Study of relationship between Scientific Attitude and Science Achievement among secondary school students of Punjab

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Development of Scientific Attitude is an important outcome of science teaching. A vitalized study of science with emphasis on open mindedness, tolerance and objectivity will lead to the development of rational outlook and scientific temperament. Ausekar (1995) defined scientific attitude as Open mindedness, a desire for accurate knowledge, confidence that the problem of solution will come through the use of verified knowledge. Srivastva (1980) had given the following as components of scientific attitude; rationality, curiosity, open mindedness, aversion to superstitions, objectivity- intellectual honesty, suspended judgment, establishing cause and effect relationship, evaluation, seeking evidence, skepticism, problem solving, desire for experimental verification, truthfulness, keen observation, critical mindedness, impartial and accuracy.

According to Crow and Crow (1956), Achievement means the extent to which the learner is profiting from instruction in a given area of learning. More often academic achievement refers to degree or level of success attained in some specific are concerning school or academic work. Science is one of the most important subjects at the secondary stage. The science achievement is the extent to which a learner progressed in Science subject. It is measured from the marks secured in science subject.

Review of the related Literature

To make the study effective adequate familiarity with work done up to the time in that field is very essential. Some of the researches related directly or indirectly to the present study are given here. Chhikara (1985) in his study into the Relationship of Reasoning abilities with achievement of concepts in life sciences found that there is a definitive positive relationship between conceptual achievement in life sciences.

Alexander (1990) examined the influence of critical thinking, scientific aptitude and socioeconomic status on achievement in science. He found that critical thinking and scientific aptitude contributed significantly to achievement in science.

Rationale of the study:

Attitudes determine the negative or positive character of our responses to various kinds of stimuli or diverse type of situations. They are an important motivator of behavior and affect human values. Sood (1984) studied that attitude towards science and scientists among students and teachers and found the understanding of science positively related to it. NPE 1986 stressed the need of developing scientific temper in children, a special emphasis has been given to science education in schools. The investigators were curious to study the relation ship of science

achievement with scientific attitude. Also the present study focused on whether boys and girls differ in their scientific temperament or not.

Objectives of the Study:

1. To find the relationship of Science Achievement with Scientific Attitude of secondary school students.
2. To examine the difference if any on the variable of Scientific Attitude of secondary school students on account of gender.

Hypotheses of the Study

1. There will not be a significant relationship between Science Achievement and Scientific Attitude of secondary school students.
2. There will not be any difference between Scientific Attitude of male and female students.

Delimitations of the Study

1. The study was restricted to Punjab state only.
2. The present study was delimited to 9th class students only.

Design of the Study

The study is quantitative one and the design of the study is Descriptive survey.

Sample

A sample of 740 students was taken from Govt. and Private Senior secondary school students of Punjab using Multiple randomization technique.

Tools used

1. Scientific Attitude Scale (Kaur, A., Gakhar, S.C. 2002)
2. Result of Class Eight Annual Examination for Science Achievement.

Data Collection

The data was collected with help of Scientific Attitude Scale from 9th class students and scores of Science Achievement of class Eighth were taken from school records.

Data Analysis Techniques

Product Moment Correlation and t- ratios technique were used to analyze data.

Data Analysis and Interpretation

Nature of score distribution

Table 1 Values of Mean and median for variables

Sr. No.	Variable	Mean	Median
1	Scientific Attitude	1021.37	1019.43
2	Science Achievement	42.11	41.12

As there is little difference in the values of mean and median on variable of Scientific Attitude, so this was indicative of the fact that the distribution of Scientific Attitude score was normal.

The distribution of scores on variable of Science Achievement also showed normalcy as the difference between mean and median was observed to be negligible.

Table 2 Values of Coefficient of Correlation between independent variable of Intelligence and Science Achievement

Sr. No.	Independent Variable	Value of Coefficient of Correlation with dependent variable of **Scientific Attitude**
1	**Science Achievement**	0.049

Dependent variable of Scientific Attitude was found to be insignificantly correlated with the independent variable of Science Achievement due to its insignificant values of coefficient of correlation (0.049) vide table 2. In other words variable of science achievement and scientific attitude are independent of each other.

The reason for the above mentioned results may be that Science achievement depends on memory, recall. Knowledge and hard work and whereas Scientific Attitude involves Scientific temper of mind, rational thinking, applying knowledge to problem solving, aversion to superstitions, etc.

Table 3 Values of mean, standard deviation and t- ratios to locate difference in the scientific attitude of students due to gender

Sr. No.	Variable	Group	N	M	SD	SED	t	Level of significance
1	Gender	Boys	400	1022.29	110.30			
						7.70	0.31	Not Significant
		Girls	336	1019.89	99.01			

From the results of table 3, it was revealed that there was insignificant difference in the Scientific Attitude of boys and girls at 0.05 level of significance (t= 0.31). Although mean scores of scientific attitude in case of boys were higher as compared to girls, yet the gender of students did not affect their scientific attitude.

The reason for the insignificant difference in scientific attitude of boys and girls may be due to the present modern set up in which parents try to provide nearly equal opportunities to them to develop scientific attitude nearly equal.

Conclusions:

1. Science Achievement and Scientific Attitude are independent of each other.
2. Gender does not affect the Scientific Attitude of students.

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