

A Study on the Attitude of Secondary School Students towards Mathematics with Special Reference to Wokha District in Nagaland State

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ABSTRACT

It is a well-known fact that in every part of life we need the concepts of mathematics. Learning mathematics involves more than just thinking and reasoning; it is also affected by the learners' attitudes toward learning and mathematics. The purpose of this study is to determine the attitude of secondary school students toward mathematics with special reference to Wokha district. The study aims to investigate secondary school students' attitudes in relation to the different variables. This study was conducted on secondary school students from Wokha district, Nagaland. The data was collected using the Attitude towards Mathematics Scale (ATMS) which was constructed by Dr. S. C. Gakhar and Rajni (2004). The tool was administered to 265 students (135 female and 130 male). The result of shows that the around 50% of secondary school students' attitude towards mathematics is lying on average level. Only 3% students were having high level of attitude towards mathematics learning. However, they did not differ with respect to gender and type of management. A significant difference was found in the attitude towards mathematics with respect to locality. Based on findings some recommendations were provided to enhance the level of attitude towards mathematics.

Keywords: Learning, Attitude Towards Mathematics, Secondary School Students, Gender, Management.

Introduction:

Mathematics is one of the most important pillars of human civilization. Mathematics education constitutes a vital part of the entire structure of formal education. Mathematics education of a child starts with the starting of formal education. According to Hamunyala (2008), "At its most basic level, Mathematics is a requirement for science, computer technology, and engineering courses. Seen from a social perspective, mathematical competence is an essential component in preparing numerate citizens for employment, and it is needed to ensure the continued production of highly skilled persons required by industry, science, and technology". The National Policy on Education earlier stated "Mathematics should be visualized as the vehicle to train a child to think, reason,

analyze, and to articulate logically" (NPE, 1986). Mathematics is so important that the Indian education system recognizes its inclusion in the secondary school curriculum.

Attitude toward mathematics has been defined by researchers and thinkers in many ways, and there is no exact definition of it (Akinsola & Olowojaiye, 2008). Attitude toward mathematics can be said of as a liking or disliking of mathematics. It may also be said as an inclination to engage in mathematical activities or to avoid it. A person's attitude will lead his or her to a belief he or she is doing well in mathematics and whether mathematics has any positive or negative use in his or her life. According to some researchers, the attitude toward mathematics

is simply an inclination or distancing from mathematics. In the field of mathematics education, research on attitude has been motivated by the belief that ‘something called “attitude” plays a crucial role in learning mathematics’ (Neale, 1969).

While assessing performance in Mathematics and students’ potential, one’s attitude towards mathematics and mathematical learning are often taken into consideration as major factors contributing to progress in the subject. A number of studies have shown that positive Attitudes are conducive to good performance. The foundation of the success of our chosen field is attitude. Just like a great building stand on a strong foundation. The same may be with Attitude toward Mathematics and performance in mathematics.

One of the important aims of mathematics education is to develop in student’s positive attitude towards mathematics. 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 (Australian Education Council, 1990). Therefore, by learning mathematics, students can also develop a positive attitude towards it. Attitude is a primary part of a person’s identity. In our day-to-day lives, individuals tend to love or hate, like or dislike, favour or oppose, agree or disagree, and persuade etc. Attitudes can thus be defined as “a summary evaluation of an object of thought” (Bohner & Wänke, 2002). For the present study, the researcher framed the following objectives:

Objectives of the study:

1. To study the level of attitude of secondary school students towards mathematics in Wokha district.
2. To study the attitude of secondary school students towards mathematics in Wokha district with respect to gender, locality, and type of management.

Research question

What is the level of attitude among secondary school students towards mathematics in Wokha district?

Null hypotheses

1. There is no significant difference in attitude of secondary school students towards mathematics in Wokha district with respect to *Gender*.
2. There is no significant difference in attitude of secondary school students towards mathematics

in Wokha district with respect to *Type of Management*.

3. There is no significant difference in attitude of secondary school students towards mathematics in Wokha district with respect to *Locality*.

Methodology

This paper consist descriptive study method that seeks to explore the attitude of secondary school student’s towards mathematics in some of the selected secondary schools in Wokha district of Nagaland state. The Population consists of 1470 students of secondary schools in Wokha district. For this study, at first 9 schools were selected as sample schools and then a sample size of 265 was selected through stratified random sampling technique from class IX students. A standardised attitude scale was administered to the students for the collection of data. The scale used for this study is Attitude towards Mathematics Scale (ATMS) which was constructed by Dr. S. C. Gakhar and Rajni in 2004.

Results and Discussion

The findings of the study are divided into three sections, attitude toward mathematics based on gender, type of management, and locality. A total of 265 students participated in this study which includes 135 females and 130 male students. The attitude scale questionnaire was analyzed to determine the level of students’ attitude towards mathematics based on gender, type of management, and locality. Table 1 shows the norms for levels of attitude towards mathematics as given by Dr. S. C. Gakhar and Rajni in 2004.

Table 1:

Norms for Levels of Attitude towards Mathematics

Sl. no.	Range of Z-Scores	Grade	Level of Attitude towards Mathematics
1.	+2.01 and above	A	Extremely favorable
2.	+1.26 to +2.00	B	High favorable
3.	+0.51 to +1.25	C	Above Average favorable
4.	-0.50 to +0.50	D	Average favorable
5.	-0.51 to -1.25	E	Below Average favorable
6.	-1.26 to -2.00	F	Highly unfavorable
7.	-2.01 and below	G	Extremely unfavorable

The overall attitude of secondary school students showed average favorable attitude towards mathematics. Table 2 shows the frequency and percentage distribution of attitude towards mathematics among the Secondary School Students.

