The Environmental Influence as Determinants of Adolescents Attitude Towards Science Stream

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Abstract:
The investigation of students' attitudes towards studying science has been a substantive feature of the work of the science education research community for the past 30–40 years. The Environmental Awareness and school science as Determinants of Adolescents Attitude towards Science Stream. Environment is external conditions or surroundings, especially those in which people live or work. The external surroundings in which a plant or animal lives, which tend to influence its development and behaviour the state of being environed; encirclement an operating system, program, or integrated suite of programs that provides all the facilities necessary for a particular application.

Keywords: *Environment, Attitude, Awareness, science*

1. INTRODUCTION

The investigation of students' attitudes towards studying science has been a substantive feature of the work of the science education research community for the past 30–40 years. Worldwide studies have revealed an important issue in that an increasing percentage of students within the adolescence age group are not interested in science. Many students, especially females, have negative feelings and attitudes toward science, which discourages them from continuing with scientific inquiries. There are limited studies related to the factors predicting school students' attitude toward science; therefore, the purpose of this study is to determine the relationships among the environmental influence and achievement toward science, their learning approaches, motivational goals, science achievement and students' nature of science views.

1.1 STATEMENT OF THE PROBLEM:

The Environmental Awareness and school science as Determinants of Adolescents Attitude towards Science Stream. Environment is an external conditions or surroundings, especially those in which people live or work .The external surroundings in which a plant or animal lives, which tend to influence its development and behaviour the state of being environed; encirclement an operating system, program, or integrated suite of programs that provides all the facilities necessary for a particular application. Environment has a great impact on the development of scientific attitude of adolescence student. Achievement is the result of what an individual has learned from some educational experiences. Achievement is the expectancy of finding satisfaction in mastering challenging and difficult performances. Achievement as the successfulness of individual. Achievement is to do one's best, to be successful, to accomplish tasks requiring skill and effort and to be recognized by authority. Proper environment creates great influence towards the achievement of scientific skill. Aptitude is a component of a competence to do a certain kind of work at a certain level. Outstanding aptitude can be considered "talent". Attitudes may be physical or mental. Attitude is inborn potential to do certain kinds of work whether developed or undeveloped. Ability is developed knowledge, understanding, learned or acquired abilities (skills) or attitude.

The innate nature of attitude is in contrast to skills and achievement, which represent knowledge or ability that is gained through learning. This study emphasize on to assess adolescent students' attitude

towards science and to find out the environmental and academic factors that influenced their attitude towards science. The dependent variable is attitude toward science, and three categories of independent variables are environmental influence measured by parental education, income and socio-economic status, influence of teachers and peers and vocational value of science; achievement in physical science, Life science, and mathematics; and scientific aptitude measured by numerical ability mechanical reasoning and space relation.

1.2 OBJECTIVES OF THE STUDY
1. To find out the level of environmental awareness among adolescence students.
2. To investigate if there is any significant difference in attitude toward learning of science among rural and urban locality students of secondary school.
3. To investigate if there is any significant difference in attitude toward learning of science among boys and girls at secondary school.
4. To investigate the impact of environmental awareness on the adolescence students' attitude towards science stream.

1.3 HYPOTHESES
H01 – There is no significant difference in interest toward learning of science among adolescence boys and girls at secondary schools.
H02 -- There is no significant difference in interest toward learning of science among Rural Area & Urban Area secondary school students.
H03 -- There is no significant difference between boys and girls of secondary schools on environmental awareness as determinants of adolescence attitude toward science stream.
H04 - There is no significant difference between Rural & Urban areas' secondary school students on environmental awareness as determinants of adolescence attitude toward science stream.
H05 - There is no significant correlation between scientific attitude and environmental awareness of adolescence students of higher secondary standard.

1.4 OPERATIONAL DEFINITION OF THE TERMS:
SCIENTIFIC ATTITUDE: With global scientific and technological growth occurring rapidly, declining student interest in science courses and careers is a worldwide concern that has prompted science education reform efforts on an international scale. Since student attitudes toward science effect course and career choices, measuring the impact of reform efforts on student attitudes is important (Owenet al, 2008). Attitudinal studies in science education area are mostly pertinent to elementary, middle and high school students', and in some cases college students' attitudes towards science (Turkmen, 2007). As science has become ever more deeply embedded in our everyday life, how ordinary people perceive science has attracted Growing attention not only from the scientific community, but also from social scientists (Bak, 2001). A significant amount of research in science education is devoted to understanding ways we can improve the quality of science education and increase enrolment in science courses and degrees. One of the key factors in learning science is students' attitudes and the development of positive attitudes toward science can motivate student interest in science education and science-related careers (George, 2006). attitude is concept that defines emotional trends in response to affaires, persons, locations, events or ideas Therefore phrases as "I like science" or " I enjoy science courses" enumerate as attitude(Simpson and Oliver, 1990).

ENVIRONMENTAL AWARENESS: associated with parental background and family environment. Other factors relate to individual characteristics such as self-concept, locus of

control, and achievement motivation. Still other variables are associated with schools influences such as class climate, teachers, and administrative styles (Talton and Simpson, 1985).According to Osborne

et al (2003), Studies have incorporated a range of components in their measures of attitudes to science including: the perception of the science teacher; anxiety toward science; the value of science; self-esteem at science; motivation towards science; enjoyment of science; attitudes of peers and friends towards science; attitudes of parents towards science; the nature of the classroom environment; achievement in science and fear of failure on course.

ACADEMIC ACHIEVEMENT: Gardner's research (1995) offered little support for any strong relationship between attitude and achievement, Schibeci (1984) draws a stronger link between the two. However, he also cites studies that show no relationship. The current position is best articulated by Shrigley (1990), who argues that attitude and ability scores can be expected to correlate moderately. Likewise, the measures used in the TIMSS study, albeit somewhat unsophisticated, have found a consistent relationship between attitude and achievement (Beaton et al., 1996). Weinberg's (1995) meta-analysis of the research suggests that there is only a moderate correlation between attitude towards science and achievement. Longitudinal study of Oliver and Simpson (1988) shows a strong relationship between the three affective variables - attitude towards science, motivation to achieve and the self-concept that the individual has of their own ability - and their achievement in science. Though many of researches on attitude towards science have dealt with science in general, but there are some researches that examine this concept in specific science courses as physics or chemistry and so on.

DELIMITATION

- The study is delimited in the locality of Gangadharpur situated in Howrah district of West-Bengal.
- For this study 200 secondary and higher secondary students of both boys and girls of adolescence age group among them 100 are males and 100 are females.

1.5 SIGNIFICANCE OF THE STUDY

Each country has its own challenges for Science education. The challenges for learners are identified based on the evidence collected by international or domestic surveys. To overcome these challenges, new school curriculum is planned and implemented. School-based lesson study contributes to the realization of the intended curriculum as the implemented one. It is important that students today understand that Science is more than what they read in a text book. As educators, parents and mentors it is our responsibility to take Science beyond the pages of a book. **(Nasr, 2011)** by developing creative and innovative lesson plans that demonstrate the cause and effect of Science, we have the opportunity to bring Science to life for our children. Academic achievement in Science has been in focus for those who are interested in dealing with the practical problems of under development in order to bring about greater work efficiency and institution building. The need for achievement in Science has been greatly felt in every field because it is the main key for academic growth. Academic achievement in Science tries to seek some standard of excellence and may be shown either in competing with others, surfing one's own level of performance, unique accomplishment or an involvement in all possible walks of life. There is a great need for the development and achievement of Science. All the accomplishments are based on it and it has a direct bearing on the occupational choice and the success of the students laying more trust in their own ability and effort. **(Soltani, 2011)** Every school should organize Science fairs at least once a year and this should include the exhibits of the students as well as demonstration talks by experts, film shows on scientific topics ,debates and declamation magic. Schools, scientific plays, etc. Teacher and the pupils should collaborate towards the success of the fair, it should be mainly an activity of the scientific work in practical; it can make an appeal to visitors which the academic type of activities may fail to provide.

