



SCIENTIFIC TEMPER AND ACHIEVEMENT IN PHYSICS OF HIGHER SECONDARY SCHOOL STUDENTS

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ABSTRACT

The present study intended to find out the level of scientific temper and achievement in physics of higher secondary school students. Survey method was conducted on a sample of 300 higher secondary school students in Vellore district through stratified random sampling technique. Data was analyzed by using Mean, SD, t-test and 'r' value. Results found that the scientific temper of higher secondary school students is found to be high and achievement in physics of higher secondary school students is found to be average. Findings also indicated that there is no significant relationship between scientific temper and achievement in physics of higher secondary school students.

KEYWORDS: *Scientific Temper, Achievement in Physics, Higher Secondary School Students.*

INTRODUCTION

Scientific Temper is a personality dimension of a person associated with one's basic drives to think in a systematic and scientific way. Scientific temper is not really the knowledge of a particular subject that defines such a temper. A Scientific temper refers to an open, question seeking mind. A mind seeks truth and accepts it when proved. A mind that is curious to understand 'why's' and 'how's' of life while accepting that all questions may not be fully answerable.

Scientific temper is an attitude, a way of living which should be applicable to all aspects of our life. The essence of scientific method in his outlook and uses it in his everyday life as possessing "Scientific Temper". One may not necessarily be a scientist, not even a science student and yet have scientific temper. This scientific temper is characterized by some traits such as healthy, universalism, freedom from prejudice or bias, objectivity, open mindedness and humility, willingness to suspend judgment without sufficient evidence; positive approach to failure etc. universalism is an important characteristic of scientific temper. The attributes of scientific temper like, honesty, truthfulness, perseverance, positive approach to failure are essentially some of universal human values which are important for happiness of an individual and the society.

NEED FOR THE STUDY

In the era of this scientific knowledge, science education has no longer confined to a few seriously devoted persons. Since life in the present world invariably warrants, to variable degrees, knowledge of scientific facts and laws, science has now become a necessity for everyone. Teaching of science for everybody has become an unavoidable part of general education. They have to be imbibed and not merely imparted. But our anxiety is not to invest our best brains outside the country, but to impart scientific temper

in our education curriculum and not inculcating this spirit in our young minds. The explosion of scientific knowledge has been so rapid in our age, that with the passing of every decade, our stock of knowledge on any subject has tended to become double or more. For advancement of culture and civilization in the adequate direction, the development of scientific temper among younger generation is now considered as a vital task in our new education policy. Hence the investigators wanted to know the connection between scientific temper and achievement in physics of higher secondary school students. Hence the topic has been coined as "Scientific Temper and Achievement in Physics of Higher Secondary School Students".

OBJECTIVES OF THE STUDY

- To find out the level of scientific temper and achievement in physics of higher secondary school students.
- To find out the significant difference in scientific temper and achievement in physics of higher secondary school students with respect to gender and locality.
- To study the significant relationship between scientific temper and achievement in physics of higher secondary school students.

HYPOTHESES

1. There is no significant difference in scientific temper of higher secondary school students with regard to gender.
2. There is no significant difference in scientific temper of higher secondary school students with regard to locality.
3. There is no significant difference in achievement in physics of higher secondary school students with regard to gender.
4. There is no significant difference in achievement in physics of higher secondary school students with regard to locality.
5. There is no significant relationship between scientific temper and achievement in physics of higher secondary school students.

RESEARCH METHOD

The present study belongs to normative survey method, as the study was intended to measure the present status of scientific temper and achievement in physics of higher secondary school students.

SELECTION AND SIZE OF THE SAMPLE

A sample of 300 higher secondary school students was chosen from various higher secondary school students in Vellore district by using stratified random sampling technique.

TOOLS

- Scientific Temper Scale (STS) by Krishna, K. & Bhuvaneshwari, H. (1989).
- Achievement Test in Physics (ATP) was developed by the investigators. The multiple choice questions with 4 alternatives were framed from the 2 units of the 11th standard physics text book. The drafted multiple choice items were given to two experts, one was 11th standard teacher who handles physics portion and the other was teacher educator. By following the split- half method, correlation co-efficient was found out. As the r value was found to be 0.82, the tool was considered to be good an administering for measuring ATP among higher secondary school students.

