Research Paper Education

Science Attitude of Higher Secondary Students

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ABSTRACT

Development of science attitude is mostly due to science teaching and learning. Though some people view the science attitude as the by-product of teaching science, yet a majority of the people consider it as equally important as knowledge aspect. Science attitude is of very significant concern in the process of science education. The present study was designed to make out the status of science attitude of biology group students of higher secondary stage. The sample consists of six hundred and twenty one XI standard students randomly drawn from Thiruvannamalai District. The findings indicate the existence of significant difference between rural and urban higher secondary school students in science attitude. Further, the unaided schools have some influence on developing science attitude among the students when compared to the government and aided schools. Development of science attitude is mostly due to science teaching and learning. Though some people view the science attitude as the by-product of teaching science, yet a majority of the people consider it as equally important as knowledge aspect. Science attitude is of very significant concern in the process of science education. The present study was designed to make out the status of science attitude of biology group students of higher secondary stage. The sample consists of six hundred and twenty one XI standard students randomly drawn from Thiruvannamalai District. The findings indicate the existence of significant difference between rural and urban higher secondary school students in science attitude. Further, the unaided schools have some influence on developing science attitude among the students when compared to the government and aided schools.

Keywords : Science Attitude, Higher Secondary Students, Rural and Urban, Government Schools, Aided Schools and Unaided Schools.

Introduction

Science and technology have greatly influenced the course of human civilization. It holds the key to future economic growth and social development (Pranab Mukherjee, 2013). Demand for science education has been increasing worldwide. The president of the United States, Barrack Obama, has consistently affirmed his commitment to a renewed focus on science education, and other world leaders have also expressed the need to reimagining science education to better prepare students for the jobs and important challenges of the future. An understanding of science will be vital as the next generation of global citizens confronts complex problems such as climate change, sustainable energy, food production, and the control of disease and illness. Indeed, the educational systems of the future must not only to prepare the next generation of scientists, but also to produce an informed citizenry, capable of understanding and using scientific evidence to inform their opinions and choices (Benjamin D. Jee and Florencia K. Anggoro, 2012).

Science attitude is an opinion or position taken with respect to a psychological object in the field of science. According to Sekar, P and Mani, S (2013), science attitude is normally associated with the mental processes. These habits are important in the daily life of everyone. Scientific attitudes possess attributes thought to be either false and do not express an evaluative quality. To lessen the semantic confusion, scientific attitudes may be better labeled as "scientific attributes". The attributes of science attitude are: rationality, curiosity, open mindedness, aversion to superstitions, objectivity and intellectual honesty and suspended judgement. According to Lawson (1982), science attitude is absolutely necessary to dispel ignorance and backwardness; it will bring a balanced perspective to bear on social evils and conflicts and could lead to a better world. And the most useful scientific attitudes are open mindedness, critical mindedness, respect for evidence, suspended judgment, intellectual honesty, willingness to change opinion, search for truth, curiosity, rational thinking, etc. Teaching of science at school stage helps in development of science literacy. It also helps in the formation of science attitude, which is essential to dispel social evils and helps in development of open mindedness, decision-taking ability. Training in science method thus improves the quality of thinking (Indira Sharma, 2007). Attitudes have been defined as ideas with emotional context, important beliefs, prejudices, biases, predispositions, appreciations, and as status of readiness (Wan L Russell, 2006). Extremely immense challenge is that many students have negative attitudes toward science (Atwater, Wiggins, & Gardner, 1995; Simpson & Oliver, 1985). Several researchers have found that student' attitudes toward science decline as they progress through school (Atwater et al., 1995; Cannon & Simpson, 1985; Hill, Atwater, & Wiggins, 1995; Simpson & Oliver, 1985). The students with the most negative attitudes tend to perform the worst. Poor achievement, in turn, leads to increasingly negative feelings (Mattern & Scheau, 2002). In this background, the present study is attempted to know the status of science attitude among higher secondary students in Thiruvannamalai district of Tamilnadu.

Statement of the Problem:

The present study is entitled as 'SCIENCE ATTITUDE OF HIGHER SECONDARY STUDENTS'.

Objectives:
The objectives of the present study are as follows:

- To find out the significant difference in science attitude of higher secondary students with respect to the location of permanent residence.
- To find out the significant difference in science attitude of higher secondary students with respect to the type of management of school.

