

SJIF 2013 = 1.795
ISSN: 2348-3083

An International Peer Reviewed & Referred

**SCHOLARLY RESEARCH JOURNAL FOR
HUMANITY SCIENCE & ENGLISH LANGUAGE**



SCIENTIFIC ATTITUDE OF THE TEA TRIBES SECONDARY SCHOOL STUDENTS OF TINSUKIA DISTRICT OF ASSAM

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Introduction

Science is the greatest invention of mankind. It is the systematic process of gathering knowledge about the universe. The major contribution of science is to impart scientific attitude among the learners. Scientific attitude is the attitude of being objective in observation and thinking. A person with scientific attitude, revise himself in accordance with the new findings. Scientific attitude of a person never allows him to belief blindly without having complete evidences. It is the tendency to test everything in the light of convincing proof. Scientific attitude is the attitude of being logical thinking and reasoning. A person with scientific attitude always feels excited to see a new thing or to learn a new idea. He is free from any sort of socio economic and political influences while judging a situation. Science is changing our life in a faster way. But still, we see many people around us are not free from some types of false beliefs. For instance, a large number of witch hunting cases were reported from different parts of Assam in the last few years. It is observed that the areas dominated by the tea tribes still believe that organization of 'toad marriages' is the way to thwart draught. Similarly, other superstitious beliefs such as eating food at the time of solar eclipse is harmful, a number of contagious diseases are caused by witches, rhino's horn have many medicinal values etc. are also very much prevalent in these regions.

According to government sources, 80 people have been killed and 17 tortured in Assam from January 2006 to February 2011 in witch hunts. In similar incidents, 12 people were killed in 2012. To eradicate these types of false beliefs from our society development of scientific attitude among the students may be a right way to follow. Thus, the researchers conducted a study on scientific attitude of tea tribe secondary school students of Tinsukia District. Shinde, (1982) found that the scientific attitude of the boys and girls of the same cultural group is same. Golwalkar (1984) conducted a study on scientific attitude, creativity and academic achievement of tribal students of Rajasthan and found that the non-tribal students were superior to tribal students on their scientific attitude. Mukhopadhyaya (1991) did a cross sectional study on the field of academic motivation and the scientific attitude on science aptitude of students. He found significant differences between sub groups in certain cases. He revealed the highly positive relationship between academic motivation and scientific attitude from which scientific aptitude of a person can be predicted. Rao (2004) made a comparative study of scientific attitude, scientific aptitude and achievement in Biology at secondary school level and found that sex did not influence on scientific attitude. Maqboot and Akbar (2013) studied about scientific temper and academic achievement of science and social science stream adolescents. They did a comparative study on science and social science students on scientific temper and academic achievement. The study revealed that the two groups differ significantly on the 'curiosity' and 'objectivity' dimensions of scientific temper. The study further revealed that the two groups do not differ on 'open mindedness', 'rationality' and 'aversion to superstition' dimensions of scientific temper. The study also revealed that these two groups differ significantly on academic achievement scores.

Objectives of the Study

1. To find out the level of scientific attitude of Tea Tribes and Non-Tea Tribes secondary school students of Tinsukia District.
2. To compare the scientific attitude of Tea Tribes and Non-Tea Tribes secondary school students of Tinsukia District.
3. To compare the scientific attitude of Tea Tribe boys and girls secondary school students of Tinsukia District.
4. To compare the scientific attitude of boys and girls Non-Tea Tribes secondary school students of Tinsukia District.

Hypotheses of the Study

1. There is no significant difference in scientific attitude of Tea Tribes and Non-Tea Tribes secondary school students of Tinsukia District.
2. There is no significant difference in scientific attitude of Tea Tribes boys and girls secondary school students of Tinsukia District.
3. There is no significant difference in scientific attitude of boys and girls Non-Tea Tribes secondary school students of Tinsukia District.

Operational Terms

- i. **Scientific Attitude:** Scientific attitude is defined as one's rationality, curiosity, open mindedness, aversion to superstitions, objectivity in intellectual beliefs and the ability to make suspended judgement. In the present study, the score obtained in the scientific attitude scale is considered to be the measure of scientific attitude of an individual. Higher the score higher the scientific attitude of individual.
- ii. **Tea Tribes:** There are more than one thousand tea gardens in Assam where workers originally coming from Orissa, Madhya Pradesh, Bihar, Andhra Pradesh and West Bengal have engaged themselves and subsequently settled in Assam permanently. They are known as Tea and Ex-Tea Garden Tribes, who are recognized as Other Backward Classes by the Government (Department of Tea Tribes, Government of Assam). In the present study, the Tea and Ex-Tea Garden Tribes engaged in different activities of tea gardens are considered to be the Tea Tribes.
- iii. **Secondary Schools:** In the present study, secondary schools refer to the schools under the Board of Secondary Education, Assam, having classes from IX to X.
- iv. **Non-Tea Tribes Secondary School Students:** The students other than tea tribes are considered to be Non-Tea Tribes secondary school students in the present study.