For schools to be effective and make a difference in student learning, they must hold teaching and learning at the center of their work. Additionally, realizing teachers have a significant impact on

student learning, teachers should strive to ensure that students are at the center of learning and that classroom instruction provides rich and meaningful curriculum for the full range of students in schools**. (Nasr, 2011)**

In practice, Science as a process involves an integration of knowledge, skills, and attitudes to develop scientific understanding. Practical work in Science can include experiencing phenomena, developing practical skills or techniques, and carrying out investigations. Investigations provide key opportunities for students to extend their understanding in Science. They also enable students to develop the scientific skills and attitudes required to enhance their ability to explore phenomena and events and to solve problems. It can be expected that, as they learn, students will show an increasing sophistication in the skills they use in their investigations.

To conclude, the present study has shown that there is a relationship between attitude toward learning of Science and academic achievement in Science of secondary school students. The present study also revealed that gender, type of school, the management and the medium of instruction has significant bearing of achievement in Science and attitude to learning of Science of secondary school**. (Soltani, 2011)** The boys and girls among the secondary school section studying in the different types of school have a definite influence on the attitude towards Science. Thus it could be concluded that a positive attitude towards learning of Science would enhance the achievement in Science. Keeping in mind the importance of learning Science, it becomes very important for schools and families in particular and society at large to foster good attitude toward learning, intelligence, learning skills among students and provide good socio-economic conditions for their effective learning and performance in Science.

2. REVIEW OF RELATED LITERATURE
2.1 INTRODUCTION
Review of related literature and Researches is first and for most prerequisite of any research work. Any research cannot be a single step in research fields; but it is a link in a stream of research; every research should be based on all the relevant thinking and the research that has preceded it. It is the abstract or a brief summary of previous researches, which provides evidence for researcher what is already known and what is still unknown and untested. So any new research is built upon or adds to what is known up to that print of time. "A literature review is a systematic explicit and reproductive method for identifying evaluating and interpreting the existing body of recorded work produced by researcher's scholars and practitioners." Fink, 1998

According to Ary et al; (1972). Organizing related literature is like proposing an expedition, by mapping out the known territory and pointing the way to the unknown territory one proposes to explore. If the study has several aspects or is investigating more than a single hypothesis this is done separately for each facet of the study. One should avoid the temptation to present the literature as a series of abstracts. Rather, it should be presented in such a way as to lay a systematic foundation for the study (P.67)

J.W. Best in his book 'Research in Education' says that, "Review of the literature and research provides and background for the development of the present study and brings the reader up to date since good research is based upon everything that is known about problems this part of the report gives evidence of the investigations knowledge of the field."

The objectives of the study are to assess adolescent students' attitude towards science and to find out the environmental and academic factors that influenced their attitude towards science. The dependent variable is attitude toward science, and three categories of independent variables are environmental influence measured by parental education, income and socio-economic status, influence of teachers

and peers and vocational value of science; achievement in physical science, Life science, and mathematics; and scientific aptitude measured by numerical ability mechanical reasoning and space relation.

2.2 REVIEWS OF LITERATURES

Schibeci, R. A.; & Riley II, J. P. (1986) studied on **Influence of students' background and perceptions on science attitudes and achievement.** The purpose of the study was to investigate the influence of students' background and perceptions on science attitude and achievement. The data analysed came from Booklet 4 given to 17-year-olds during the 1976–1977 National Assessment of Educational Progress (NAEP) survey. Causal modeling procedures were used to analyze the data. In particular, the LISREL method which underlies the LISREL IV computer program, (Jöreskog and Sörbom, 1978) was employed. The influence of five background variables (sex, race, home environment, amount of homework, and parents' education) on three dependent variables (student perception of science instruction, student attitudes, and student achievement) was examined. Sex, race, and the home environment were shown to have substantial influence on student achievement in science. Further, two different models were tested: a model in which attitudes influence achievement and its converse (achievement influences attitudes). The data supported the first model, that is, attitudes influence achievement.

Talton, E. Lynn; & Simpson, Ronald D. (1987) studied on **Relationships of attitude toward classroom environment with attitude toward and achievement in science among tenth grade biology students.** The objective of the study was to examine the relationship of classroom environment to attitudes toward science and achievement in science among tenth grade biology students. An attitude instrument was administered at three times during the school year to measure student attitudes toward science and the classroom environment. The classroom environment measures examined six areas: emotional climate of the science classroom, science curriculum, physical environment of the science classroom, science teacher, other students in the science classroom, and friends attitudes toward science. Student achievement in science was measured by teacher reported semester grades. The results of the study indicated: (1) student attitudes toward the classroom environment predicted between 56 to 61% of the variance in attitudes toward science, (2) student attitudes toward the classroom environment predicted between 5 to 14% of the variance in achievement in science, (3) student attitudes toward science and attitudes toward the classroom environment predicted between 8 and 18% of the variance in achievement in science.

Crawley III, Frank E.; & Coe, Annette S. (1990) studied on **Determinants of middle school students' intention to enroll in a high school science course: An application of the theory of reasoned action.** The objectives of the study are The determinants of intentions to enroll in a high school science course were investigated, using the theory of reasoned action, among earth science students enrolled in a middle school located in a middle-income, suburban community in central Texas. The sample consisted of 5 of 14 eighth-grade earth science classes, randomly selected for this study. Classes contained Caucasian and minority students, male and female, of differing science abilities who were grouped according to general academic abilities—basic, average, and gifted and talented. The prediction of behavioral intention of sample participants was tested using four external variables, attitude, and subjective norm (Direct-Full Effects Model), attitude and subjective norm alone (Direct-Reduced Effects Model), and disaggregated data on attitude and subjective norm (Indirect Effects Model). Results of the study revealed attitude and subjective norm to be the sole predictors of behavioral intention for the aggregated data, but to be differentially effective for groups formed on the basis of sex, ethnicity, general ability, and science ability. Evidence is presented to show that the relative contributions of attitude and subjective norm to the prediction of behavioral intention varies

among students depending upon their sex, ethnicity, general ability, and science ability. Results of the study are discussed in terms of increasing the enrollment of all students in elective science courses.

Myers III, Raymond E.; & Fouts, Jeffrey T. (1992) studied on **A cluster analysis of high school science classroom environments and attitude toward science.** The objectives of the study was to test a theory which suggests that student perceptions of their classroom environment affect their attitudes toward science. Using the statistical technique of cluster analysis, 27 high school science classes were divided into three distinct clusters which were most distinguishable by the amount of involvement, affiliation with students, teacher support, order and organizations, and innovative teaching strategies. One of the clusters provided a classroom environment which was significantly different from the other two and the students in that environment had more positive attitudes toward science. The dimensions of the classroom environment which make a difference are those which teachers may develop and change in order to enhance the science attitudes and, possibly, the science achievement of their students.

Nasr, Ahmad R.; & K., Asghar Soltani (2011, May 9) studied on **Attitude towards Biology and Its Effects on Student's Achievement.** The main purpose of this study was to examine the relation between attitudes towards science in biology courses and students' biology achievement. A total of 185 grade 12 (age 17-18 years) students in Isfahan answered to a 30-item questionnaire provided by authors based on STAQ-R inventory. The results showed that among attitude towards science dimensions, only "biology is fun for me", have meaningful and positive relation with students' achievement in biology. Also there was no significant difference between girls and boys in attitude towards biology, although girls had better achievements in biology in comparison with boys.