DATA ANALYSIS**Table 1: Level of Scientific Temper and Achievement in Physics of Higher Secondary School Students**

	N	Mean	SD	Remark
Scientific Temper	300	81.48	5.21	High
Achievement in Physics	300	56.36	16.11	Average

Table-1 shows that the level of scientific temper of higher secondary school students is found to be high. At the same time, the level of achievement in physics of higher secondary school students is average.

Table 2: Scientific Temper of Higher Secondary School Students based on Gender

Gender	N	Mean	SD	't' value
Male	160	80.97	5.17	2.39
Female	140	82.07	5.26	

From Table-2, the t-value 2.39 is significant at 0.05 level. It can be concluded that there is significant difference in scientific temper of male and female higher secondary school students. Hence, the hypothesis-1 is rejected.

Table 3: Scientific Temper of Higher Secondary School Students based on Locality

Locality	N	Mean	SD	't' value
Rural	148	82.03	5.21	1.24
Urban	152	80.95	5.17	

Table-3 depicts that the t-value 1.24 is not significant at 0.05 level. It can be concluded that there is no significant difference in scientific temper of rural and urban higher secondary school students. Hence, the hypothesis-2 is accepted.

Table 4: Achievement in Physics of Higher Secondary School Students based on Gender

Gender	N	Mean	SD	't' value
Male	160	56.31	18.27	1.24
Female	140	58.57	13.19	

From Table-4, the t-value is 1.24 which is not significant at 0.05 level. It can be concluded that there is no significant difference in achievement in physics of male and female higher secondary school students. Hence, the hypothesis-3 is accepted.

Table 5: Achievement in Physics of Higher Secondary School Students based on Locality

Locality	N	Mean	SD	't' value
Rural	148	64.74	14.64	8.77
Urban	152	50.18	14.14	

Table-5 reveals that the t-value 8.77 is significant at 0.05 level. It can be concluded that there is significant difference in achievement in physics of rural and urban higher secondary school students. Hence, the hypothesis-4 is rejected.

Table 6: Relationship between Scientific Temper and Achievement in Physics of Higher Secondary School Students

Scientific Temper vs. Achievement in Physics	N	'r'
	300	0.11

From Table-6, the r-value 0.11 is not significant at 0.05 level. It implies that there is no significant relationship between scientific temper and achievement in physics of higher secondary school students. Hence, the hypothesis-5 is found to be accepted.

FINDINGS OF THE STUDY

- Scientific temper is found to be high whereas achievement in physics is found to be average.
- Female students are having high level of scientific temper than the male students.
- Both the rural and urban students are having similar level of scientific temper.
- Both the male and female students are having similar level of achievement in physics.
- Rural students are having high level of achievement in physics than urban students.
- Scientific temper and achievement in physics of higher secondary school students are not correlated.

EDUCATIONAL IMPLICATIONS OF THE STUDY

The study found that the students are having higher level of Scientific Temper. However it has not reflected on the Achievement in Physics. As the students are having higher level of Scientific Temper, if they are properly motivated and logically explained the concepts by the teachers in a systematic manner, the students may achieve good Achievement in Physics. Workshops and internship training may be conducted to the teachers and this will definitely bring good impact on the achievement of the students. Male students may be given some extra coaching on learning process so that they may also raise the level of Achievement in Physics.

Use of teaching-learning materials, ICT and emphasis on learning by doing may be useful in fostering Scientific Temper among science students. Science is the product of creative thinking. The development of creative genius of our youth should be of prime importance in our education system.

Scientific Temper is a refined human nature and a major outcome of this must be on the systematic irrespective of subjects. It will be better to organize various co-curricular activities such as science fair, science exhibitions, scientific debate; science club etc. and use of inductive inquiry training model, concept attainment model, project method, problem solving method, Brain storming and programme instruction in teaching rather than conventional method of teachings.

CONCLUSION

The present study measured the influence of scientific temper towards the achievement in physics of higher secondary school students. From the perusal of the above findings, it is understood that the higher secondary school students have high scientific temper irrespective of their scores in physics and the variables. The study revealed the gender difference on the scientific temper and no influence on achievement in physics with respect to gender and locality.

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