

**A COMPARATIVE STUDY OF SCIENTIFIC ATTITUDE
AND SCIENCE INTEREST OF SECONDARY SCHOOL
STUDENTS: WEST TRIPURA DISTRICT, TRIPURA AND
PRAKASAM DISTRICT, ANDHRA PRADESH**

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ABSTRACT

Science has become an integral part of our daily life and living. It has its significant role in promoting quality of life either directly or indirectly. Our life is completely dependent on science and its fruits surround us on all sides. The process of applying science to the needs of the living has moved quickly to a great extent. Moreover qualities imbibed by the learner through learning science are valuable for a citizen living in the society. Therefore, science is now a compulsory subject in every system of school education right from the elementary stage. Science not only satisfies the usual needs for its inclusion as a subject in the curriculum – such as intellectual, cultural, moral, aesthetic, utilitarian as well as vocational values science learning provides training in scientific method and also helps to develop a scientific attitude of mind in the learner. Moreover, the students should develop a proper attitude towards the study of science and an active interest in the subject, besides appreciating the importance of science in human life and civilization. It also helps to improve their abilities and capacities in science. There is a need for awareness in science for the full fledged development of a child. The acquisition of the knowledge of scientific terms, principles and concepts, a clear understanding of them, the ability to use such knowledge in different situations in the life and in the development of skills should

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be the outcomes of teaching and learning of science. In this context “A Comparative Study of Scientific Attitude and Science Interest of Secondary School Students” was conducted to identify the association of scientific attitude and science interest among students of West Tripura District, Tripura and Prakasam District, Andhra Pradesh. For this purpose Descriptive survey method of research was used. A sample of 110 secondary school students from west Tripura district, Tripura and 120 students from Prakasam district, Andhra Pradesh were selected randomly. The methodology includes chi- square (χ^2) test.

INTRODUCTION

Science has made a tremendous impact on the cultural life of the present day society which is a product of science. The thinking, feeling and actions of modern man are practically guided by the effects of science. There is an involvement of science, direct or indirect, in all works as well as leisure of a modern man. It can now be said without any hesitation that we owe our very existence to science which has led us to the dawn of scientific era. Man feels more safe, secure, comfortable and important today than ever before, because of scientific development and advancement. Our habits and attitudes have also been affected by science. So exploring attitude, interest and ability have to be studied in the early stages of life. Science is also helping us in satisfying the natural curiosity with which we all are born. And it is only with science we can find how nature is operated. It also specifies new natural laws through experimental work and using chain of evidence. And all these can be learned in a systematic, logical, thought oriented process through study of science. Specific observations, logical thinking, spirit of investigation, enquiry, and skill of asking questions are promoted through study of science only. These can be greatly achieved and developed with the help of teachers among children through science teaching and learning at all levels in the classrooms. Efforts are being made in this direction which is also been supported by Education Commission. "There is, of course, one thing about which we feel no doubt or hesitation. Education which is science based and in coherence with Indian culture and values can alone provide the foundation, as also the instrument, for the nation's progress, security and welfare." (Education Commission, 1964-66)

Interest and attitudes in specified areas are two important determinants of school attainment and, therefore, are potential predictors of success in all forms of performance in school subject. They

have close similarity on the ground that both represent mental readiness or preparation for a particular behaviour pattern. The individual usually likes the things in which (s)he is interested and the thing that interests also, activity sought. Attitudes, on the other hand, may orient and individual either favourably or uniformly towards certain objects, places, ideas etc. Scientific attitude is a complex behavioural aspect of science having so many characteristics and it can be attributed to many situations. If students develop their scientific attitude, this in turn leads to the development of science interest and can be successful in their academic performance. And science interest is very essential for a successful person. As we consider the future responsibilities of citizens, we will probably agree that helping children to become more co-operative, more responsible, more open-minded, and at the same time, more critical minded is certainly worth the effort by adopting and transferring these to situations in everyday life. Students can be expected to be more tolerant of other points of view and to be more successful in living and working along with other people. Hence, we can safely say that the study on these two aspects of secondary school students will trace out the problems concerned with its possession and ultimately helps in the development of such an important psychological trait.

With these aspects in mind, there is a felt need to study scientific attitude and science interest of secondary school students. The present study is limited to these two aspects of secondary school students who will be in the age group of 14+ and 15+ and to find out their inter-relationship. Importance is given to gender, locality of the school, type of management, and medium of instruction. The present research work, “**A Comparative Study of Scientific Attitude and Science Interest of Secondary School Students**” was intended to identify whether there exists any association among scientific attitude and science interest in secondary school students of West Tripura district and Prakasam district.