Anwar, Muhammad; Iqbal, Hafiz Muhammad; & Harrison, Christine (2012) studied on **Students' Attitude towards Science: A Case of Pakistan**. This study was conducted to examine students" attitude towards science. The sample of the study consisted of 3526 students of 10thgrade (Boys = 1914, Girls = 1612) and were from urban (n = 2304) and rural (n = 1222) localities of Pakistan. The instrument administered was „„Test of Science Related Attitudes"" (TOSRA) developed by Fraser (1981). Results of the study depicted a significant effect of gender and locale on students" attitude towards science. Girls had significantly higher attitude towards science than boys on total scale and on all sub-scales of TOSRA with only one exception of Career Interest in Science subscale on which boys were slightly high than girls but it was not significant. Locality wise results showed rural students to score significantly higher on the total scale and on the subscales of Social Implication and Career Interest in Science than the urban respondents, while the urban respondents scored significantly higher on the subscale of Adoption of Scientific Attitudes than the rural respondents. There was no significant variation between the rural and urban respondents in their Attitude towards Scientific Inquiry, Enjoyment of Science Lessons and Leisure Interest in Science. This study has wide implications for educationists.

Mohammad, Najafi; Aazam, Dehghani; Maryam, Rezaei & Ebrahim, Ebrahimitabass (2012, February) studied on **Students' Attitude towards Science and Technology.** This study assessed attitudes towards science and technology middle school students. The population included all 3rd grade students a total of 230 students (105 female and 125 male) chose through stratified random sampling method. Research instrument was the Persian

translation of the Science Education questionnaire. Data analyzed by SPSS version 17.00. Reliability of the scale calculated by Cronbach's alpha coefficient (0.91). Results indicated that there is a positive attitude towards science and technology among students. However, there was not a positive attitude towards some items of science and technology. The results also showed that there is a meaningful

difference between males and females points of views in attitude towards sciences and technology. According to this result, males have higher averages than the females. The results of this research provide important information about students' attitude towards science and could be used by science teachers and educators to development of science curricula and science books.

Narmadha, U. ; & Dr.Chamundeswari, S. (2013, June 15) studied on **Attitude towards Learning of Science and Academic Achievement in Science among Students at the Secondary Level**. The present study aimed to investigate attitude towards learning of Science and academic achievement in Science among students at the secondary level. Using random sampling technique 422 students, from the secondary level in different systems of education, namely, state, matriculation and central board schools were chosen. The Attitude toward Learning of Science Scale (Grewal, 1972) was used to assess the attitude towards learning Science and the marks scored in Science were taken from their half yearly performance. The data collected was subjected to statistical analysis, namely, mean, standard deviation, 't'- test, 'F'-ratio, Karl Pearson's Product Moment Correlation Co-efficient 'r'. Results showed that the students belonging to the central board schools have a higher level of attitude towards learning of Science compared to students in state board but did not differ with students in matriculation board schools at the secondary level. Similarly, students belonging to central board schools performed better in Science subject compared to the students in state and matriculation board schools at the secondary level. The girls are significantly better in their attitude toward learning of Science when compared to the boys in all categories of schools. In matriculation and central board schools the girls are better than boys in their academic achievement in Science whereas in state board schools there is no significant difference in their gender. A positive correlation was found to exist between attitude towards learning Science and academic achievement in Science among the students.

Dr. Candrasekaran, S. (2014, June 6) studied on **Developing Scientific Attitude, Critical Thinking and Creative Intelligence of Higher Secondary School Biology Students by Applying Synectics Techniques.** The objectives of the study were the educational problems relating to quantity and quality could be tackled by the proper utilization of synectics techniques. Synectics technology is a systematic way of designing, carrying out and evaluating the teaching learning process. A Synectics technique makes scientific attitude, critical thinking and creative intelligence more effective, understandable and meaningful. All types of resources are used to make the learning easy. Traditional teacher centered approach in the classroom has been shifted from teaching to learning. It is called student centered or techniques based approach, the students being the resources. The major objectives of the study were, (1) to find the development of synectics interest, scientific attitude, critical thinking and creative intelligence of in teaching and learning biology through synectics techniques at higher secondary level to students of experimental group and control group. To see the difference of treatment effects between the control and experimental groups on the variable of gender, the researcher selected the students' of 11th biology class of Government Higher Secondary School and two groups (Experimental groups and Control groups) were randomly selected from total available group. The equivalence of the groups was determined by equating the students of both groups on the pre-test scores four chapters of biology were taught during the experiment to both experimental and control groups by two different students almost of the same classes and were intended to measure the outcomes of learning. The post-test was administered to both groups after twelve weeks. In order to secure data, pre-test, post-test were administered as research instrument. Data were tabulated, analyzed and interpreted in the light of objectives of the results. Tests of significance such as t-test were applied the development of scientific attitude, critical thinking and creative intelligence and weakness of traditional approach at secondary level in teaching biology. The analysis revealed that the application of synectics techniques as supplementary strategy in teaching biology was more development because the use of synectics techniques increased interest and enhanced motivation levels. Synectics techniques as supplementary strategy were also found to be equally development for students. On the basis of findings, researcher

provides workable suggestion recommendations for enhancing the effective learning of students of biology at higher secondary level.

Hacieminoglu, Esme (2015, November 22) studied on **Elementary School Students' Attitude toward Science and Related Variables.** The main objective of this study was to reveal an important issue in that an increasing percentage of students within the X – Y age group are not interested in science. Many students, especially females, have negative feelings and attitudes toward science, which discourages them from continuing with scientific inquiries. There are limited studies related to the factors predicting school students' attitude toward science; therefore, the purpose of this study is to determine the relationships among the seventh grade elementary students' attitudes toward science, their learning approaches, motivational goals, science achievement and students' nature of science (NOS) views. The questionnaires for this study were administered online to 3,598 seventh grade students in different regions and cities of Turkey. The convenience sampling method was used in this study. The correlation results revealed the positive relationship between attitude toward science and the other variables. Multiple regression analysis indicated that while students' meaningful learning, self-efficacy, and nature of science views have a positive contribution, rote learning contributed negatively to the model. The findings also showed that parents' income and education level had a significant effect on students' attitude toward science.

2.3 CRITICAL APPRAISAL
The selected topic is Environmental Influence, Academic Achievement as Determinants of Adolescents Attitude towards Science Stream. For the sake of the progress of this study we have mentioned here 8 international and 2 national related literature review.

Students' Attitude towards Science: A Case of Pakistan - This study was conducted to examine students" attitude towards science. The sample of the study consisted of 3526 students of 10thgrade (Boys = 1914, Girls = 1612) and were from urban (n = 2304) and rural (n = 1222) localities of Pakistan. The instrument administered was „"Test of Science Related Attitudes"" (TOSRA) developed by Fraser (1981). Results of the study depicted a significant effect of gender and locale on students" attitude towards science. **Attitude towards Learning of Science and Academic Achievement in Science among Students at the Secondary Level** - The present study aimed to investigate attitude towards learning of Science and academic achievement in Science among students at the secondary level. Using random sampling technique 422 students, from the secondary level in different systems of education, namely, state, matriculation and central board schools were chosen. . A positive

correlation was found to exist between attitude towards learning Science and academic achievement in Science among the students. **Influence of students' background and perceptions on science attitudes and achievement** – It investigate the influence of students' background and perceptions on science attitude and achievement. The influence of five background variables (sex, race, home environment, amount of homework, and parents' education) on three dependent variables (student perception of science instruction, student attitudes, and student achievement) was examined. Sex, race, and the home environment were shown to have substantial influence on student achievement in science.**Relationships of attitude toward classroom environment with attitude toward and achievement in science among tenth grade biology students -** THIS study was to examine the relationship of classroom environment to attitudes toward science and achievement in science among tenth grade biology students. The classroom environment measures examined six areas: emotional climate of the science classroom, science curriculum, physical environment of the science classroom, science teacher, other students in the science classroom, and friends attitudes toward science. Student achievement in science was measured by teacher reported semester grades. **Attitude towards Biology**

