
**A STUDY OF SCIENTIFIC ATTITUDE OF XIII CLASS STUDENTS IN RELATION TO ACADEMIC
ACHIEVEMENT IN TIRUPATI**

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ABSTRACT

Science education provides field to a person to create something new, for the society and for the nation. Although creativity is not related to any particular subject area, but science education has much wider scope of fostering and encouraging creativity. Science teachers have important role in popularizing science among the younger generation. It is the science teacher who inculcates motivation and values. Wise teachers can offer a curriculum with plenty of opportunities for creative behaviors. They can make assignments that call for original work, independent learning, self-initiated projects, and experimentation. Science is not only educational scenario but also this science can be used in common life as a birth to death, eating to sleeping like in many ways science can be involves in entire life. A sample of 300 VIII class students Government, private and aided schools in Tirupati.

KEYWORDS: Scientific Attitude, XIII Class, Gender, locality, Management and Academic Achievement

INTRODUCTION

One widening realization of the last few decades has been that knowledge is a continuum and the boundaries between disciplines are increasingly becoming blurred, tenuous and indefinable. India has merely 119 researchers, whereas Japan has 5287 and the US has 4484 researchers per million of population.

SCIENCE EDUCATION

Science education has generally involved teaching not only a body of knowledge but also the processes and activities of scientific work. This view has linked the scientific uses of technology with hands-on experiences. The term "hands-on science" was descriptive of the major curriculum reform projects of the 1960s and became a label for a revolution in teaching science through the next two decades (Flick, 1993).

Indian scientists made significant contributions to the advancement of science and technology in the 1950s and '60s. This was possible because of the support extended to science education and research by the successive governments. Numerous research and development institutions were established across the country. However, over the years, in spite of continuing government support, both the quality and quantity of the research output from India has been on the decline as has been pointed out by Prof. C.N.R. Rao. It is necessary to examine the reasons for this decline and implement remedial measures.

Grady Venville and Vaille Dawson (2006) in the book 'the art of teaching science' stated that Working in science education is a privileged occupation because it enables teachers to pursue their personal interests in science and at the same time share the exhilaration and wonder of science young people.

Science teachers have important role in popularizing science among the younger generation. It is the science teacher who inculcates motivation and values. In order to achieve the desired goals one has to start from grass-root level. Once a child acquires the gift of creativity, the chief aim of science education is achieved. Therefore, the role of secondary level teacher is more important.

Wise teachers can offer a curriculum with plenty of opportunities for creative behaviors. They can make assignments that call for original work, independent learning, self-initiated projects, and experimentation. Using curriculum materials that provide progressive warm-up experiences, procedures that permit one thing to lead to another, and activities that make creative thinking both legitimate and rewarding makes it easier for teachers to provide opportunities for creative learning.

A well-educated, flexible, creative and self-confident population is a key to achieving economic prosperity and social development and civic enlightenment. Developing greater scientific awareness in the general population, inspiring more young people to take up careers that depend on excellence in science, technology and mathematics and building a culture of innovation in schools are of the utmost importance.

The success of science has more to do with an attitude common to scientists than with a particular method. This attitude is one of inquiry, experimentation, and humility before the facts.

AIMS AND OBJECTIVES OF HIGH AND HIGHER SECONDARY LEVEL TEACHING SCIENCE

At this stage the teaching of life science are:

1. To familiarize the student with his surroundings and to make him understand the impact of science on society and thus enable him to adjust himself with his environment.
2. To familiarize him with 'scientific method' and thus to help him to develop the scientific attitude.
3. To make him understand the evolution of science in the historical perspective.

Science education mainly concerns with attitude formation - that is to say develop in a person the quality of scientific temper and scientific attitude rather than loading him with scientific information and knowledge only. It provides opportunities to a person for creating something new, whether for an individual or for the whole civilization. Although, Creativity is not restricted to any particular subject area but there is no doubt that science education has much wider scope of nurturing and encouraging divergent thinking and Creativity.

Providing effective Science education is possible only with scientific attitude, a positive attitude towards science and creative ability to develop them among the children. Scientific attitude and attitude towards science will confuse the common reader by appearing same but they are two different variables of teaching science.

Creativity and scientific attitude are to be nurtured and nourished in our class room. It requires complete involvement of the students in the subject, welcoming their ideas, providing them which an intellectual atmosphere - free to do experiments, observe, think, discuss, infer and express.

