



A Study On Scientific Attitude Of 5T Secondary School Students Of Boudh District, Odisha.

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Abstract: This study investigated the scientific attitude of 5T secondary school students in Boudh district, Odisha due to gender (boys and girls) and locality (rural and urban). The research was followed by descriptive survey research method. A sample of 80 students (40 boys and 40 girls) from Boudh district were randomly drawn from eight sampled 5T secondary schools. These 8 sampled 5T secondary schools were randomly drawn from the three blocks (Boudh, Kantamal and Harabhanga) of Boudh district. The data were collected by using a self-prepared Scientific Attitude Scale contained five points by the investigators. For the analysis and interpretation of data, the researchers had used Mean, Standard Deviation and t-test. It was revealed from the study that there is no significant difference due to locality and there is significant difference due to gender.

Key words: Science, Scientific Attitude, 5T, Secondary school students, Gender, and Locality.

1. INTRODUCTION

In 21st century's rapidly advancing world, fostering the scientific attitude among secondary school students are imperative for nurturing the next generation of critical thinkers, problem solvers and innovators. Scientific attitude always cultivates a deep understanding of the scientific process and its application in everyday life. The components of scientific attitudes basically include curiosity, scepticism, open-mindedness, objectivity, critical thinking, and perseverance. These components help scientists approach problems with an analytical and evidence-based mindset, fostering discovery and innovation.

Extensive list of components of scientific attitude are to be found in the investigations of Crowell (1935), Ebel (1938) and Lampkin (1938). Curiosity is a part of scientific attitude to know about one's environment. Strange and mysterious can always explain by natural causes (Chadwell and Curits, 1943). According to educator encyclopaedia, smith, Krouse and Atkinson (1960), A person with a scientific attitude has characteristics like curiosity, critical thinking, scepticism, objectivity, open mindedness, patience in checking the result, thirst for new knowledge, understanding of the problem, not time for oldwives tables, rumours or superstitions, willing to work together and a willingness to question assumption. They value evidences-based reasoning, seek to understand natural phenomena through observation and experimentation and are willing to revised their beliefs in light of new evidences. Also, they often exhibit patience, perseverance and precision in their approach to problem solving and inquiry. Henery R. E (1964) scientific attitude included characteristics such as Curiosity Rationality, Willingness to suspend judgement, Open mindedness, critically minded, Objective, intellectually honesty, Humility. Diederich, P. B. (1967) provided twenty components and defined them clearly, which were the part of scientific attitude. Scientific attitude according to Rao (1996) represents the motivation which converts the knowledge about scientific fact and skills in the use of scientific methods into action. Scientific attitude was explained by Abell and Lederman (2007) as an attitude to scientific idea and information, particular way of evaluating them for transferring,

in day-to-day experiences. The importance of scientific attitudes as belief, curiosity objectivity, critical mindedness, open mindedness inventiveness, risk taking, intellectual honesty, humility, responsibility etc. Thus, scientific attitude has great value in present day. This study is an attempt to know the scientific attitude of 5T secondary school students of Boudh district.

2. RATIONALE OF THE STUDY

Scientific attitude is an attitude having scientific base and it leads to logical, systematics and planned action about anything in life. Scientific attitude is helpful for enhancing the level of curiosity, not to believe in superstitions, suspended judgement, Intellectual honesty seeking to adopt different planed procedures in solving the problem, to have the respect of scientific experiments of the school students. The investigators review the related literature and get the various ideas from conclusion and findings of the study. That are as follows, there is no significant difference of secondary school students towards scientific attitude [Pillai (2012), R. Lamar (2014) and Ravita N. & Dr.K. P and Meera (2017)]. There is significant difference in scientific attitude of student with respect to gender and locality [Jancirani et. al (2012), and Sekhar P and Mani (2013)]. There is positive attitude of students towards Scientific attitude [Olasehinde and Olatoye (2014), Dr. Chakradhar Singh & C. Arundhati Bai (2017) and Yoti Victoria (2012)]. There is average level of scientific attitude of the secondary school students [Dr. Utibe C. Ataha&Ogustine E. Ogumorgu (2013) and Prof. Dr. Preeti Sinha &Ms. Swapna Suman (2016)]. From the above all the literature reviews, the investigators find the research gap that there is no study about the 5T secondary school students in Odisha. But the Scientific attitude is the major aspect for the secondary school students, for the development of the scientific based knowledge, temper, skills etc. The investigators feel that the scientific attitude is an important study and which is necessary in day today life of secondary school students as achievement in science may depends on scientific attitude scale to measure the scientific attitude on the students. The researchers feel that in 21st century the knowledge about the scientific attitude of secondary school students is very essential, which is also discussed by NEP 2020. So, here the investigators want to study will assess the scientific attitude of the 5T secondary school students of Boudh district, on the basis of the gender and locality. 5T secondary school students may have a positive attitude of the science activities and science problem solving ability. The purpose of the study to assess the influence of the gender, locality of the school on scientific attitudes in 5T secondary school students of Boudh district.