and Its Effects on Student's Achievement - this study was to examine the relation between attitudes towards science in biology courses and students' biology achievement. **Determinants of middle school students' intention to enroll in a high school science course: An application of the theory of reasoned action.** This study determinants the intentions to enroll in a high school science course, using the theory of reasoned action, among earth science students enrolled in a middle school located in a middle-income, suburban community in central Texas. Classes contained Caucasian and minority students, male and female, of differing science abilities who were grouped according to general academic abilities—basic, average, and gifted and talented. Results of the study revealed attitude and subjective norm to be the sole predictors of behavioral intention for the aggregated data, but to be differentially effective for groups formed on the basis of sex, ethnicity, general ability, and science ability. **A cluster analysis of high school science classroom environments and attitude toward science –** This study was to test a theory which suggests that student perceptions of their classroom environment affect their attitudes toward science. . The dimensions of the classroom environment which make a difference are those which teachers may develop and change in order to enhance the science attitudes and, possibly, the science achievement of their students. **Students' Attitude towards Science and Technology -** This study assessed attitudes towards science and

technology middle school students. The population included all 3rd grade students a total of 230 students (105 female and 125 male) chose through stratified random sampling method. According to this result, males have higher averages than the females. **Elementary School Students' Attitude toward Science and Related Variables -** This study was able to reveal an important issue in that an increasing percentage of students within the X – Y age group are not interested in science. Many students, especially females, have negative feelings and attitudes toward science, which discourages them from continuing with scientific inquiries. The findings also showed that parents' income and education level had a significant effect on students' attitude toward science. **Developing Scientific Attitude, Critical Thinking and Creative Intelligence of Higher Secondary School Biology Students by Applying Synectics Techniques.** The objectives of the study were the educational problems relating to quantity and quality could be tackled by the proper utilization of synectics techniques. On the basis of findings, researcher provides workable suggestion recommendations for enhancing the effective learning of students of biology at higher secondary level.

Ahmad R. Nasr; & Asghar Soltani K. (2011, May 9); U. Narmadha; & Dr. S. Chamundeswari (2013, June 15); Muhammad Anwer; Hafiz Muhammad Iqbal; & Christin Harrison (2012) found out the same findings on the topic **Attitude towards Learning of Science and Academic Achievement in Science** that the Girls had significantly higher attitude towards science than boys on total scale. The girls are significantly better in their attitude toward learning of Science when compared to the boys in all categories of schools. In matriculation and central board schools the girls are better than boys in their academic achievement in Science and girls had better achievements in biology in comparison with boys. But according to Najafi Mohammad; Dehghani Aazam; Rezaei Maryam & Ebrahimitabass Ebrahim (2012, February) there is a meaningful difference between males and females points of views in attitude towards sciences and technology, males have higher averages than the females. E. Lynn Talton; & Ronald D. Simpson (1987) ; Raymond E. Myers III; & Jeffrey T. Fouts (1992) found out the same findings on the topic **Relationships of attitude toward classroom environment with attitude toward and achievement in science** that student attitudes toward the classroom environment predicted between 56 to 61% of the variance in attitudes toward science, student attitudes toward the classroom environment predicted between 5 to 14% of the variance in achievement in science, student attitudes toward science and attitudes toward the classroom environment predicted between 8 and 18% of the variance in achievement in science. The dimensions of the classroom environment which make a difference are those which teachers may develop and change in order to enhance the science attitudes and, possibly, the science achievement of their students. R. A. Schibeci; & J. P. Riley II (1986) ;Frank

E. Crawley III; & Annette S. Coe (1990) found out the same findings on the topic **Influence of students' background and perceptions on science attitudes and achievement** that is Sex, race, and the home environment have substantial influence on student achievement in science. Evidence is presented to show that the relative contributions of attitude and subjective norm to the prediction of behavioral intention varies among students depending upon their sex, ethnicity, general ability, and science ability.

The above mentioned studies was not given focus on the three variables together that is Environmental influence, Scientific aptitude and Academic achievement to measure the adolescence boys and girls motivation towards science stream. They focused only on single variables either on the environmental background or scientific aptitude or academic achievement. Beside this they could not given stress on the remedial teaching or how could the teacher can motivate adolescence students towards science stream. They did not give any focus on teaching strategies to improve the motivation of students towards science teaching.

The significance of my topic is to find out if there is any effect of Environmental influence, scientific aptitude and Academic achievement to develop better scientific attitude among adolescence student of secondary and higher secondary school. To find out if there is any significant difference between adolescence boys and girls on the measurement of scientific intelligence. To find out remedial teaching strategies to motivate students and creates interest toward science stream.

For schools to be effective and make a difference in student learning, they must hold teaching and learning at the center of their work. Additionally, realizing teachers have a significant impact on student learning, teachers should strive to ensure that students are at the center of learning and that classroom instruction provides rich and meaningful curriculum for the full range of students in schools. **(Narmadha, 2013)**

In practice, Science as a process involves an integration of knowledge, skills, and attitudes to develop scientific understanding. Practical work in Science can include experiencing phenomena, developing practical skills or techniques, and carrying out investigations. Investigations provide key opportunities for students to extend their understanding in Science. **(Chamundeswari, 2013).** They also enable students to develop the scientific skills and attitudes required to enhance their ability to explore phenomena and events and to solve problems. It can be expected that, as they learn, students will show an increasing sophistication in the skills they use in their investigations.

To conclude, the present study want to show that there is a relationship between attitude toward learning of Science and academic achievement in Science of secondary school students. The present study also revealed that gender, type of school, the medium of instruction has significant bearing of achievement in Science and attitude to learning of Science of secondary school. **(Narmadha, 2013).** The boys and girls among the secondary school section studying in the different types of school have a definite influence on the attitude towards Science. Thus it could be concluded that a positive attitude towards learning of Science would enhance the achievement in Science. Keeping in mind the importance of learning Science, it becomes very important for schools and families in particular and society at large to foster good attitude toward learning, intelligence, learning skills among students and provide good socio-economic conditions for their effective learning and performance in Science.

3. METHODOLOGY
3.1 POPULATION
The study has been conducted at Gangadharpur block in Howrah district and Baguihati area in Kolkata. The population of the study is the adolescence school students of the age group of 13-15

years of rural and urban area. There are 3 schools in Gangadharpur and 2 schools in Baguihati including total 200 students both secondary school boys and girls students are considered as population.

3.2 SAMPLE: 200 school students of Gangadhapur and Baguihati have been selected among 5 secondary school students who are in adolescence age group. The sample division according to different region schools both rural and urban and according to gender both boys and girl. The samples are stratified into two stratum Boys-Girls, Rural-Urban.

Table 1: Sample distribution according to categorical variation
TOTAL SAMPLE – 200

BOYS (109)		GIRLS (91)	
RURAL	URBAN	RURAL	URBAN
60	49	61	30

3.3 TOOLS & TECHNIQUES: A self developed four scale questionnaire consisting of 30 questions on scientific attitude and environmental factor in developing scientific attitude has been used for data collection. The questionnaire has been formed from a standardised tool on Scientific Attitude of adolescence students named ROSE –The Relevance of Science Education. The validity test of this questionnaire has been performed by 3 educationists. After that reliability test has been conducted among selected 30 students from the 200 adolescence students at the interval of two weeks.
Question no.1,2,3,4,7,8,9,10,11,12,13,15,16,17,18,19,20,22,23,25,26,28,29 are positive types and question no.5,6,14,21,24,27,30 are negative types. For positive type questions the each "very interested" answer has been given a weightage of 4; and for "Not interested" answer, it has been given a weightage of 1. For negative type question the weightage are just vice versa.

