

**Academic Performance in Mathematics between Tribal and Non-Tribal Students in Bodoland Territorial Region (BTR) of Assam State, India: A Study of Senior Secondary Level**

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**Abstract**

*The major purpose of this research was to investigate the mathematical performance among tribal and non-tribal students of senior secondary level in the districts of Bodoland Territorial Region (BTR) of Assam State, India. Students were selected from different senior secondary schools, junior colleges and colleges on the basis of random sampling technique. Significant difference was found between students from tribal and non-tribal communities together with their gender of class X as well as class XII.*

**Keywords:** *Mathematical performance, tribal and non-tribal, gender, BTR, Assam, senior secondary.*

**2010 AMS classification:** 76M25

**1. Introduction**

Tribal communities in India have to struggle hard for continuing their existence and development. They constitute a huge number of populations so their development is utmost important for overall development of our subcontinent. They are desired of several opportunities which may result in intellectual inferiority. The term tribal is not mentioned anywhere in our Constitution although the Article 342, Scheduled Tribes (STs) symbolizes the tribes or tribal communities that are notified by the President. The Bodo (also Boro) are the part of the greater Bodo-Kachari family of ethnolinguistic groups and are spread across northeastern part of Assam in India. They are situated mainly in the Bodoland Territorial Region (BTR), which consists of four districts of Assam, though Boros are inhabitants all other districts of Assam. They are officially marked as “Boro, Borokachari” scheduled tribe under Indian constitution. The Boro people are recognized as a plains tribe in the Sixth Schedule of the Constitution of Indian. Andrabi (2015) in his study revealed that the Govt. of India has been making intensive efforts since independence to associate the socio-economic gap between the privileged and underprivileged groups, Scheduled Tribes have remained economically, socially, culturally, and educationally backward because of their precise occupational and geographical conditions. As being an academicians and education as well as mathematics as discipline of their teaching and learning, the investigators have found interest in studying the issues of academic performance in mathematics among tribal and non-tribal students in BTR.

## **2. Literature Review**

A comparative study between scheduled caste and scheduled tribes has done by some researchers in respect to their academic competence and personality traits. Insignificant (not significant) result was found by Rawat (1991) between students from tribal and non-tribal regarding their achievement and general mental ability. Vijayalaxmi and Natesan (1992) reported that girls had a higher mean academic performance compared to boys. A noticeable significant difference was found by Mavi and Patel, (1997) in academic performance, personality, intelligence, level of aspiration and academic performance between tribal and non-tribal students. Rao, (1999) in his study pointed out that any development program in India should be taken for the welfare towards the most underprivileged and neglected groups in the society referred in this investigation as Scheduled Castes (SCs) and Scheduled Tribes (STs). These groups are economically backward and oppressed by the landlords and rural gentry over a long period and hence the government needs to put in sincere efforts to improve the quality of life of SCs and STs. A number of studies revealed

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that physical infrastructure, medium of instruction, teachers and socio-cultural background of children are the key factors which have negatively been affecting the schooling of tribal. Most of the studies indicated that the main issue in school dropout and low performance of tribal students are low educational aspirations and it remains a matter of serious concern for Govt. as well as educationist (Anitha 2000; Kanungo and Akshay, 2005; Mohanty, 2012). Li (2007) in his studies pointed out that in most countries' boys students mean score is significantly higher than their girls counterparts in the final years of school in subjects like mathematics and advanced mathematics. On the other hand, gender differences in education have changed in favor of girls in terms of both participation and achievement (Jha and Kelleher, 2006). In a research work done by Progress in International Reading Literacy Study (PIRLS), a competence-related gender differences was found among younger students (Mullis, 2007). A substantial difference was found by Kishor and Mahant (2010) among the students belonging to tribal and non-tribal background of secondary school students in terms of their total attitude towards studies and 'liking for studies' dimension of 'students' attitude towards studies' scale. Talawar and Das (2014) found a positive correlation between academic achievement and mental health of tribal students in secondary schools of Assam, which is similar with the findings of Taviyad Manshingbhai (2013), and Verma (2013). A study design by Behera and Samal (2015) on secondary school students and found a considerable difference between students belonging to tribal and non-tribal background, students belonging to rural tribal and rural non-tribal, and students belonging to urban tribal and urban non-tribal in their educational aspiration. Goerge and Rajaguru (2016) found a similar academic achievement between children's belonging to tribal and non-tribal community; whereas the level of intelligence of tribal children were lower than to their counterparts belonging to non-tribal children. They also found a strong and direct positive correlation between intelligence and academic performance between them. A number of investigators indicated that boy's student's average score is significantly higher than their girl's counterparts in mathematics performance (Thomas, 1991; Wajiha, 2000; Patel, 2002; Patel, 2012; Olof and Sriraman, 2003; and Datt Pandey, 2017), which is not in the line of the finding of Roach (1979) that girls scored significantly higher than boys of the same. Moreover, no gender-wise wise difference was found by Mehra (2004) on performance in mathematic. An investigation done by Dutta et. al. (2020) on Scheduled Castes and Scheduled Tribes female students in higher education in Assam, Sharma (2018) made a study on academic achievement and Singh (2015) studied relationship of study habits and motivation among class ten students of

