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A STUDY ON THE RELATIONSHIP BETWEEN SCIENTIFIC ATTITUDE AND ACADEMIC ACHIEVEMENT AMONG SENIOR SECONDARY LEVEL SCIENCE STUDENTS

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ABSTRACT

This study is attempted to find out the relationship between scientific attitude and academic achievement among senior secondary level students. The researchers have used standardized scientific attitude scale developed by Dr. J.K. Sood and R.P. Sandhya which covers six dimensions. Random sampling technique is used for selecting the sample and adopted survey method for the study. Result revealed a positive relationship between scientific attitude and academic achievement among senior secondary level science students.

KEYWORDS: Scientific Attitude , Academic Achievement , Random sampling technique .

INTRODUCTION :

Scientific attitudes refer to the behavioral dispositions expected in individuals who intend to become successful scientists. Scientific attitudes include respect for evidence, honesty, creativity, flexibility, curiosity, objectivity and skepticism. Scientific attitudes are attributes of an individual who not only behave outwardly in desirable way towards any scientific endeavor but also understand why they act as they do so", defined by Rao (1996). An early notable contribution towards Science was made by Klopfer (1971), who categorized a set of affective behaviors in Science education as:

- The manifestation of favorable attitudes towards Science and scientists
- The acceptance of scientific enquiry as a way of thought
- The adoption of 'scientific attitudes'
- The enjoyment of Science learning experiences
- The development of interests in science and science-related activities and



- The development of an interest in pursuing a career in science or science related work.

The aim of teaching science is to develop scientific attitude among students. The future of our society will be determined by citizens who are able to understand and help shape the complex influences of Science and technology on our world (Ungar, 2010). It is therefore in the interest of society, and the responsibility of educators, to improve students' attitude towards Science, and to prepare students to live in a highly scientific and technological society.

A positive scientific attitude has a strong association with academic achievement as academic achievement represents performance outcomes that indicate the extent to which a person has accomplished specific goals that were the focus of activities in instructional environments, specifically in school, college, and university. Besides the relevance for an individual, academic achievement is of utmost importance for the wealth of a nation and its prosperity. It is a known fact that there is a strong association between a society's level of academic achievement and positive socioeconomic development. Science education also imbibes scientific attitude among students. Developing scientific attitude among students holds the top priority of the whole education setup.

As the National Curriculum for Primary and Secondary Education (NCERT, 1988) emphasizes the need for inculcation of scientific attitude among the student in the following words: "Education should help the individual not only in acquiring knowledge and its application but also in developing a scientific attitude and rational world view."

Emina (1986) has classified the various components of scientific attitude into five:

1. Rationality: It is the commitment to rationality in problem solving, seeking for natural causes of events and identification of cause-effect relationship, belief in science as a means of influencing environment.
2. Curiosity: It is the desire for new knowledge or ideas, desire for additional information, seeking for evidence to support conclusions made from scientific materials, expression of interest in scientific discoveries and the desire for explanations.
3. Open-Mindedness: It is the willingness to subject data and opinion to criticism and evaluation to others, willingness to consider new evidence, rejection of singular and rigid approach to people, things and ideas.
4. Objectivity: It gives preference for statements supported by evidence over unsupported ones, sensitivity to accuracy of data, preference for scientific generalization that have withstood the test of critical review.
5. Aversion to Superstition: It is the rejection of superstitious beliefs, and preference for scientific explanations.

SIGNIFICANCE OF THE STUDY

Science education is very important to the development of any nation. Attitude towards science and scientists influence views of students on science, future career awareness, and classroom participation. Students who have positive attitudes show increased attention to classroom instruction and participate more in science activities (Germann, 1988; Jarvis & Pell, 2005). Research studies indicates that students develop more negative attitudes toward studying science, toward their science classes, and toward their science teachers the longer they study typical school science (Yager & McCormack, 1989). It is important to develop among students a positive attitude toward science. When they have positive scientific attitudes, their academic achievement also increases as science is a subject which has spread its branches in other disciplines too. Academic achievement is most important for the prosperity of a nation. A good academic record of a child indicates his performance and helps him in shaping his future. A positive scientific attitude with a good academic achievement record gives child immense opportunities to develop and gives wide opportunity in the career front. Since senior secondary level students are the ones who will choose their carrier, the researcher tries to find the relationship of scientific attitude with academic achievement.

OBJECTIVES

- 1.To study the relationship between scientific attitude and academic achievement of 12th standard students.
- 2.To find out the significant difference between scientific attitude and academic achievement among boys and girls of 12th standard students.
- 3.To find out the significant difference between boys and girls in academic achievement of 12th standard students.

HYPOTHESES

- 1.There is no significant relationship between scientific attitude and academic achievement of 12th standard students.
- 2.There is no significant difference between boys and girls of 12th standard students in their scientific attitude.
- 3.There is no significant difference between boys and girls in academic achievement of 12th standard students.

METHODOLOGY

Survey method has been used for the study. The population of study is the students studying in senior secondary science schools. The random sample consists of 59 students of science stream.

Tools

- Scientific Attitude Scale developed by Dr. J.K Sood and R.P Sandhya.
- The achievement scores are the scores, scored by the students in the first term examination.

DATA ANALYSIS

Hypothesis 1: There is no significant relationship between scientific attitude and academic achievement of 12th standard students.

Table 1: Correlation between Scientific Attitude and Achievement of 12th Standard Students

Groups	N	Calculated 'r' Value	Remark
Scientific Attitude and Achievement	59	0.88	Significant at 0.01 level
	59		

From Table-1, it is found that there is a positive relationship between scientific attitude and academic achievement of 12th standard students as 'r' is significant at 0.01 level. Hence the hypothesis-1 is rejected.

Hypothesis 2: There is no significant difference between boys and girls of 12th standard students in their scientific attitude.

Table 2: Comparative Post-test Mean Scores of Boys and Girls of 12th Standard Students in their Scientific Attitude

Scientific Attitude	Gender	N	Mean	SD	t-value	Remark
	Boys	34	133	11.13	2.00	Significant at 0.05
	Girls	35	134	10.12		

From the table-2, the obtained t-value is greater than the table value and is significant at 0.05 level. Hence the hypothesis-2 is rejected. Therefore there is significant difference between boys and girls of 12th standard students in their scientific attitude.

Hypothesis 3: There is no significant difference between boys and girls in academic achievement of 12th standard students.

Table 3: Comparative Post-test Mean Scores of Boys and Girls of 12th Standard Students in their Academic Achievement

Academic Achievement	Gender	N	Mean	SD	t-value	Remark
	Boys	34	8.53	0.62	2.01	Significant at 0.05
	Girls	35	8.05	1.04		

Table-3 shows that the obtained t-value is greater than table value and is significant at 0.05 level. Hence the hypothesis-3 is rejected. Therefore there is significant difference between boys and girls in academic achievement among 12th standard students. Since the mean values of boys are more of girls, the boys show better academic achievement than girls.

FINDINGS

- There is a significant relationship between scientific attitude and academic achievement among senior secondary level students. So we may conclude that at senior secondary level academic achievement increases with positive scientific attitude. Therefore a positive scientific attitude towards science is essential to have a good academic achievement.
- There exists significant difference between scientific attitude between boys and girls and boys score more than girls because of their positive scientific attitude.
- There exists significant difference between academic achievement between boys and girls. So we may conclude that boys’ scores better in their academic achievement compare to that of girls.

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