Table 2 : Assignment of the scores on the opinion

Statement	Not interested	Not very interested	Interested	Very interested
Positive	1	2	3	4
Negative	4	3	2	1

There are two variables dependent and independent. The scientific attitude comes under dependent variable and the environmental factor is the independent variable. The scientific attitude of the students is depended upon the environmental factors. The questionnaire is divided into following categories according to the respective types of questions. The categories and question numbers are arranged into following table.

Table 3 : division of questions according to various category

STATEMENTS	QUESTION NOS.
1.What do you want to learn?	1-6
2.My Future Job	7-13
3.My science classes	14-17
4.My opinions about science & technology	18-20
5.Me and environmental challenges	21-24
6.What I want to learn about the environment	25-30

Descriptive survey method was employed to collect necessary data with the help of self-designed questionnaire. Collected information from the self development questionnaire has been tabulated and with the help of the tabulated data, "t" test and correlation has been done by using MS EXCEL 2007. Three schools from rural area and two schools from urban are were selected for data collection.121 rural students and 79 urban students were selected for survey among them 109 were boys and 91 were girls. The self-made questionnaire was distributed among the students in the classroom and the data was collected from them to judge their scientific attitude.

3.4 ANALYSIS AND INTERPRETATION: The collected data and information of scientific attitude of adolescence students and how environmental factor influence it with the help of self developed questionnaire , has been tabulated and with the help of this tabulated data "t" test and "correlation" has been done by using MS EXCEL 2007 and graphical representation has been done by bar and pie chart.

4. ANALYSIS AND RESULT
The investigations of students' attitude towards studying science have been a substantive feature of the work of the science education research community for the past 30-40 years. Worldwide studies have revealed an important issue in that an increasing percentage of students within adolescence age group are not interested in science. Especially females have negative feelings and attitudes towards science. Therefore the purpose of this study is to determine the relationship between environmental awareness and scientific attitude among adolescence age group.

4.1.GENDER ON SCIENTIFIC ATTITUDE
HYPOTHESIS 1: There is no significant difference in interest towards learning of science among adolescence boys and girls at secondary schools.

TABLE 4: NULL HYPOTHESIS 1

Particular	No. of students	SCIENTIFIC ATTITUDE		Mean difference	t Critical two-tail	t Stat Value	Level of significance
		Mean	SD	4.458	1.9720174 32	-2.272498501	Significant
GIRLS	**109**	46.560	13.44				
BOYS	**91**	51.018	14.11				

Table-4 is clearly demonstrated the **hypothesis 1**, where the critical value of "t" with 198 degree of freedom at 0.05 levels of significance is 1.972017432 which is less than the "t stat" value, i.e. -2.272498501.So it is statistically significant at 0.05 levels. This means there is a significant difference

in scientific attitude between boys and girls in secondary schools. According to this result males have higher averages than the females. So Null hypothesis is **rejected.**

Mohammad (2012, February) & Narmadha, U. (2013, June 15) studied on **Students' attitude towards science and technology.** According to their study there is a significant difference between male and female points of views in attitude towards sciences & technology.

It is very unfortunate that in our society still boys get much attention and care in home and sometimes in school from teachers than girls. There is very much discrimination between two genders. The family and society instigate the boys to select science stream rather girls are forced to get arts stream. Due to lack of encouragement and motivation the performance and interest in science stream getting lower in gir students.
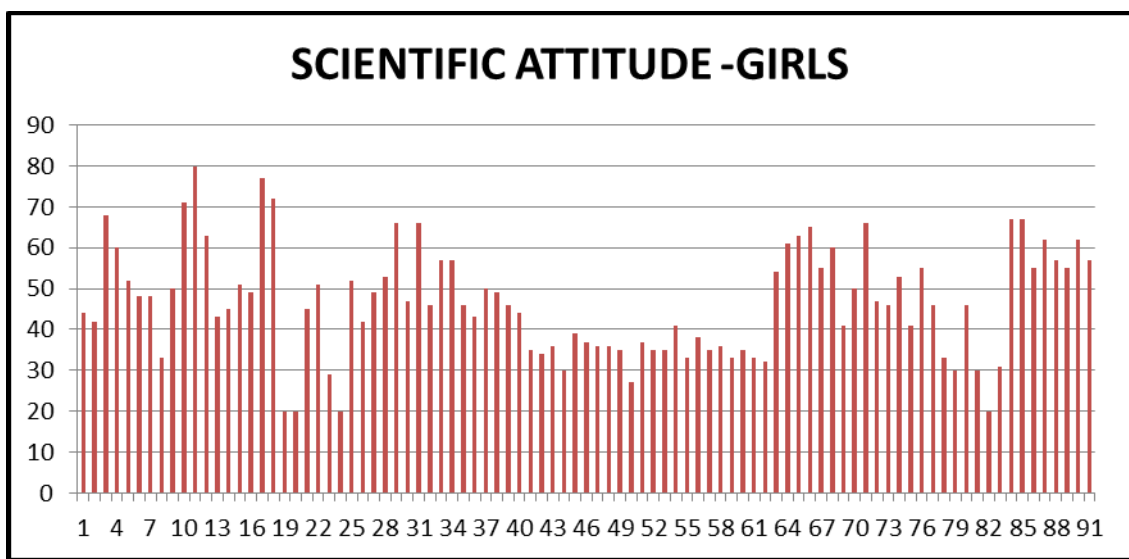

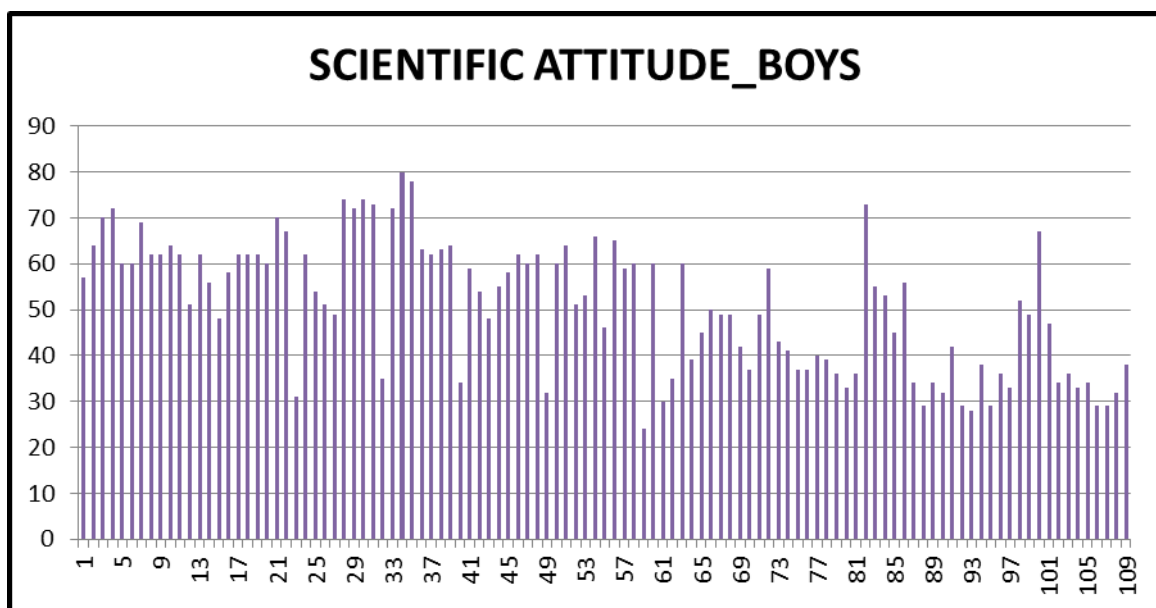**Fig 1 : Responses of girls on interest in school science**