OBJECTIVES

1. To identify and compare the association of scientific attitude and science interest at secondary school level between West Tripura district and Prakasam district.
2. To compare the influence of following variables on scientific attitude and science interest of secondary students of West Tripura district and Prakasam district.
 - a) Gender
 - b) Type of school
 - c) Residence
 - d) Medium of instruction

HYPOTHESIS

1. There is no significant positive association among scientific attitude and science interest of secondary school students.
2. There is no significant positive association among scientific attitude and science interest of boys and girls of secondary schools.
3. There is no significant positive association among scientific attitude and science interest of private and government secondary school students.
4. There is no significant positive association among scientific attitude and science interest of urban and rural secondary school students.
5. There is no significant positive association among scientific attitude and science interest of Bengali medium and English medium secondary school students.

DESIGN AND METHODOLOGY

Descriptive survey method of research is been employed for the present study. A sample of 110 secondary school students were selected randomly from seven schools of West Tripura district, Tripura and 120 from nine schools of Prakasam district, Andhra Pradesh. Sample was collected from government, and private schools consisting of boys and girls of rural and urban areas.

TOOLS

Among the tools developed in India, the Scientific Attitude Scale developed by J.K. Sood and R.P.Sandhya was finalized for the final administration to measure the scientific attitude of secondary school students. Scientific Attitude Scale contained 36 statements of which 18 were of positive polarity and 18 were of negative polarity.

Science Interest Test standardized by L.N. Dubey and Archana Dubey was employed to measure the Science Interest of secondary school students. There are 64 statements in the test. 32 statements show liking for science subject while 32 statements indicate disliking for the subject.

STATISTICAL ANALYSIS

The data was analyzed using chi- square (χ^2) test of independence.

ANALYSIS AND INTERPRETATION**Hypothesis -1**

There is no significant positive association among scientific attitude and science interest of secondary school students.

To test the validity of hypothesis, the chi-square values are computed.

Table -1: Association in the Whole Sample of West Tripura district students (χ^2 values)

<i>Sample</i>	<i>Scientific Attitude with Science Interest</i>
110	10.62 [#]

d_f=4 P at 0.01 level is 13.28 # Not Significant

Table -2: Association in the Whole Sample of Prakasam district students (χ^2 values)

<i>Sample</i>	<i>Scientific Attitude with Science Interest</i>
120	29.02 ^{\$}

d_f=4 P at 0.01 level is 13.28 \$ Significant

It can be seen from the above table -1, that there is a positive association among scientific attitude and science interest of secondary school students of west Tripura district at 0.05 level of significance, but not at 0.01 level. But table – 2 shows significant positive association among secondary school students of Prakasam district, Andhra Pradesh.

The hypothesis that *there is no significant positive association among scientific attitude and science interest of secondary school students* can be accepted only in case of *West Tripura district*.

Hypothesis -2

There is no significant positive association among scientific attitude and science interest of boys and girls of secondary schools.

Table – 3: Association in Boys and Girls of West Tripura district (χ^2 values)

<i>Variable</i>	<i>Sample Size</i>	<i>Scientific Attitude with Science Interest</i>
Boys	57	6.08 [#]
Girls	53	10.1 [#]

Not Significant at 0.01 level

Table – 4: Association in Boys and Girls of Prakasam district (χ^2 values)

<i>Variable</i>	<i>Sample Size</i>	<i>Scientific Attitude with Science Interest</i>
<i>Boys</i>	<i>60</i>	<i>14.44[§]</i>
<i>Girls</i>	<i>60</i>	<i>14.85[§]</i>

§ Significant at 0.01 level

In girls more association is seen among scientific attitude and science interest, when compared to boys at 0.05 level of significance. There is no association seen in boys and girls of West Tripura district among *their* scientific attitude and science interest at 0.01 level, Whereas equal positive association is seen in boys and girls of Prakasam district among *their* scientific attitude and science interest.

The hypothesis that *there is no significant positive association among scientific attitude and science interest of boys and girls of secondary schools* can be accepted in case of *West Tripura district*.

Hypothesis - 3

There is no significant positive association among scientific attitude and science interest in private and government secondary school students.