Education has always been a key public-agenda item because the economy of any country requires changes in educational policies to match the changes in economic growth. Teachers, therefore, need to be constantly aware of new skills and be receptive to learning these skills so as to impart them to their students. Rapid changes in a knowledge-based and an information technology environment have led to urgency in revolutionizing some of the ways educational

training has been for centuries. Creativity in education is addressed as a way to help educators in their journey into the next century.

Traditionally science was concerned with compilation of facts and phenomena related with living and the non-living things. Today, science is considered to include knowledge but also manipulative skills, intellectual skills as also investigative and objective attitudes. An irony about the actual classroom situation of science teaching is that the students hardly get any opportunity to explore and discover on their own. In most of our classrooms, the teachers play the role of an authority. In that sense, a non-creative class room is one where the teacher is rigid, controlled by time factor, insensitive to pupils' emotional needs, unwilling to give them freedom and preoccupied more with descriptive lecture and busy in dumping information in the class.

Review of Literature

Hanushek and Rivkin (2004) describe various attempts to estimate the impact of teacher quality on student achievement. Estimates suggest that the differences in annual achievement growth between an average and a good teacher are large. Within one academic year, a good teacher can move a typical student up at least four percentiles in overall distribution. It is clear that having a series of good teachers can dramatically affect the achievement of any student.

The investigation of student's attitude towards studying science has been a substantive feature of the work of the science education research community for the past 30-40 years. (Osborne, 2003)

Developing positive attitudes towards science has been an exposed goal of most of the curriculum development efforts since the last 1950s. It was hoped that increasing interest in science would result in increased science enrolment, which in turn would yield a larger science work force pool and a science literate public. The increased attention to the effective outcomes of science has also resulted in a proliferation of attitude research studies, more measuring techniques, and several attempts to measure attitude towards science on an international level.

With the increased number as well as proportion of students enrolling for science education-28% of all enrolments at the graduate level were in the science field in 1995-96 and this went up to 31% in 2004. It is difficult to believe there is any sense of crisis in the science education scene in the country. Indeed, over three fourths of teachers polled in the national science survey-2004 were of the view that science education is growing.(India science report, 2005)

SCOPE OF THE STUDY

The main intention of the study is to find the relation of scientific attitude of XIII class students with locality, mother education and management.

OBJECTIVES

The following are the main objectives of the present study.

1. To study the influence of gender on the scientific attitude of XIII class students.
2. To study the influence of locality on the scientific attitude of XIII class students.
3. To study the influence of management on the scientific attitude of XIII class students.

HYPOTHESES

Based on the above objectives the following hypotheses are formulated.

1. There would be no significant influence of gender on the scientific attitude of XIII class students.
2. There would be no significant influence of locality on the scientific attitude of XIII class students.
3. There would be no significant influence of management on the scientific attitude of XIII class students.

SCIENTIFIC ATTITUDE QUESTIONNAIRE

The tool scientific attitude questionnaire is developed by T.I. Nagarjuna, Department of Education, S.V. University, Tirupati was adopted for the present study.

Tool description

Two popular methods of measuring attitude, indirectly, commonly used for research purposes are "The Thurston's Technique of scaled values 'and' Likert's method of summated ratings"

The attitude scale is constructed with 48 statements designed to measure the overall scientific attitude of the respondents. The tool has in five point scale, where the students have to express their attitudes toward one of them. In this scale the attitude is expressed on a five point scales similar to like it – type with five choices before each statement five alternatives were given viz. strongly agree (SA) Agree (A) Undecided (U) Disagree (D) Strongly disagree (SD). The students were asked to go through each statement and encircle the appropriate alternative in accordance with their agreement.

SOCIO – DEMOGRAPHIC SCALE

Socio – Demographic scale regarding the student Name, locality, sex, mother education, mother occupation, residence, management, age, father occupation, academic achievement, caste, size of the family and type of family were collected.

SAMPLE DESIGN

The sample for the investigation consisted of 300 XIII class students in Tirupati. The

stratified random sampling was applied in two stages. The first stage is locality i.e. rural and urban and second stage is sex i.e. male and female. It is a 2X2 factorial design with 300 sample subjects.

RESULTS AND DISCUSSIONS

Gender

The relationship of scientific attitude of XIII class students with their gender is studied in the present investigation. On the basis of gender, the XIII class students divided into two groups. The male students form with the Group – I and Group – II forms with the female students. The scientific attitude of XIII class students of the two groups were analyzed accordingly. The scientific attitude of XIII class students for the two groups were tested for significance by employing ‘t’ - test. The following hypothesis is framed.