Methodology

Method Considering the objectives and the purpose of the study, normative survey method was used by the investigator for the present study.

Population and Sample The population of the present study comprises of all the Class X students studying in different secondary schools of Tinsukia District.

Fifteen secondary schools were selected purposively from the secondary schools of Tinsukia District. The sample of the study comprises of 300 Class-X secondary school students of Tinsukia district. 150 students, out of 300 students are Tea Tribe students. To select the students from each school the quota sampling method was used.

Tools and Techniques A Scientific Attitude Scale, constructed and standardized by the investigators, was used to collect data from the sample. The attitude scale consists of 78 statements out of which 37 are positive and 41 are negative statements. The attitude scale includes six dimensions of scientific attitude namely, curiosity, open mindedness, aversion to superstition, objectivity of intellectual belief, suspended judgment and rationality. It was standardized on a sample of 500 secondary school students of Dibrugarh and Tinsukia district. The coefficient of validity and reliability of the attitude scale is .51 and .85 respectively. The split-half technique was used to determine the coefficient of reliability. The concurrent validity of the scale was determined by comparing the attitude scores with the scores obtained by administering scientific attitude scale constructed by J.K. Sood and R.P. Sanadhya.

Analysis and Interpretation of Data In the present study, data were collected from the students of fifteen secondary schools of Tinsukia District and analyzed as follows:

Level of Scientific Attitude of the Tea Tribes Secondary School Students

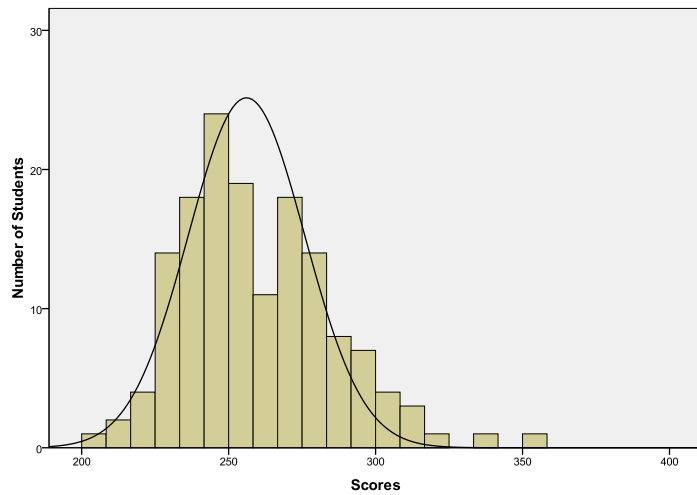
To study the level of scientific attitude of tea tribe secondary school students, the investigator calculated mean, median, standard deviation, skewness and kurtosis of the attitude scores.

Table-1: Level of Scientific Attitude of the Tea Tribe Secondary School Students

Secondary School Students	No. of Students	Mean	Median	SD	Skewness (Sk)	Kurtosis (Ku)
Tea Tribes Students	150	259.39	255	25.48	.719	.796

Table-1 shows that the computed value of Skewness is .719 which indicates that the distribution of the scientific attitude scores of Tea Tribes students are skewed positively, i.e. the scores are concentrated at the lower end of the distribution. It indicates that most of the Tea Tribe class-X secondary school students obtained low score in the scientific

attitude scale. The computed value of Kurtosis is .796 which means that the distribution of attitude scores of Tea Tribes students is platykurtic, i.e. the peak of the distribution scores is lower than the normal distribution. It also means that the scores are distributed in a long



range than the normal distribution.

Fig.1: Frequency curve and histogram showing the level of scientific attitude of the tea tribes secondary school students. The above graph shows that most of the Tea Tribes students scored between 225 to 285 and a maximum of 24 students scored in between 240 to 250. It is also observed that no student scored below 200 and above 360.

Level of Scientific Attitude of Non-Tea Tribes Secondary School Students

To study the level of scientific attitude of the Non-Tea Tribes secondary school students, the investigators calculated mean, median, standard deviation, skewness and kurtosis of the scientific attitude scores.