Fig 2: Responses of boys On interest in school science

4.1 AREA ON SCIENTIFIC ATTITUDE

HYPOTHESIS 2: There is no significant difference in interest toward learning of science among Rural Area & Urban Area secondary school students

TABLE -5: NULL HYPOTHESIS 2

Particular	No. of students	SCIENTIFIC ATTITUDE		Mean difference	t Critical two-tail	t Stat value	Level of significance
		Mean	SD	7.35	1.972017432	3.757463361	Significant
RURAL	**121**	51.89	14.29				
URBAN	**79**	44.54	12.23				

Table-5 is clearly demonstrated the **hypothesis 2**, where the critical value of "t" with 198 degree of freedom at 0.05 levels of significance is 1.972017432 which is less than the "t stat" value, i.e. 3.757463361.So it is statistically significant at 0.05 levels.This means there is a significant difference in scientific attitude between rural and urban adolescence students in secondary schools. According to this result Rural school students have higher averages than the Urban school students. So Null hypothesis is **rejected.**

Dr. Urmil Sethi (2015),studied on **Study Of Attitude Of The Students Towards Science In Relation To Certain Non-School Factors.** According to her study there is a significant difference in scientific attitude between Rural school students and Urban school students.

Due to the excessive growth of English medium schools in urban area there is now a days a common tendency of all the parents irrespective of their economic background and status to admit their children into English medium schools rather than Bengali medium. For this reason the Bengali medium secondary schools of urban area are not getting quality students in their schools. So the quality result of these schools are degraded tremendously and so the interest in school science.
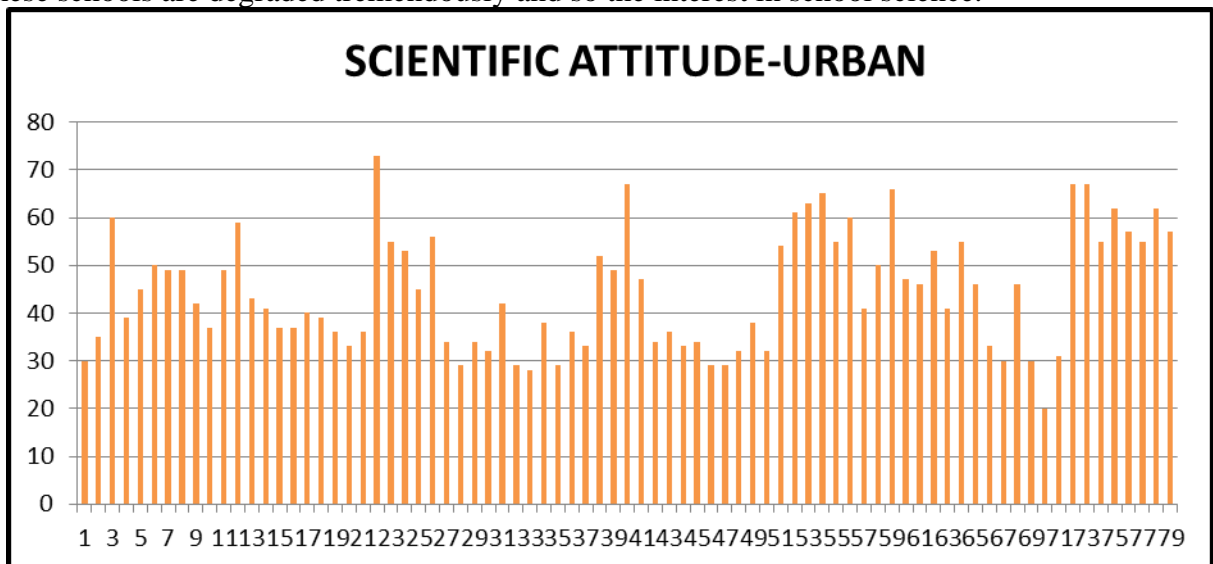

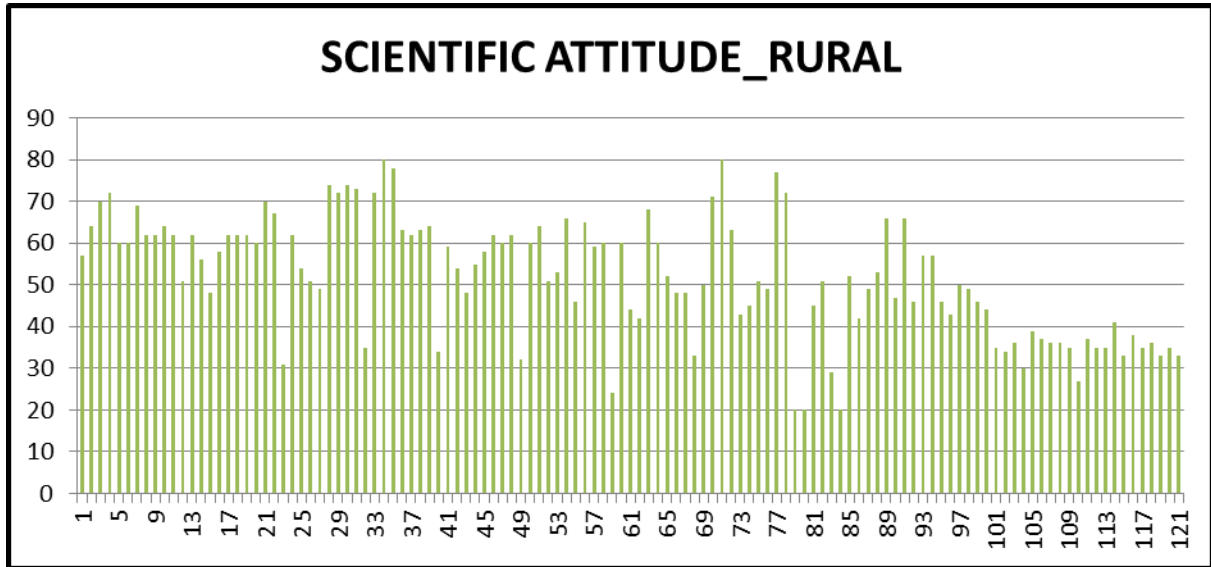**Fig 3: Responses of Urban school students on interest in school science**

Fig 4: Responses of Rural school students on interest in school science

4.3 GENDER ON ENVIRONMENTAL FACTOR

HYPOTHESIS 3: There is no significant difference between boys and girls of secondary schools on environmental awareness as determinants of adolescence attitude toward science stream.

TABLE 6 : HYPOTHESIS 3

Particular	No. of students	Environmental factor		Mean difference	t Critical two-tail	t Stat value	Level of significance
		Mean SD		2.07	1.972017432	- 1.991145342	Significant
GIRLS	**91**	22.65	7.01				
BOYS	**109**	24.72	7.53				

Table-6 is clearly demonstrated the **hypothesis 3**, where the critical value of "t" with 198 degree of freedom at 0.05 levels of significance is 1.972017432 which is less than the "t stat" value, i.e. - 1.991145342.So it is statistically significant at 0.05 levels.This means there is a significant difference on impact of environmental factor between boys and girls adolescence students in secondary schools. According to this result boys have higher averages than girls' .So Null hypothesis is **rejected.**

Joseph Chimombo (2000,December) studied on CLASSROOM, SCHOOL AND HOME FACTORS THAT NEGATIVELY AFFECT GIRLS EDUCATION IN MALAWI .According to his study There is a significant difference between boys and girls of secondary schools on the impact of environmental factor.