Hypothesis – 1

There would be no significant impact of ‘gender’ on the scientific attitude of XIII class students.

The above hypothesis is tested by employing ‘t’ - test. The results are presented in **Table – 1.**

Table - 1

Influence of gender on the scientific attitude of XIII class students

| S. No. | Gender | N | Mean | S.D. | ‘t’ - Test |
|--------|--------|-----|--------|-------|------------|
| 1. | Male | 150 | 151.59 | 20.48 | 3.527** |
| 2. | Female | 150 | 160.89 | 22.53 | |

** Indicates significant at 0.01 level

It is found from the Table – 1 that the computed value of ‘t’ (3.527) is greater than the critical value of ‘t’ (2.58) for 1 and 298 df at 0.01 level of significance. Hence the Hypothesis – 1 is rejected at 0.01 level. Therefore it is concluded that the gender has significant influence on the scientific attitude of XIII class students.

Locality

The relationship of scientific attitude of XIII class students with their locality is studied in the present investigation. On the basis of locality, the XIII class students are divided into two groups. The rural students form with the Group – I and Group – II forms with the urban students. The scientific attitude of XIII class students of the two groups were analyzed accordingly. The scientific attitude of XIII class students for the two groups were tested for

significance by employing 't' - test. The following hypothesis is framed.

Hypothesis - 2

There would be no significant impact of 'locality' on the scientific attitude of XIII class students.

The above hypothesis is tested by employing 't' - test. The results are presented in **Table - 2.**

Table - 2

Influence of locality on the scientific attitude of XIII class students

| S. No. | Locality | N | Mean | S.D. | 't' - Test |
|--------|----------|-----|--------|-------|------------|
| 1. | Rural | 150 | 150.51 | 18.74 | 3.555** |
| 2. | Urban | 150 | 159.23 | 23.49 | |

** Indicates significant at 0.01 level

It is found from the Table - 6 that the computed value of 't' (3.555) is greater than the critical value of 't' (2.58) for 1 and 298 df at 0.01 level of significance. Hence the Hypothesis - 3 is rejected at 0.01 level. Therefore it is concluded that the locality has significant influence on the scientific attitude of XIII class students.

Management

The relationship of scientific attitude of XIII class students with their management is studied in the present investigation. On the basis of management, the XIII class students divided into two groups. The Government students form with the Group - I and Group - II forms with the Private students. The scientific attitude of XIII class students of the two groups were analyzed accordingly. The scientific attitude of XIII class students for the two groups were tested for significance by employing 't' - test. The following hypothesis is framed.

Hypothesis - 3

There would be no significant impact of 'management' on the scientific attitude of XIII class students.

The above hypothesis is tested by employing 't' - test. The results are presented in **Table - 3.**

Table - 3

Influence of management on the scientific attitude of XIII class students

| S. No. | Management | N | Mean | S.D. | 't' - Test |
|--------|------------|-----|--------|-------|------------|
| 1. | Government | 150 | 158.63 | 21.37 | 3.049** |
| 2. | Private | 150 | 151.11 | 21.25 | |

** Indicates significant at 0.01 level

It is found from the Table - 4 that the computed value of 't' (3.049) is greater than the critical value of 't' (2.58) for 1 and 298 df at 0.01 level of significance. Hence the Hypothesis - 1 is rejected at 0.01 level. Therefore it is concluded that the management has significant influence on the scientific attitude of XIII class students.

FINDINGS

There is a significant influence of gender, locality and management at 0.01 level of significance on the scientific attitude of XIII class students their studies.

CONCLUSION

In the light of the findings, the following conclusions are drawn. Gender, locality and management have significant influence on the scientific attitude of XIII class students.

EDUCATIONAL IMPLICATIONS

The findings of the present research have raised some important questions related to the educational needs of the students with special reference to their scientific attitude.

1. Gender is highly influence on the scientific attitude of XIII class students. Female students have positive scientific attitude than the male students. The administrators to provide facilities for male students.
2. Locality is highly influence on the scientific attitude of XIII class students. Urban students have positive scientific attitude than the rural students. The administrators to provide facilities for rural students.
3. Management is highly influence on the scientific attitude of XIII class students. Government school students have positive scientific attitude than the private school students. The administrators to provide facilities for private schools.

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