Table-2: Level of Scientific Attitude of Non-Tea Tribes Secondary School Students

Secondary School Students	No. of Students	Mean	Median	SD	Skewness (Sk)	Kurtosis (Ku)
Other than Tea Tribes	150	268.95	266.5	27.33	.313	-.035

Table-2 shows that the computed value of Skewness is .313, which indicates that the distribution of the scientific attitude scores of Non-Tea Tribes students are skewed

positively, i.e. the scores are concentrated at the lower end of the distribution. The computed value of Kurtosis is $-.035$, which is less than $.263$, it means that the distribution of scores of Non-Tea Tribes students is leptokurtic, i.e. the peak of the distribution of scores is higher than the normal distribution. It also means that the scores are less distributed than the normal distribution.

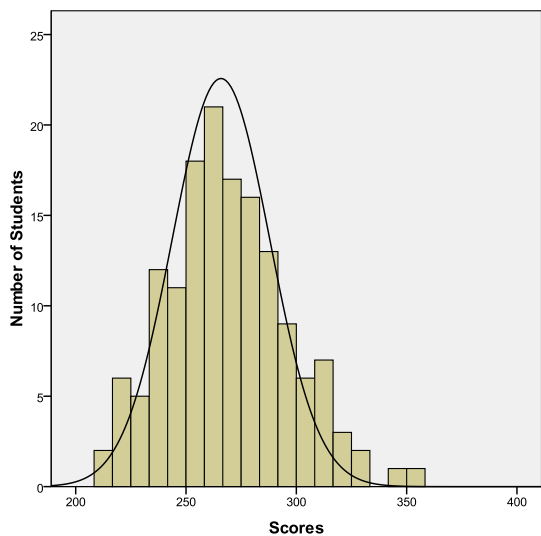


Fig.2: Frequency curve and histogram showing the level of scientific attitude of the Non-Tea Tribes secondary school students.

The Fig.1 reveals that most of the Non-Tea Tribes students scored in between 235 to 285. Also a maximum of 21 students scored in between 260 to 270. Similarly, no student scored below 208 and above 360.

Comparison of Scientific Attitude of Tea Tribes and Non-Tea Tribes Secondary School Students

To compare the scientific attitude of Tea Tribes and Non-Tea Tribes secondary school students, the investigator calculated mean, standard deviation and C.R. of the attitude scores.

Table-3: Comparison of Scientific Attitude of Tea Tribes and Non-Tea Tribes Secondary School Students

Secondary	No. of	Mean	SD	SE_D	C.R.	Inference
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School Students	Students					
Tea Tribes	150	259.39	25.48	3.05	3.28	Significant at .01 Level of Significance
Non-Tea Tribes	150	268.95	27.33			

Table-3, reveals that mean and standard deviation of the Tea Tribes secondary school students are 259.39 and 25.48. The mean and standard deviation of the Non-Tea Tribes students are 268.95 and 27.33. The calculated value of C.R. is 3.28, which is greater than 2.58 and thus significant at .01 level of significance. So, the null hypothesis, there is no significant difference in scientific attitude of Tea Tribes and Non-Tea Tribes secondary school students of Tinsukia District is rejected. Hence, we may conclude that there is a significant difference between Tea Tribes and Non-Tea Tribes secondary school students of Tinsukia District in terms of scientific attitude. **Scientific Attitude of Boys and Girls of Tea Tribes and Non-Tea Tribes Secondary School Students** To compare the scientific attitude of boys and girls of Tea Tribes and Non-Tea Tribes secondary school students, the investigator calculated mean, standard deviation and C.R. of the attitude scores.

Table-4: Scientific Attitude of Boys and Girls of Tea Tribes and Non-Tea Tribes Secondary School Students

Variable	Sex	No. of Students	Mean	SD	SE _D	CR	Inference
Tea Tribes	Boys	82	265.99	26.71	3.90	3.76	Significant at .01 level.
	Girls	68	251.44	21.54			
Non-Tea Tribes	Boys	69	269.33	25.58	4.49	.04	Not significant.
	Girls	81	268.62	28.90			

From table-4, we found that the Critical Ratio (C.R.) of scientific attitude for Tea Tribes boys and girls is 3.76, which is greater than 1.96 and therefore, significant at .01 level of significance. Thus, we can conclude that there is significant difference in scientific attitude of Tea Tribe boys and girls of secondary school students of Tinsukia District. Similarly, the Critical Ratio (C.R.) of scientific attitude of boys and girls Non-Tea Tribes secondary school students is .04, which is less than 1.96 and therefore not significant (Garrett, Table-D). So, the null hypothesis is accepted. Hence, we may conclude that there is no significant difference between boys and girls Non-Tea Tribes secondary school students of Tinsukia District as far as scientific attitude is concerned.