3. OPERATIONAL DEFINITION OF THE TERM USED

Scientific attitude- It refers to the attitude of secondary school students towards the activities conducted in science subject at 5T secondary schools in Boudh district.

5T secondary school students- The 9th and 10th students, who are enrolled in the 5T secondary schools of Boudh District.

4. OBJECTIVE OF THE STUDY

1. To compare the scientific attitude of 5T secondary school students in relation to gender (Boys and Girls) and locality (rural and urban).

5. HYPOTHESIS OF THE STUDY

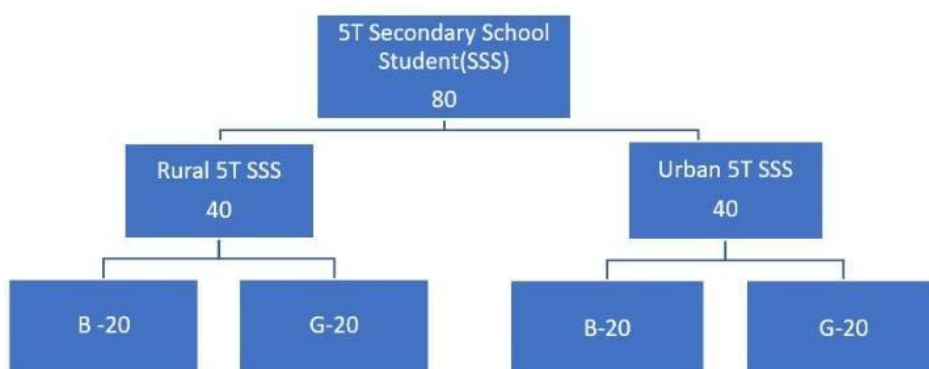
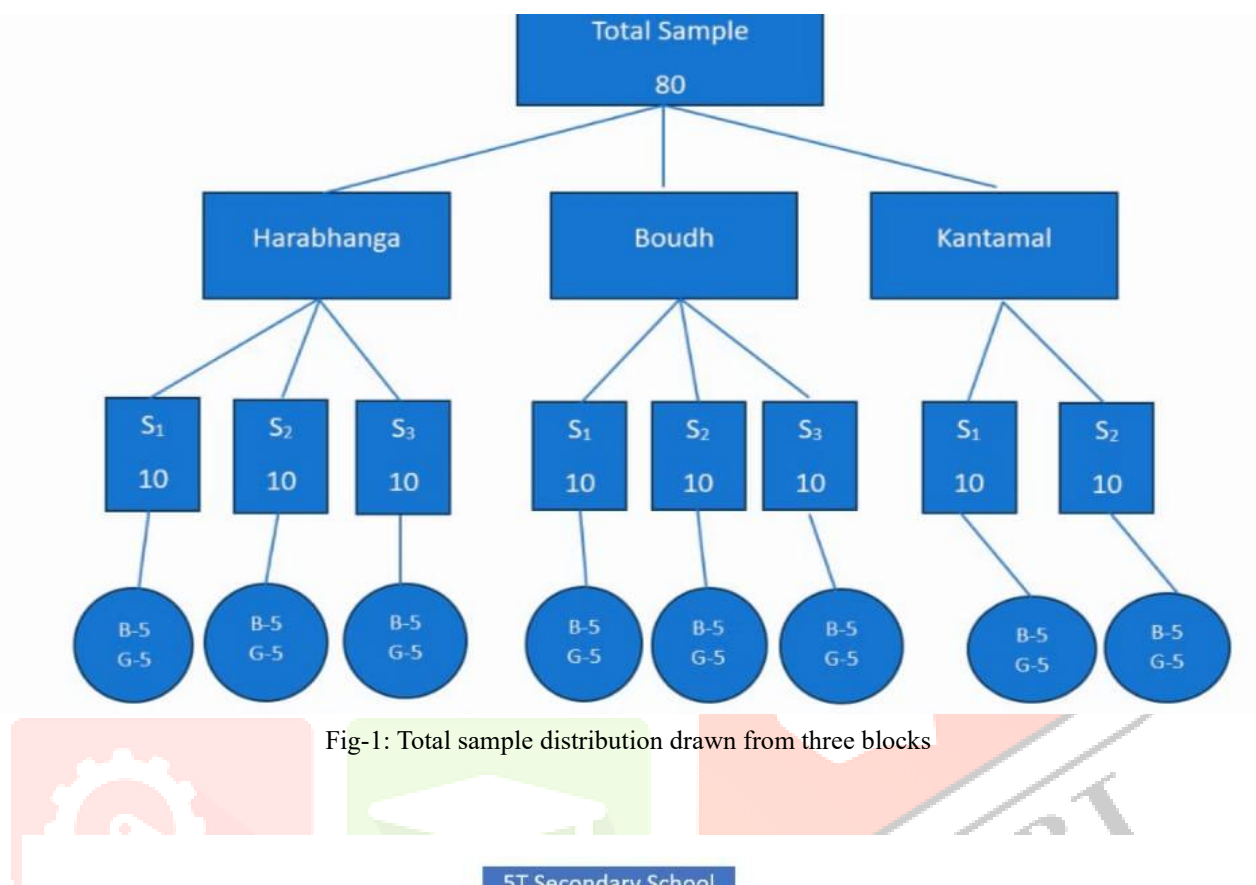
H₀₁: There is no significant difference between the scientific attitude of 5T secondary school students on the basis of gender (Boys & Girls).