Jammu. Naqvi and Khan (2018) found that the scheduled tribe students were not different from non-tribal students in respect to their educational aspiration and academic performance, and similar results were found between the boys and girls in respect to their educational aspiration.

### **3. Importance of the Present Study**

Being as investigators as well as academicians, the present study was to compare the mathematical performance among students belonging to tribal and non-tribal communities towards studies in the districts of BTR of Assam State, India due to difference in the environment of tribal and non-tribal areas in respect to their economic status, geographical location, schools infrastructure, number of teaching staff, distinguished of language and culture, extra coaching classes etc. Academic performance in mathematics is the aggregate of marks obtained in mathematics by senior secondary level students in their examination for the session 2018-19 conducted by the State Board of Assam. The present study tried to investigate whether tribal and non-tribal dichotomy predicts the academic performance in mathematics of senior secondary level students. In the study of extensive reviewed literature, investigators have not found any study focusing on academic performance in mathematics of senior secondary level students conducted in the districts of BTR of Assam. This has promoted investigators to choose an unbeaten area at senior secondary school level. To strengthen the academic performance in mathematics for students, it is expected that present study will be helpful to all education stakeholders in designing the favorable school environment and removing the tribal and non-tribal disparity.

### **4. Objectives of the Study**

The present study is guided by the following research objectives.

- (i) To study and compare the level of mathematical performance between boys and girls students of class X and class XII.
- (ii) To study and compare the level of mathematical performance between tribal and non-tribal students of class X and class XII.
- (iii) To study and compare the level of mathematical performance between tribal and non-tribal students in respect to their gender of class X and class XII.

### **5. Hypotheses**

On the basis to the objectives, we may consider the following null-hypotheses here

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under.

**H<sub>01</sub>:** There is no significant difference in mathematical performance between tribal and non-tribal students of class X.

**H<sub>02</sub>:** There is no significant difference in mathematical performance between tribal and non-tribal students of class XII.

**H<sub>03</sub>:** There is no significant difference in mathematical performance between tribal boys and non-tribal boys students of class X.

**H<sub>04</sub>:** There is no significant difference in mathematical performance between tribal boys and non-tribal boys students of class XII.

**H<sub>05</sub>:** There is no significant difference in mathematical performance between tribal girls and non-tribal girls students of class X.

**H<sub>06</sub>:** There is no significant difference in mathematical performance between tribal girls and non-tribal girls students of class XII.

### **6. Research Methodology**

#### **6.1. Method Employed**

The major objective of this study was to assess the academic performance in mathematics of senior secondary level students in the districts of Bodoland Territorial Region (BTR) which made up four districts (Kokrajhar, Baksa, Udalguri, and Chirang) of the Assam State, India. The investigation at present has been planned and executed on the influence of gender and category on mathematical performance. The methodology of the inquiry involves collection, tabularization and significant analysis of the data; and depiction of appropriate inferences.