Analysis of the Responses given by Secondary School Students on Different Statements of Scientific Attitude Scale:

1. About 38% Tea Tribes students and 31% Non-Tea Tribes secondary school students believe that a garden lizard sucks our blood and becomes red if we see to its eyes for a long time.
2. 54% Tea Tribes students and 52% Non-Tea Tribes secondary school students believe that we should not kill snake because Goddess Manasa may harm us.
3. 42% Tea Tribes students and 40% Non-Tea Tribes secondary school students disagree with the fact that taking food during solar eclipse is not harmful.
4. About 37% Tea Tribes students and 50% Non-Tea Tribes secondary school students do not agree with the fact that no disease can be cured by reciting mantras.
5. 41% Tea Tribes students and 23% Non-Tea Tribes secondary school students agreed to the statement that if luck favours, a student can pass the examination in first division without any hard work.
6. Majority of Tea Tribes students (83%) and Non-Tea Tribes secondary school students (58%) believe that only good actions in this world can ensure a place in the heaven for the departed soul.
7. 47% Tea Tribes students and 43% Non-Tea Tribes secondary school students disagreed to the statement that a cat crossing the road in front of a car cannot not be a sign of our impending misfortune.
8. 47% Tea Tribes students and 48% Non-Tea Tribes secondary school students agreed to the statement that they do not tolerate if someone makes adverse comments on some of the customs though they know that he is correct.
9. 50% Tea Tribes students and 53% Non-Tea Tribes secondary school students feel that only hard work is not enough for success, if luck does not favour.
10. Almost 45% Tea Tribes students and 29% Non-Tea Tribes secondary school students believe that a number of contagious diseases are caused by witches.

11. 40% Tea Tribes students and 28% Non-Tea Tribes secondary school students opposed to the fact that wearing rings of different metals and stones cannot protect from impending misfortune.

Findings of the Study The findings of the study are:

1. The distribution of scientific attitude scores of the Tea Tribes secondary school students is positively skewed (skewness=0.719). However, the distribution of scientific attitude scores of the Non-Tea Tribes secondary school students is slightly positively skewed (skewness=0.313). It indicates that most of the Tea Tribes secondary school students obtained low score in the scientific attitude scale in comparison to the Non-Tea Tribes secondary school students.
2. A significant difference is found in scientific attitude of the Tea Tribes and Non-Tea Tribes secondary school students of Tinsukia District.
3. Moreover, a significant difference is also found in scientific attitude of the Tea Tribes boys and girls secondary school students of Tinsukia District.
4. There is no significant difference in scientific attitude of boys and girls Non-Tea Tribes secondary school students of Tinsukia District.
5. More than half of the Tea Tribes as well as Non-Tea Tribes secondary school students do not like to kill snake not because of the fact that we must protect animals to sustain our environment but because of the fear of Goddess Manasa.
6. It is also interesting to note that more number of Non-Tea Tribes secondary school students believe that reciting mantras can cure diseases in comparison to the Tea Tribes students that is on contrary to the public apprehension. .
7. The Tea Tribes students are more prone to luck in comparison to the Non-Tea Tribes secondary school students as they believe that if luck favours, a student can pass the examination in first division without any hard work.
8. Both Tea Tribes students and Non-Tea Tribes secondary school students believe that there is a connection of good actions and heaven for the departed soul. This belief is more predominant in the Tea Tribes students.

9. A majority of Tea Tribes students believe that a number of contagious diseases are caused by witches. The percentage of the Non-Tea Tribes secondary school students in this regard is less in comparison to the Tea Tribes students.

10. The Tea Tribes students have more faith in wearing rings of different metals and stones to protect impending misfortune in comparison to the Non-Tea Tribes secondary school students.

Conclusion The study reveals that scientific attitude of the Tea Tribes secondary school students is lower than the Non-Tea Tribes secondary school students. A significant difference is found in scientific attitude of the Tea Tribes and Non-Tea Tribes secondary school students of Tinsukia District. Moreover, a significant difference is also found in scientific attitude of Tea Tribes boys and girls secondary school students of Tinsukia District. The study also reveals that a majority of Tea Tribes students believe that a number of contagious diseases are caused by witches. They have more faith in wearing rings of different metals and stones to protect impending misfortune in comparison to the Non-Tea Tribes secondary school students. They also believe that if luck favours, a student can pass the examination in first division without any hard work. Thus it can be concluded that tea tribe students are more superstitious in comparison to Non-Tea Tribes secondary school students of Tinsukia District.

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