In our society still girls get less importance in family and school. They are forcefully engaged in household work rather than going school and completing her education. So environment factor create less impact on them than the boys.
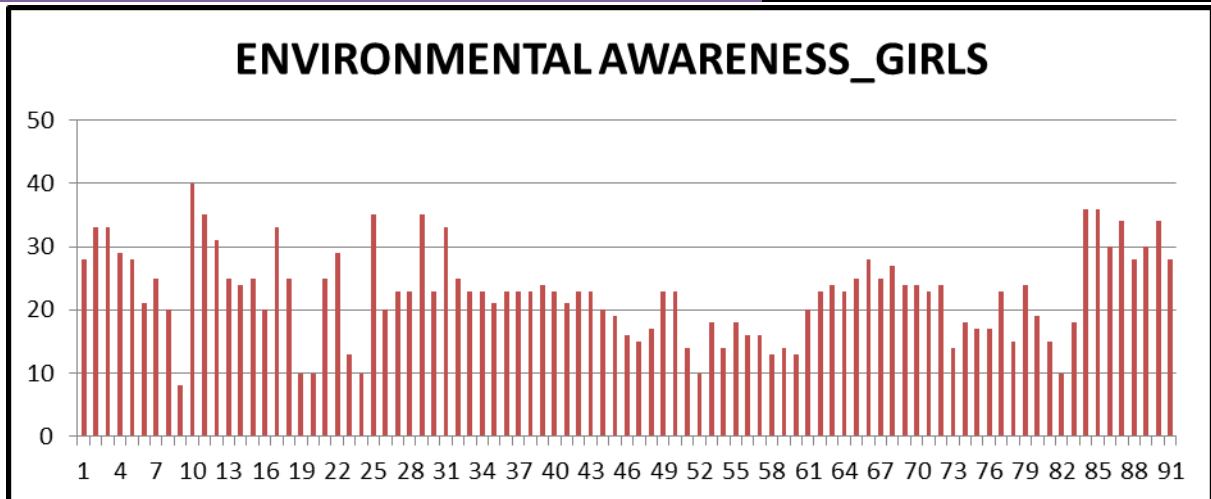
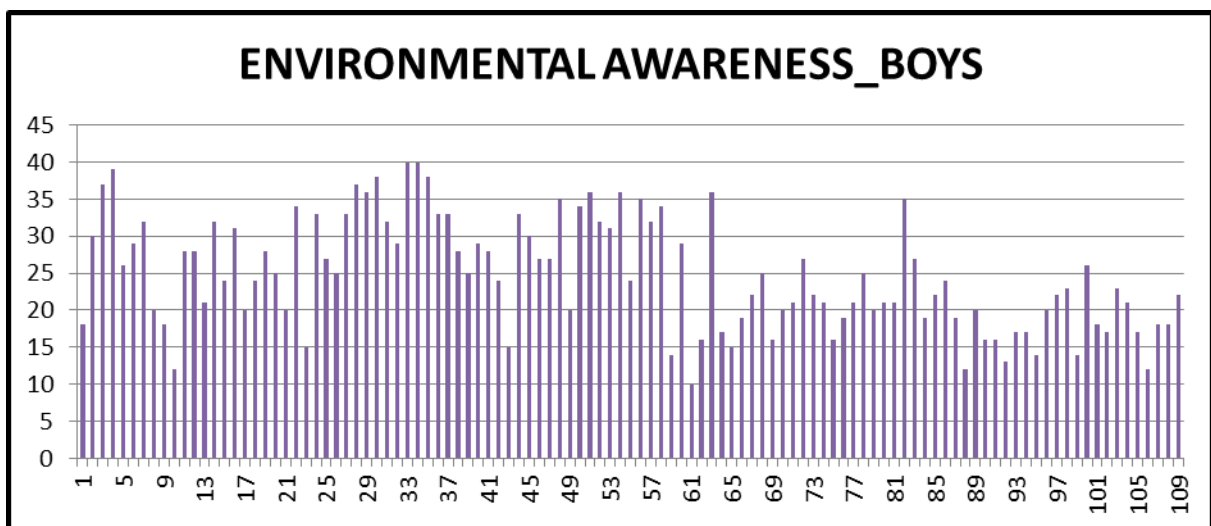**Fig 5: Responses of Girls on Environmental Awareness**

Fig 6: Responses of Boys on Environmental Awareness

4.4 AREA ON ENVIRONMENTAL FACTOR
HYPOTHESIS 4: There is no significant difference between Rural & Urban areas' secondary school students on environmental awareness as determinants of adolescence attitude toward science stream.

TABLE 7: HYPOTHESIS 4

Particular	No. of students	Environmental factor		Mean difference	t Critical two-tail	t Stat value	Level of significance
		Mean	SD	4	1.972017432	3.885056651	Significant
RURAL	**121**	25.36	7.74				
URBAN	**79**	21.36	6.00				

Table-7 is clearly demonstrated the **hypothesis 4**, where the critical value of "t" with 198 degree of freedom at 0.05 levels of significance is 1.972017432 which is less than the "t stat" value, i.e.

3.885056651.So it is statistically significant at 0.05 levels. This means there is a significant difference in impact of environmental factor between rural and urban adolescence students in secondary schools. According to this result rural school students have higher averages than the Urban school students. So Null hypothesis is **rejected.**

J. David McCracken & Jeff David T. Studied on Differences between Rural and Urban Schools, Student Characteristics, and Student Aspirations. According to their study there is a significant difference between rural and urban secondary schools students on the impact of environmental factor.
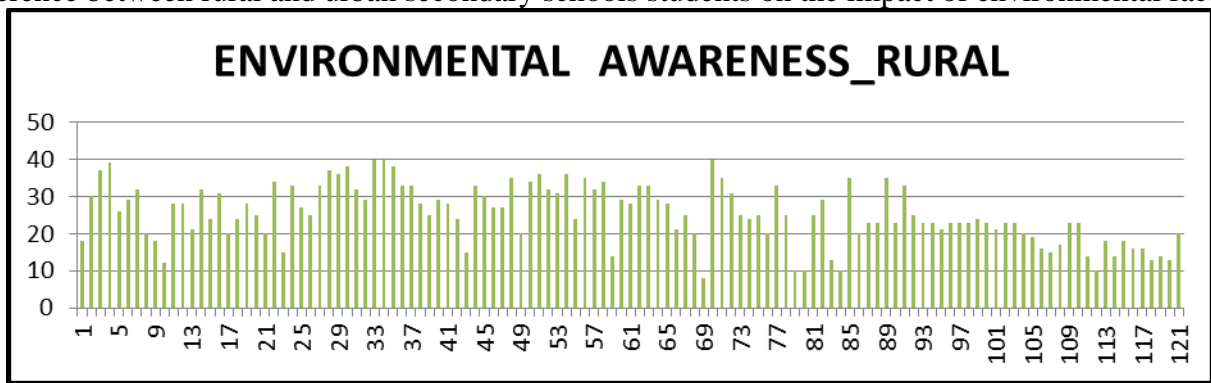