H₀₂: There is no significant difference between the scientific attitude of 5T secondary school students based on locality (Rural & Urban).

6. METHODOLOGY

Here the investigators were used Descriptive Survey Method, for the data collection. The Objective is to study the scientific attitude of the 5T secondary school students. To compare the scientific attitude of 5T secondary school students on the basis of gender (boys and girls) and locality (rural and urban). The researchers were considered eight 5T secondary schools of Boudh district. For this study the total sample unit was 80. Ten students were taken from each school. Out of 80 samples, each 40 units of boys and girls were taken from rural and urban secondary schools. In this way, all the sample units were collected by choosing the stratified random sampling technique and considered for the data collection. The researchers were prepared a self-developed scientific attitude scale for the collection of data on the basis of measuring

scientific attitude level of class IX and X students of secondary schools. The scale was achieved 25 items based on the dimensions of open mindedness, curiosity, critical mindedness, suspended judgement, free from superstitions and fatalism, faithfulness, honesty, patience, belief in scientific solutions to problems, systematism, preciseness, application of science in day -to -day life and future interest, etc. Each statement of the scale was followed by 5-point rating of Likert's Method. The scale of each statement was possessed with options such as SA-Strongly Agree, A-Agree, UD-Undecided or Uncertain, D-Disagree and SD-Strongly Disagree



7. DATA ANALYSIS

In this study, the researchers have collected data from the secondary school students of different schools of Boudh district. The researchers analysed the data quantitatively, by using the scientific attitude scale which contains five points rating of Likert's Method. Here the investigators were scored 5,4,3,2,1 for SA-Strongly Agree, A-Agree, UD-Undecided or Uncertain, D-Disagree and SD-Strongly Disagree in case of positive statements whereas negative statements were scored like 1,2,3,4,5 for SA-Strongly Agree, A-Agree, UD-Undecided or Uncertain, D-Disagree and SD-Strongly Disagree. Whatever may be, for this study the investigators used only positive statements. After the collection of data from the respondents, the investigators were tabulated the row scores in a frequency distribution. As per the demand of the study, the

investigators used statistical techniques such as Mean, Standard deviation, t-test and bar graph representation and analysed the data.

Objective-1: To compare the scientific attitude of 5T secondary school students in relation to gender (boys and girls) and locality (Rural and Urban).

- 1. Null Hypothesis (H_{01}): There is no significant difference between the scientific attitude of 5T secondary school students on the basis of gender (boys and girls).**

Table-1: Comparison of Gender (Boys and Girls).

Summary of independent two samples t-test with mean, standard deviation, degree of freedom and t-value between boy and girl students of 5T school with scientific attitude scores in activities towards science subject.