Table – 5: Association in the Students of Pri and Govt Schools of West Tripura district (χ^2 values)

<i>Variable</i>	<i>Sample Size</i>	<i>Scientific Attitude with Science Interest</i>
<i>Private</i>	<i>50</i>	<i>17.12[§]</i>
<i>Government</i>	<i>60</i>	<i>7.11[#]</i>

§ Significant at 0.01 level

Not Significant at 0.01 level

Table – 6: Association in the Students of Pri and Govt Schools of Prakasam district (χ^2 values)

<i>Variable</i>	<i>Sample Size</i>	<i>Scientific Attitude with Science Interest</i>
<i>Private</i>	<i>60</i>	<i>24.67[§]</i>
<i>Government</i>	<i>60</i>	<i>11.96[#]</i>

§ Significant at 0.01 level

Not Significant at 0.01 level

From the above table it is clear that there is a significant positive association of scientific attitude and science interest among the students studying in private schools, and no association is seen in government schools students. But association of scientific attitude and science interest is seen more among the students studying in Prakasam district when compared to that of West Tripura district.

The hypothesis that *there is no significant positive association among scientific attitude and science interest in private and government secondary school students* can be rejected.

Hypothesis - 4

There is no significant positive association among scientific attitude and science interest of urban and rural secondary school students.

Table – 7: Association in the Students of Urban and Rural Schools of West Tripura district (χ^2 values)

<i>Variable</i>	<i>Sample Size</i>	<i>Scientific Attitude with Science Interest</i>
Urban	67	18.13 [§]
Rural	43	3.52 [#]

§ Significant at 0.01 level

Not Significant at 0.01 level

Table – 8: Association in the Students of Urban and Rural Schools of Prakasam district (χ^2 values)

<i>Variable</i>	<i>Sample Size</i>	<i>Scientific Attitude with Science Interest</i>
Urban	60	17.89 [§]
Rural	60	15.27 [§]

§ Significant at 0.01 level

Not Significant at 0.01 level

It is evident from the above tables that more association of scientific attitude and science interest is found among the students studying in urban schools when compared to that of rural schools. No significant association is found among rural school students of West Tripura district, whereas there is significant association among rural school students of Prakasam district. More over more association of scientific attitude and science interest is found among the students of Prakasam district when compared to students of West Tripura district.

The hypothesis that *there is no significant positive association among scientific attitude and science interest of urban and rural school students of secondary schools* can be rejected.

Hypothesis - 5

There is no significant positive association among scientific attitude and science interest of Bengali medium and English medium secondary school students.

Table -9: Association in the Students Studying in Bengali Medium and English Medium Schools of West Tripura district (χ^2 values)

<i>Variable</i>	<i>Sample Size</i>	<i>Scientific Attitude with Science Interest</i>
Bengali	60	7.11 [#]
English	50	17.12 [§]

§ Significant at 0.01 level

Not Significant at 0.01 level

Table -10: Association in the Students Studying in Telugu Medium and English Medium Schools of Prakasam district (χ^2 values)

<i>Variable</i>	<i>Sample Size</i>	<i>Scientific Attitude with Science Interest</i>
Telugu	78	16.35 [§]
English	42	12.99 [#]

§ Significant at 0.01 level

Not Significant at 0.01 level

From the above table-9, it is clear that there is high association between scientific attitude and science interest in English medium students and no association is seen in Bengali medium students of West Tripura district. But table-10 reveals quite different findings to that of table-9. High association between scientific attitude and science interest is seen in Telugu medium students when compared to that of English medium students.

The hypothesis that *there is no significant positive association among scientific attitude and science interest in the students of Bengali medium and English medium secondary school students* can be rejected.

FINDINGS

The present study found positive and significant relationship between scientific attitude and science interest of secondary school students in Prakasam district, Andhra Pradesh. This study

reveals that these two factors are interrelated. If students develop their scientific attitude, this in turn leads to the development of science interest and can be successful in their academic performance. In this study, results showed that there is no influence of gender on the association of these aspects from West Tripura district. Promotion of them must be taken into consideration. At the same time, reasons for the independent nature of association of scientific attitude with science interest must also be identified and rectified. As expected more association is seen in the students of urban schools as they have more chances of exposure to scientific experiences. At the same time association is also seen in the students of rural schools, Prakasam district, AP. Teachers and government have to realise the fact and give special focus on rural as well as government schools, to bring out and develop these factors in them. Language is a channel for communication and everybody can excel in any field with it. This is been witnessed from the findings of Prakasam district. Mother tongue might have helped Telugu medium students to understand the phenomena better than those of English medium students. But the case was different with West Tripura students. It was good to see positive association in English medium students than in Bengali medium students. On the whole, scientific attitude and science interest are average in the samples. There is a significant and positive association among scientific attitude and science interest.