Fig 7: Responses of rural school students on Environmental awareness
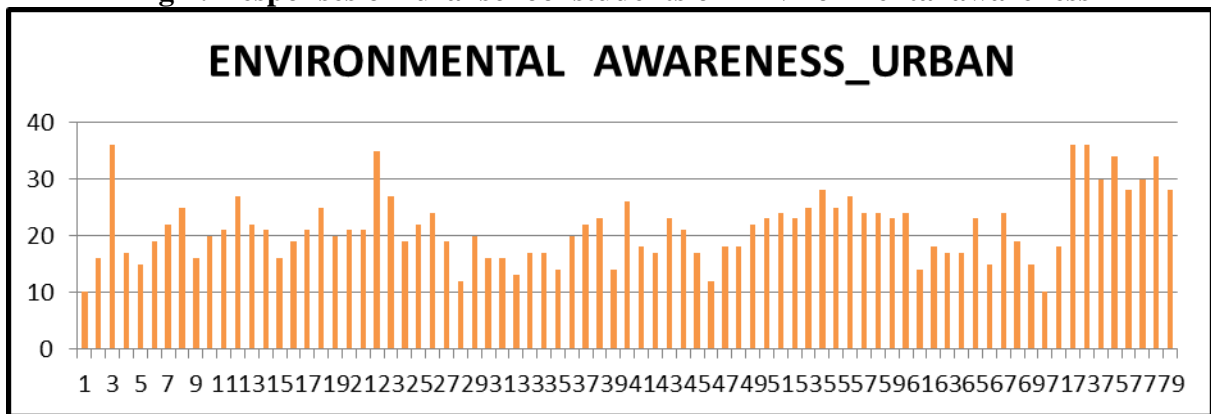

Fig 8: Responses of urban school students on Environmental Awareness

HYPOTHESIS 5: There is a significant correlation between scientific attitude and environmental awareness of adolescence students of higher secondary standard.
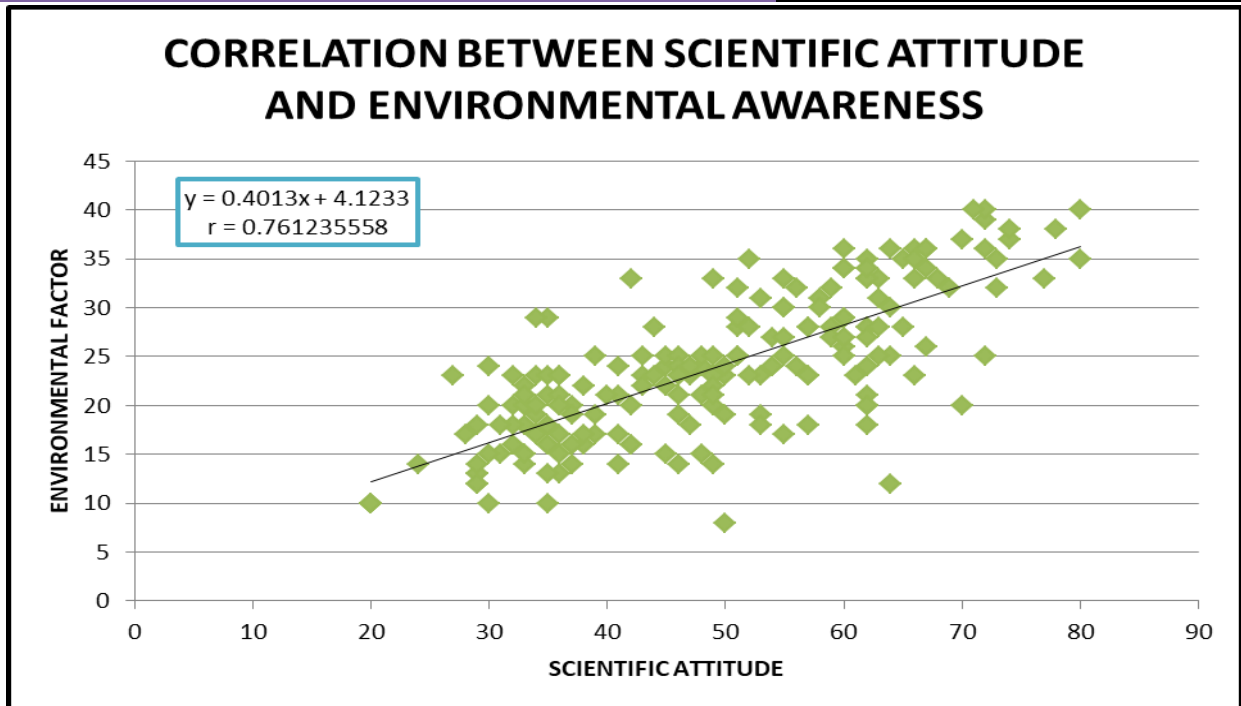
Fig 9: significant correlation between scientific attitude of the students and environmental awareness

From the **figure 9** it can be stated that there is a correlation between environmental awareness and scientific attitude of the students. According to the range of computes correlation coefficient table our computed **r value is 0.76** which falls in between 0.71 – 0.90 rang which is a very high correlation and quite dependable relationship. From the above analysis we found that there is a significant difference in scientific attitude of boys and girls and rural and urban school students.

And there is also a significant difference between boys and girls, rural and urban students on environmental awareness. There is a strong correlation between scientific attitude and environmental awareness and a quite dependable relationship has been found between two.

5. CONCLUSION
5.1 SUMMARY & FINDINGS:
The present investigation reveals the significant difference in science attitude and interest in school science of adolescent secondary students with respect to the gender, locality of school and Environmental factor. However, science attitude is a vital factor in determining the students' day-to-day life and future carrier. Hence, a positive attitude towards science need to be developed among secondary students and the initiation should start from the beginning of the school education. Therefore, teachers and teacher educators need to inculcate the science attitude among student community, as it is very much essential for the present-day scientific and technological world.

The findings of this study are as follows:
- Boys and girls differ significantly in their scientific attitude and interest in school science. Boys have high level of scientific attitude and interest than girls.
- There is significant difference in the scientific attitude of students according to the locality of the school. Rural students have high level of scientific attitude than urban students.
- Boys and girls of adolescence age group differ significantly on the impact of environmental awareness as determinants of adolescence attitude toward science stream.
- There is a significant difference between Rural & Urban locality secondary school students on environmental awareness as determinants of adolescence attitude toward science stream.

- There is a high correlation between environmental awareness and scientific attitude of the adolescence students. These two variables are very much dependent on each other

5.2 LIMITATIO NS
Although this research was carefully prepared, I am still aware of its limitation and shortcomings.

- First of all the research was conducted in Gangadharpur locality in Howrah district and Baguihati locality in Kolkata for collection of both rural and urban data respectively. The area is very small it could have been better if larger area can be selected for more significant result.
- Secondly because of the short time limit the research was conducted only on a small size of population,200 students and might not represent the majority of the students of the secondary level.
- Questionnaire designed to measure the students' attitude towards science and environmental factor, there was only 30 questions which were not enough to measure and judge a student's attitude towards science stream.
- Research was conducted on the data based only on WEST BENGAL BOARD OF SECONDARY EDUCATION school students. The study could be more significant if some other boards like CBSC and ICSC board students can be included.
- Study was conducted only on Bengali medium school students. It could be more fruitful if the data was collected from English medium school students.
- Data was collected mainly from class IX –X students. Due to some unavoidable circumstances it was not possible to collect data from class XI-XII. The study could be more significant if the scientific attitude of class XI-XII can be measured.

5.3. SUGGESTIONS
▪The teachers have to be more attentive, interested and conscious during science classes. They have to follow a realistic and heartiest approach in this regard.

- The teacher should always use proper teaching aids in science classes or perform scientific experiments to encourage students in learning science subjects and to create their interest in school science.
- The parents of girl children and also teachers should encourage the girl students in science classes to develop their interest and attitude toward science. The teacher will never discriminate between boys and girls students. He/She should always encourage girl students to take science stream for higher studies according to their merit.
- School authority and Principal of schools should take initiatives for scientific excursion, science museum visit, science magazine publication by students, science fare arrangement by students, Give science based project as homework etc to inculcate their interest towards science.
- School authority also has to be careful about the availability of teaching aids in science classroom and arrangement of a proper science laboratory for demonstration of scientific experiments by teachers.

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