Gender	n (80)	Mean	S.D.	Df	t-value	Significance value (0.05)	Significance value (0.01)
Boys	40	98.1	12.361	78	3.444	Table value (1.990)	Table value (2.639)
Girls	40	106.575	7.288				

The result of the above table clearly shows that, the calculated value of t-test is 3.444 and the critical value of t with 78 degrees of freedom at 0.05 significant level (5% level) is 1.990 and at 0.01 significant level (1% level) is 2.639. It indicates that the calculated value i.e. 3.444 is greater than both 1.990 and 2.639. It means that, a significant difference was observed between boy and girl students of 5T secondary school with scientific attitude scores in science. Therefore, the H_{01} is rejected and alternative hypothesis is accepted. It concluded that, the girl students of 5T secondary schools have significant and higher scientific attitude scores in science as compare to the boy students of 5T the given figure. This may be due to the various factors like type of management, administration, community involvement, teachers' approach towards the students, teaching practices and day to day experiences.

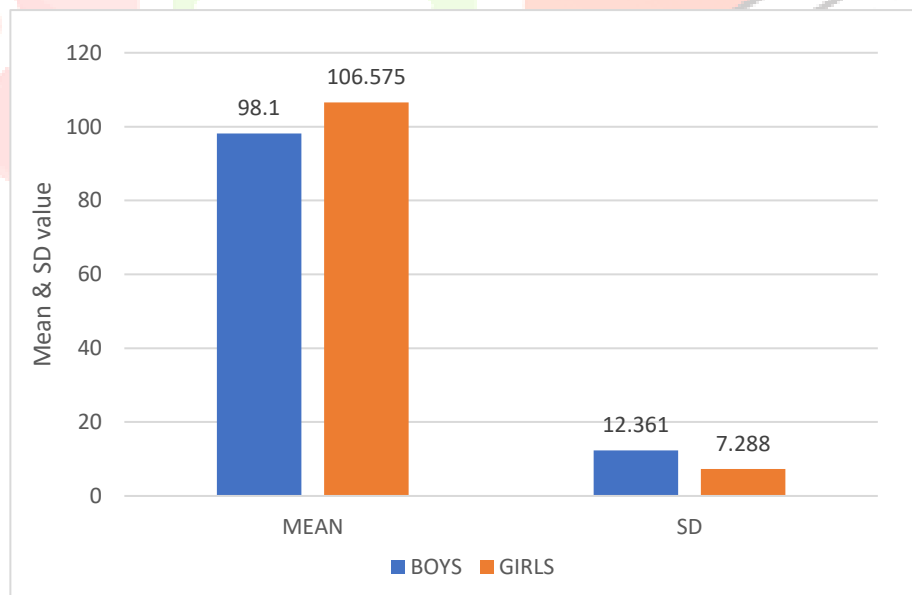


Fig. 3: Comparison between boy and girl student of 5T secondary school with scientific attitude scores in activities of science.

2. Null Hypothesis (H₀₂): There is no significant difference between the scientific attitude of 5T secondary school students based on locality (Rural and Urban).

Table-2: Comparison of locality (Rural and Urban)

Summary of independent two samples t-test with mean, standard deviation, degrees of freedom and t-value between rural and urban 5T secondary school students with scientific attitude scores in science activities.

Locality	n (80)	Mean	S.D.	Df	t-value	Significance value (0.05)	Significance value (0.01)
Rural	40	100.2	12.405	78	1.773	Table value (1.990)	Table value (2.639)
Urban	40	104.475	8.866				

The result of the above table clearly shows that, the calculated value of t-test is 1.773 and the critical value of t with 78 degrees of freedom at 0.05 significant level (5% level) is 1.990 and at 0.01 significant level (1% level) is 2.639. It indicates that the calculated value i.e. 1.773 is lesser than both 1.990 and 2.639. It means that, there is no significant difference was observed between rural and urban students of 5T secondary school with scientific attitude scores in science. Therefore, the H₀₂ is accepted. But it concluded that the urban students of 5T secondary schools slightly higher scientific attitude scores in science as compare to the rural students of 5T the given figure. This may be because of the factors like facilities available in school, teachers' interest towards the students, students interest level, teachers' approach towards the students, social and economic background of the students.