#### **6.2. Variables**

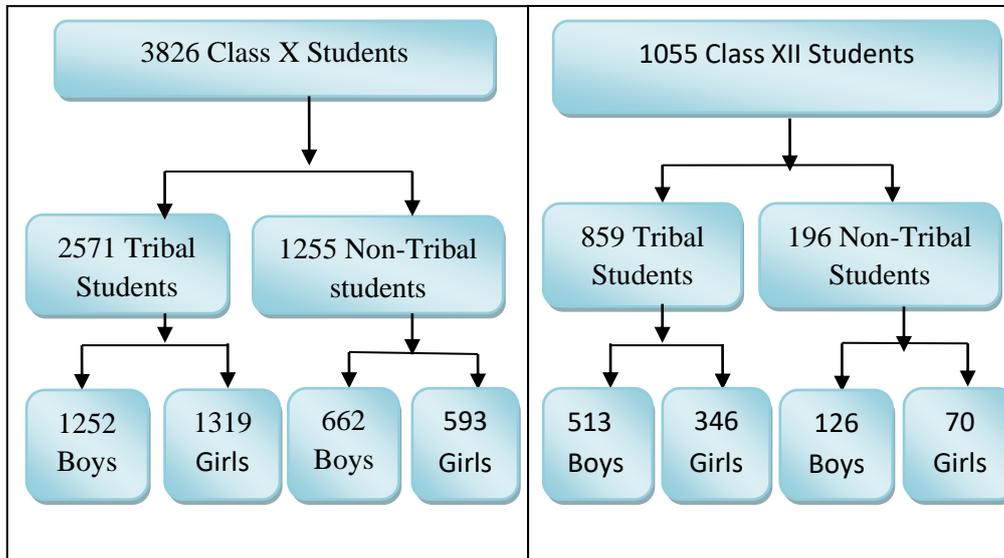
In this investigation, we consider performance as output or dependent variable, whereas gender (boys and girls), and category (tribal and non-tribal) as independent variables.

#### **6.3. Population**

All the students of who have passed of class X, and of class XII in 2019 in different senior secondary schools, junior colleges and colleges (government and private) in the districts of BTR of Assam (India), affiliated to State Board of Assam, constitute the population of the study.

#### **6.4. Sample**

Sample comprised of 4881 students (class X and class XII) who have passed in 2019 of the Academic Session 2018-19 of mathematics stream are selected at random from the four districts in Bodoland Territorial Region (BTR) of Assam for the study. The allocation of the sample has been reflected in the following figures.



**Fig. 1:** Sample distribution of Class X and Class XII.

### 6.5 Statistics used

Different statistical measurements are used to illustrate the situation. All the statistics used in the study are as follows:

- **Descriptive Statistics:** Descriptive statistics such as Mean and S.D. were used to find out the nature of the sampling distribution.
- **Inferential Statistics:** To establish whether if any significant mean difference was there between performance and students groups within the variable quantity under consideration a t-test was adopted.

### 7. Results and Discussion

In order to present the self-explanatory of the result systematically the hypothesis wise interpretation has been given by using the results presented in the following tables.

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**Table 1:** Comparison of academic performance in mathematics between tribal and non-tribal students of class X and class XII.

Class	Category	Total (N)	Mean	S.D.	t-value	Level of significance
Class X	Tribal	2571	45.43	15.185	7.438	Significant at 0.05 level
	Non-Tribal	1255	49.76	19.989		
Class XII	Tribal	859	34.25	11.502	7.177	Significant at 0.05level
	Non-Tribal	196	41.34	16.097		

The Table 1 shows that the obtained 't' value is greater than the critical value at 0.05 level for class X as well class XII and consequently there is a significant difference in mathematics performance between students belonging to tribal and non-tribal background i.e. non-tribal students have a higher mean academic performance in mathematics compared to non-tribal students of both the grades. Hence the null hypotheses  $H_{01}$  and  $H_{02}$  are rejected.

**Table 2:** Comparison of academic performance in mathematics between tribal boys and non-tribal boys students of class X and class XII.

