudes, parents’ education, students’ belief in mathematics etc.

Research problem: The statement of the research problem for the present study is as under:
Operational definitions of the terms and variable
The operationalization of the terms and variables used in the present study is itemized as under:

▪ **Mathematical attitude**: Attitude towards mathematics has been defined by researchers and thinkers in numerous ways and there is no exact definition of it (Chopra, S.L. (1986) [8]) says it is a liking or disliking of mathematics, a tendency to engage in or avoid mathematical activities, a belief that one is good or bad at mathematics, and a belief that mathematics is useful or useless. In the present study it refers to the set of scores obtained by the respondents on mathematical attitude scale developed by S.C. Gakhar.

▪ **Students**: Students in the present study refer to those secondary school students who are reading in class 11th in selected higher secondary schools of Anantnag District.

Objectives of the study
The present study consists of below mentioned objectives:

**Analysing mathematical attitude of students**
1) To explore the mathematical attitude among male and female secondary school students on below mentioned dimensions:
   - Wider applicability
   - Development of skills
   - Reasoning
   - Objectivity
   - Intellectual development
   - Non-intellectual development
   - Individual outlook
   - Universal outlook

**Hypothesis**
Based on richness background of the knowledge, the investigator speculated the below mentioned research hypothesis:
2) To explore the mathematical attitude among male and female secondary school students on below mentioned dimensions:

**Delimitations of the study**
During the whole research process, lot or constraints were faced by the investigator. However, investigator made ample efforts to delimit these constraints up to maximum extent. Consequent the research delimited the present study to following domains:
- The present study has been delimited to 200 students.
- The present study has been delimited to Anantnag district of union territory of Jammu and Kashmir.

**Methodology**
The methodology of the study has been stated in the following sub-headings:

**Design of the study**
The present study has been conducted through descriptive survey method. Further, design of the study is based on below mentioned parameters.

- **Sampling procedure**: The researcher selected tie 200 students with due representation of the gender.
- **Researcher instrument**: The researcher selected the Attitude towards Mathematics scale developed by Dr. S. C. Gakhar and Rajani.

**Analysis of the data**
The data has been analysed with the help of suitable statistical treatment. Descriptive and comparative analysis was used for processing the data. The detailed description of the statistical treatment is given as under:

**Table 1**: Showing the descriptive analysis of the Male and Female Students on Their Mathematical Attitude. (N=100 Each)

<table>
<thead>
<tr>
<th></th>
<th>N</th>
<th>Range</th>
<th>Minimum</th>
<th>Maximum</th>
<th>Mean</th>
<th>Std. Deviation</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Statistical</strong></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Male Students</td>
<td>100</td>
<td>61.00</td>
<td>96.00</td>
<td>157.00</td>
<td>131.3300</td>
<td>1.18442</td>
</tr>
<tr>
<td>Female Students</td>
<td>100</td>
<td>84.00</td>
<td>81.00</td>
<td>165.00</td>
<td>109.8000</td>
<td>1.47038</td>
</tr>
</tbody>
</table>

**Graphical representation**

**Fig 1**: Showing the graphical representation of the descriptive analysis of the Male and Female Students on Their Mathematical Attitude.
(N=100 Each)
The results reported in above mentioned table gives information about the descriptive analysis of the male and female students on their mathematical attitude. The results reveal that incase of male students the range was seen 61.00 and the mean was seen 109.80. Accordingly, in the same table it was found that the standard deviation of male students was seen 11.84 and the standard error mean was seen 1.18. Coming towards their female students, it was observed that 84.00 and the mean were seen 109.80. Accordingly, in the same table it was found that the standard deviation of male students was seen 14.70 and the standard error mean was seen 1.47.

Conclusions of the study
In context to same, the researcher found that male students were found more favourable attitude towards mathematics as compared to female students on all the dimensions viz. wider applicability, development of skills, reasoning, objectivity, intellectual development, non-intellectual development, individual outlook and universal outlook. Thus, impact of gender was found significant on the mathematical attitude of students.

Conflict of interest: The researcher declare that there is no any conflict of interest.

References