Hypotheses:
The following are the hypotheses of this study:

- There is no significant difference in science attitude of higher secondary students with respect to the location of permanent residence.
- There is no significant difference in science attitude of higher secondary students with respect to the type of management of school.

Research Design:
Survey method is adopted by the investigators.

Population:
The population of this study comprises of higher secondary students in Thiruvannamalai District of Tamilnadu.

Sample and Sampling Procedure:
Six hundred and twenty one XI standard biology students were randomly selected from higher secondary schools located in Thiruvannamalai District of Tamilnadu.

Instrument used in the study:
The researchers used the following tools:

- Basic Data Sheet developed by the researchers.
- Science Attitude Scale (SAS) prepared and validated by Avinash Grewal (1977) was adopted by the investigators.

Data Analysis:
Differential analysis was used to compute the data and to verify the hypotheses by using the Statistical Package for the Social Sciences (SPSS). The results of the analysis are presented in Table 1 and 2.

Results:
Table 1: Mean, SD and t-value in science attitude of higher secondary students with respect to the location of permanent residence.

Location of Permanent Residence	N	Mean	SD	t-value	Significance at 0.05 Level
Rural	405	56.80	15.741	3.798	Significant
Urban	216	61.66	14.153		

Table 2: Mean, SD and F-ratio in science attitude of higher secondary students with respect to the type of management of school.

Type of Management of School	N	Mean	SD	F - ratio	Significance at 0.05 Level
Government	207	46.16 [a]	6.405	205.753	Significant
Govt. Aided	208	59.44 [b]	17.437		
Unaided	206	69.92 [c]	8.988		

Note: Different alphabet among type of management of the school denotes significant at 5% level using Duncan Multiple Range Test (DMRT).

Research Findings:
From the analysis of the data, the following findings are observed:

Table -1 reveals the significant difference in science attitude of higher secondary students with respect to the location of permanent residence at 0.05 level. In this aspect, the higher secondary students hailing from urban area have gained more mean score (M=61.66) than the students coming from rural area (M=56.80).

From Table-2, significant difference is noted in science attitude of higher secondary students with respect to the type of management of school at 0.05 level. Based on Duncan Multiple Range Test (DMRT), the higher secondary students of government schools, government aided schools and unaided schools significantly differ among themselves in science attitude at 5% level. Further, in science attitude, the higher secondary students of unaided schools have gained more mean score (M=69.92) when compared to the higher secondary students of government aided schools (M=59.44) and government schools (M=46.16).

Discussion:
The present study was an attempt to know the science attitude of higher secondary students with respect to the location of permanent residence and the type of management of schools. The study reveals the significant difference in science attitude of higher secondary students with respect to the location of permanent residence. It is supported by the findings of Kamabalppagari Maruthi (2009); Amees Tuhasaif Aezum and Nisar Ahmed Wani (2013) and Jancirani. R et al (2012). As far as location of permanent residence is concerned, the present study reveals that urban students significantly differ with the rural students.

With regard to the type of management of school, significant difference is noted in science attitude of higher secondary students. The higher secondary students of government schools, government aided schools and unaided schools significantly differ among themselves in science attitude. Unaided school students got more science attitude than the students of aided schools and government schools. This fact is supported by the findings of Syed Mustaq Ahmed (2007); Jancirani. R et al. (2012); Amees Tuhasaif Aezum and Nisar Ahmed Wani (2013); and Surekha Ksheerasagar and Kavyakishore, P.B, (2013).

Conclusion:
The present investigation reveals the significant difference in science attitude of higher secondary students with respect to the location of permanent residence. Similarly, they also significantly differ in science attitude with regards to the type of management of school. However, science attitude is a vital factor in determining the students' day-to-day life and future carrier. Hence, a positive attitude towards science need to be developed among higher secondary students and the initiation should start from the beginning of the school education. Therefore, teachers and teacher educators need to inculcate the science attitude among student community, as it is very much essential for the present-day scientific and technological world. Science teachers have to incorporate appropriate scientific facts during the teaching of science to develop interest in science and develop positive attitude in students towards science learning, so that students may be able to work better in such a way to adjust themselves in the fast developing scientific world.

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