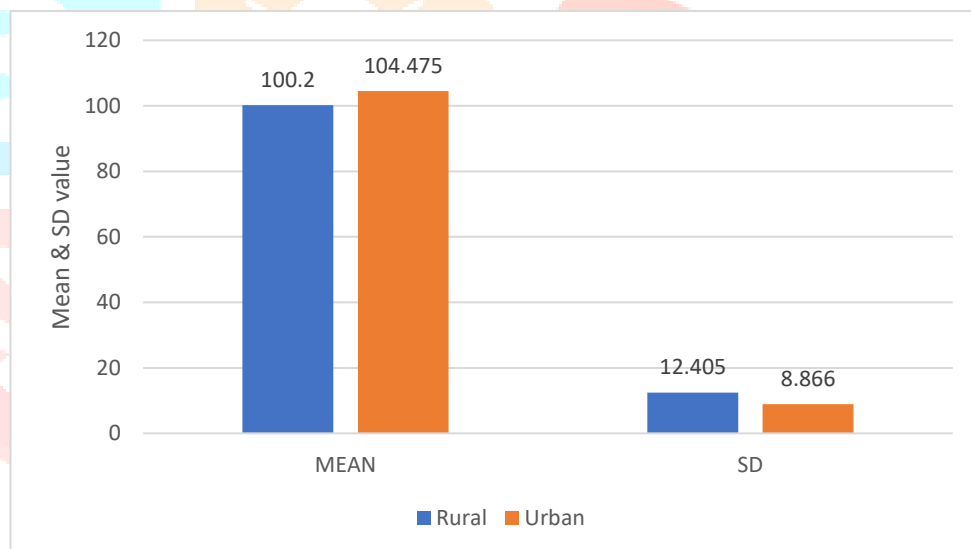


Fig-4: Comparison between students of rural and urban 5T secondary schools with scientific attitude scores in activities towards science.

8. MAJOR FINDINGS OF THE STUDY

The major findings of the present study are stated below.

- I. From the table -1, the investigators found that the mean score of boys group is 98.1 and that of girls group is 106.575. Also, the standard deviation of boys group is 12.361 and for girls' group is 7.228. It is found that boys' and girls' student having different scientific attitude.
- II. From the table-2, the mean score of rural students is 100.2 and that of urban students is 104.475. The standard deviation of rural students is 12.405 and for urban students is 8.866. The mean score of rural students does not differ significantly than the urban students. So, it is found that both rural and urban students of 5T secondary schools have same scientific attitude.

9. DISCUSSION

From the major finding-I, there was significant difference between the scientific attitude of 5T secondary school students on the basis of gender (boys and girls). This may be cause of the facility available in the school, teachers' interest towards the students, financial background of the students, interest of the students towards science, attitude towards science subject learning and doing various activities, intellectual domains

of the students etc. The finding of the study was substantiated by the studies of Jancirani et al., (2012), aimed at investigating the scientific attitude of adolescence students in Namakkal district and observing the influence of gender, locality, medium of instruction and type of management. Finding of the study was revealed significant difference in scientific attitude of the students with respect to gender, locality, instruction and management. Also, Sekhar P and Mani (2013) has carried out a study entitled “Science Attitude of Higher Secondary Students” which is supported to the findings of the current study. From the major findings-II, there was no significant difference between the scientific attitude of 5T secondary school students on the basis of locality (rural and urban). The findings of the study were supported by the findings of the study of Pillai (2012), R. Larmar (2014) and Ravita N. et al., (2017).

10. EDUCATIONAL IMPLICATION

The study has some educational implications such as,

- The proposed study helps to create the close interaction between the student’s mind and scientific modern world.
- The result will help to teachers to formulate appropriate teaching learning strategies which are suitable to 5T secondary school students.
- The proposed study helps to teachers, students, parents and stakeholders for developing the curriculum content which is suitable to learning style of 5T secondary school students.
- The study will help to provide quality education to 5T secondary school students.

11. CONCLUSION

The present research work was planned to find out the scientific attitude of 5T Secondary school students on the basis of gender (boys and girls) and locality (rural and urban). Previously, many researches carried out by the other researchers which were same as that of present study. For the scientific attitude, there is significant different between boys and girl students of secondary schools. The same result also obtained by Jancirani et al. (2012), Sekhar P and Mani (2013). But there is no significant difference between urban and rural students. Similar result also obtained by Pillai (2012), R. Larmar (2014) and Ravita N. et al., (2017).

Cultivation of scientific attitude for the students means cultivation of curiosity, critical thinking, open mindedness, scepticism, experimental mindset, ethical awareness, free from superstition etc. in the students’ mind. According to NEP-2020, the future use of scientific attitude also outlined as preparing students to engage with complex challenges, adapt to technological advancements, contribute to innovation and sustainable development. Scientific attitude always facilitates to empower learners to approach problems with curiosity, evidence-based reasoning, commitment to lifelong learning and make fit for dynamic world. So, the scientific attitude is very essential for the secondary school students. This study reveals that the boys and girls have same level of scientific attitude whereas on the basis of locality it has different. So, it very essential for secondary school courses to add scientific attitude in the curriculum and co-curriculum. That’s why it may be important for the secondary school students and for further research work.

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