Table 2:
Frequency and Percentage Distribution of attitude towards mathematics among the Secondary School Students in Wokha District, Nagaland (N=265)

Slno.	Level of Scores	Attitude towards Distance Education Level	Frequency	Percentage(%)
1.	+2.01 and above	Extremely Favorable	16	6
2.	+1.26 to +2.00	Highly Favorable	9	3
3.	+0.51 to +1.25	Above Average Favorable	31	12
4.	-0.50 to +0.50	Average Favorable	122	46
5.	-0.51 to -1.25	Below Average Favorable	75	28
6.	-1.26 to -2.00	Highly Unfavorable	12	5
7.	-2.01 and below	Extremely Unfavorable	0	0
Total			265	100

According to table 2, The frequency and percentage distribution of Attitude level among the Secondary School girls in Nagaland indicates that 46% of secondary school students have *average favorable* attitude toward Mathematics, 12% of secondary school students are found to have *above average favorable* level of attitude, 28% of secondary school students have *below average favorable* level of attitude toward Mathematics, 5% of secondary school students have highly unfavorable attitude, 3% of secondary school students have highly favorable attitude, and 6% of secondary school students have extremely favorable level of attitude toward Mathematics. Overall, all the Secondary School students fall under Average Favorable level in their attitude toward mathematics.

Attitude towards Mathematics based on gender

Hypothesis 1. There is no significant difference in attitude of secondary school students towards mathematics in Wokha district with respect to *Gender*.

Table 3.

Result of two-tailed t-test between secondary school students' attitude towards mathematics and male students (n=130) and female students (n=135)

Gender	No. of students(N)	Mean	Standard Deviation (SD)	Calculated t-value	Degree of freedom (df)	P value	S/NS at 0.05 level
Male	130	300.28	27.18	1.70	258	0.09	Not Significant
Female	135	294.88	24.44				

It can be seen from Table 3 that there is no significant difference between the secondary school students' attitude toward mathematics between male (M=300.28, SD = 27.18) and female (M= 294.88, SD = 24.44), where $t(258) = 1.70, p = 0.09, \alpha = .05$. So, according to the findings the hypothesis 1 can be accepted. The findings of this study was supported by the studies carried out by Rai (1981); Quing (2007); Mahanta (2009); Asante (2012); Nongsiej (2013); Bibiana & Ibadani (2014); Jyothi, (2019). There was a significant difference in sex observed in the attitudes toward mathematics among boys and girls (Asante, 2012; Quing, 2007). There are many studies that suggest that there is no significant difference between attitude towards mathematics among male and female students (Mohamed & Waheed, 2011; Yasar, 2015).

Attitude towards Mathematics based on type of management

Hypothesis 2. There is no significant difference in attitude of secondary school students towards mathematics in Wokha district with respect to *Type of Management*.

Table 4
Attitude towards Mathematics among Secondary School Students with respect to Type of Management.

Type of Management	No. of students(N)	Mean	Standard Deviation (SD)	Calculated t-value	Degree of freedom (df)	P value	S/NS at 0.05 level
Private	205	298.17	26.80	1.02	186	0.14	Not Significant
Government	60	295.35	12.34	12.34			

It can be seen from Table 4 that there is no significant difference between the secondary school students' attitude towards mathematics between Private (M=298.17, SD = 26.80) and government (M= 295.35, SD = 12.34), where $t(186) = 1.02, p = 0.31, \alpha = .05$. So, again the hypothesis 2 can be accepted, based on the findings.

Attitude towards Mathematics based on locality

3. There is no significant difference in attitude of secondary school students towards mathematics in Wokha district with respect to *Locality*.

Table 5:
Attitude towards Mathematics among Secondary School with respect to Locality.

Locality	No. of students(N)	Mean	Standard Deviation (SD)	Calculated t-value	Degree of freedom (df)	P value	S/NS at 0.05 level
Urban	231	298.60	27.04	158.25	245	0.0001	Significant
Rural	34	9.26	12.33				

It can be seen from Table 5 that there is a significant difference between the secondary school students' attitude towards mathematics between urban (M=298.60, SD = 27.04) and rural (M= 9.26, SD = 12.33), where $t(245) = 158.25, p = 1.05, \alpha = .05$. So, the hypothesis 3 can be rejected, based on the

findings. This study's findings contradict the findings of Kannan, et al. (2015) that no significant difference in attitude towards mathematics exists between urban and rural secondary students.

Conclusion

The result of the study showed that the secondary school students' attitude towards mathematics is average favourable which indicates that there can be an improvement in the attitude of the students. The study also showed that the secondary school students' attitude towards mathematics did not differ with respect to gender and type of management, while it differed significantly with respect to locality. It is highly recommended to further conduct study on attitude towards mathematics in every district of Nagaland State, in the rural and urban areas of every district. It is also recommended that a comparative study on attitude towards mathematics could be done on Nagaland state and other neighboring northeast states,

and Nagaland state with the other mainland states. Furthermore, studies could also be conducted to find if there is any relationship between the attitude of students and their academic performance in the schools in Nagaland.

Recommendations:

Based on the conclusion some recommendations can be given as:

1. The students should be motivated to learn mathematics.
2. Qualified and trained mathematics teachers should be appointed in the schools.
3. Some orientation programme can be organized to enhance the motivation towards mathematics.
4. From the primary school level the basics of mathematics of every individual should be strong to grasp mathematical concepts in further studies.

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