SUGGESTIONS

Based on the findings of the study some suggestions are worth mentioning. The biggest challenge for any teacher is to capture the students' attention, and put across ideas in such a way that it stays with them long even after they have left the classroom. For this to happen, classroom experience should be redefined and innovative ideas should be implemented that make teaching methods more effective that makes classes interesting. Like bringing aspects of creativity, encouraging different ideas and freedom to explore themselves that will excite the young minds and capture their interest.

One of the major aims of teaching science is invariably the development of scientific attitude in the student. Science teachers must try to promote scientific attitude in the students through some procedures like taking students to science exhibitions, fairs, excursions, fieldtrips, industries, etc. Audio-visual materials must be incorporated in required concept sessions. Use of info graphics

or other mind mapping and brain mapping tools will not only help students imagination thrive and grow, but also develops interest in them. And, there is also a need to arrange activities in teaching that develop science interest, which may be helpful in developing science interest among students. Due steps must be taken by the government especially in rural areas for the development of students.

Science activities give the students ability to think in new dimensions. By this, scientific attitude can be enhanced in the students, and thus get interested too. Hence there is a need to develop the facilities, and teachers should try to promote quality in science instruction to develop scientific attitude and science interest, along with the medium of instruction. Teachers and parents must try to focus on establishing and promoting the relationship between ability of thinking and learning, but not just on scoring in examinations. The science educators must try to promote the level of scientific attitude and science interest among students.

SUGGESTIONS FOR FURTHER RESEARCH

Based on the present study, a good number of new areas can be studied by the future researchers. The areas and variables which are not covered in this study may be put to test to enlighten the factors associated with inculcation and development of scientific attitude and science interest and other factors associated with them. Studies may be conducted to find out the effect of digital classrooms, to identify the impact of peers on science interest and achievement of the students. Critical observations can also be taken up at different levels, to identify the factors that influence science interest, students studying in state and central schools, to identify the influence of educated and uneducated parents on the science interest, comparative study by the students studying in state and central schools, etc... Studies can also be conducted correlating scientific attitude and science interest in achievement in science.

REFERENCES

1. Abdul Gafoor, K., & Jaithra, V.S. (2012). *Influence of Out of School Experiences on Interest in Science of Secondary School Students in Kerala*. Indian Educational Review.

2. Bhaskara Rao, Digumarti and E. Sreekanth Babu (2004). *Educational Interests of School Students*. New Delhi : Discovery Publishing House.
3. Buch, M.B., (ed.), (1991). *Fourth Survey of Research in Education*. New Delhi: National Council of Educational Research and Training.
4. Gardner, P.L.(1998). The development of males' and females' interest in science and technology. In L.Hoffmann, A.Krapp, K.A.Renninger & J. Baumert (Eds), *Interest and Learning. Proceedings of the seeon-conference on science interest and gender, 41-57*. Kiel, Germany: Institute fuer die paedagogik der Naturwissenschaften (IPN).
5. Garret, Henry E. (1979). *Statistics in Psychology and Education*. Bombay: Peffer and Simons Pvt. Ltd
6. Ira C. Davis (1935). The Measurement of Scientific Attitudes. *Scientific Education, 19*.
7. Krapp, A., Hidi, S., and Renninger, K.A. (1992). Interest, learning and development. In K.A.Renninger, S. Hidi & A.Krapp (Eds.), *The role of interest in learning and development*. Hillsdale, NJ: Erlbaum.
8. Malviya, D.S. (1991). *A Study of attitude towards science and interest in science of school going adolescents*. V Survey of Research in Education, Vol. II, 1988-92, 1250.
9. Mangal, S.K. (1989). *Educational Psychology*. Ludhiana: Prakash Brothers.
10. Shrivastava, N.N.(1975). A Study of the Scientific Attitude and its Measurement. Ph.D. Education, Patna University. As cited by M.B. Buch: *Third Survey of Research in Education*. New Delhi: NCERT.
11. Vaidya, Narendra (1967). *Problems solving in Science*. Delhi : S. Chand and Co.