Class	Category	Total (N)	Mean	S.D.	t-value	Level of significance
Class X	Tribal Boys	1252	45.86	15.309	5.958	Significant at 0.05 level
	Non-Tribal Boys	662	50.72	19.722		
Class XII	Tribal Boys	513	35.10	11.988	6.094	Significant at 0.05level
	Non-Tribal Boys	126	42.93	16.164		

Like previous results as mentioned before, the Table 2 shows that the 't' value attained is greater than the table value at 0.05 level for class X, and class XII. From this it is concluded that there is a significant difference in mathematics performance between tribal boys and non-tribal boys i.e. non-tribal boys performed better than tribal boys of both the grades and hence the null hypotheses  $H_{03}$  and  $H_{04}$  are rejected.

**Table 3:** Comparison of academic performance in mathematics between tribal girls and non-tribal girls' students of class X and class XII.

Class	Category	Total (N)	Mean	S.D.	t-value	Level of significance
Class X	Tribal Girls	1319	45.03	15.061	4.412	Significant at 0.05 level
	Non-Tribal Girls	593	48.70	20.247		
Class XII	Tribal Girls	346	32.99	10.632	3.607	Significant at 0.05 level
	Non-Tribal Girls	70	38.49	15.688		

It is clear from Table 3 that a significant difference can be noticed between the mean value of mathematics performance for tribal girls and non-tribal girls students of class X as well as class XII i.e. tribal girls students have a lower mean academic performance in mathematics compared to non-tribal girls of both the grades. Therefore, the null hypotheses  $H_{05}$  and  $H_{06}$  are rejected.

### 8. Research Implications of the Findings

The sample considered in this investigation was delimited to students belonging to tribal and non-tribal background of the State Board affiliated schools in the State of Assam, India. Other sample should be used in upcoming challenges to emulate and extend the findings of the investigation; e.g., students belonging to tribal and non-tribal background from other Board, other States, other educational institutions like Lower and Upper primary school students and also from College students. Also, nothing was known about the socio-economic status of the students in the sample, their parents, and parents' educational level has not been considered and therefore, its effect on the academic achievement could not be measured. The results of this investigation also point to the direction for future researchers. For example, researchers may further investigate such questions as-

- How do the tribal and non-tribal students formulate their performance in accordance to their culture?
- How does cultural factors subsidize to the development of personality?
- In order to make a comparative study, it should be investigate the personal profiles of students from tribal community of every corner of the country.
- A study for determining the different strata wise difference in academic achievement of minorities' viz. Tribe, Scheduled caste, and Backward Community may be conducted.
- Family Structure, Parental Behavior and Conservatism study among the

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students belonging to Tribal and Non- Tribal communities in college level of BTR may be attempted.

A qualitative and quantitative research work can be made further on the quality of these questions. The field of emotional intelligence and personality will be improved by answering these questions and will also enable to educators to use their knowledge to facilitate more effective teaching and learning.

### **9. Conclusion**

The Government of India has frequently acknowledged that the tribal communities are disadvantaged group in terms of education and it has recognized to address the matters related to it. The Govt. of India has taken many initiatives such as Sarba Siksha Abhijan (SSA-2002), Rashtriya Madhamik Shiksha Abhijan (RMSA-2012), Madhyamik Siksha Kendra, Siksha Bondhu, School Inspectors, and Village Education Communities etc. under SSA and have been executed it to make success in Universal Elementary Education (UEE). The study has investigated the academic performance in mathematics between the students belonging to tribal and non-tribal communities of senior secondary level of BTR of Assam State, India. The study established that there is a substantial difference in mathematical performance between tribal and non-tribal, tribal boys and non-tribal boys, and tribal girls and non-tribal girls of class X, and Class XII students. It also indicated that the non-tribal students showed more advantage to their tribal counterparts, and tribal and non-tribal boys are performed better than the tribal and non-tribal girls in concerning the proper level of mathematical performance. Therefore, to enhance the academic performance in mathematics of the tribal students, suitable measures are to be taken by the various stakeholders. So, all students should be goal-oriented and proper guidance and counseling should be provided for making him/her about the improvement of Mathematics in particular and overall academic improvement in general. It is utmost important in case of tribal, girls, and other backward sections of students.

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