ORIGINAL RESEARCH PAPER

Education

INTEREST IN SCIENCE AND ACHIEVEMENT IN SCIENCE OF HIGH SCHOOL STUDENTS

KEY WORDS: High School Students, Interest in Science, Achievement in Science.

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ABSTRACT

The investigators attempted to find out the significant relationship between interest in science and achievement in science among the students of standard IX. The self-made tools: Interest in Science Scale and Achievement Test in Science was used to assess the variables related to this study. Investigators employed random sampling technique for the selection of the sample. The sample consists of 17 Government, Government Aided and Private High and Higher Secondary Schools in Cuddalore District. The size of the sample for the present study was 1006 students; of which, 448 were males and 558 were females. The major findings of the study revealed that female students are having better interest in science and also shown better achievement in science.

Introduction:

Every individual desires to live a harmonious and successful life. In order to achieve this, skills and abilities are to be learnt. These skills will definitely help the individual in solving the problems of life and to lead a successful life. Thus, a child must be familiarized with the problems of adult life and one has to provide the solutions there in when they are studying in school. In this, context gaining education is a preparation for life, by an individual.

Education has continued to evolve around diversity and extend its reach and coverage since the dawn of human history. Every nation has its own system of education to express and promote its unique socio-cultural identity and to meet the challenges of the times. The Indian National Policy on Education (1986) highlights the importance and need for meeting the challenges pertaining to social, economical, cultural and moral factors of the present day Indian society. These challenges could be effectively addressed only through education, which in fact is the more powerful instrument to bring out meaningful and effective changes not only in the individual but also in the entire society.

Science Education:

In the Indian context, generally the education system includes the domains of language, mathematics, science, social science, fine arts, health, etc. Under science education, the fields of engineering, technology, physics, chemistry, and biology are included.

An understanding of science is vital as the next generation of global citizens faces complex problems such as climate change, sustainable energy, food production, and control of diseases and illness (Sekar, 2014). Indeed, the educational system of the future should not only prepare the next generation of scientists, but also to produce an informed community, capable of understanding and using scientific devices in the exact way. The Indian Education Commission (1964-66) rightly observed that science based education, in coherence with Indian culture and values can alone provide the foundation and also be the instrument for the nation's progress, security and culture.

Interest in Science:

According to John Dewey (1913), interest is a state that a man is totally engaged. It describes why the organism tends to favour some situation and thus comes to react to it in a selected manner. It is a tendency to have something to do with some person or to choose one's activity. Interest is subjective in nature and differs from person to person; interest also denotes an element of worthwhileness (Ainley and Ainley, 2011).

Academic Achievement:

It refers to the general terms for the successful attainment of some goal requiring a certain effort. It refers the degree of success in a task. Achievement is the result of certain intellectual or physical activity defined according to individual and objective of proficiency (Avinashilingam and Sharma, 2005). Achievement means pupil's grasp of some kind of knowledge or his/her proficiency in certain skills. According to Dash and Dash (2008), academic achievement refers to the level of proficiency of an individual in some work activity of subject-matter. Achievement is a task oriented behavior that allows the individual's performance to be evaluated (Mangal, 1994).

Interest and Achievement:

Interest is said to be a key factor of achievement and it is universally accepted as a motivating factor for achievement in any field (Deci, 1992). One of the factors that facilitate academic achievement is interest in learning the subject (Chauhan, 1997).

Need for the study:

Studies reveal that science is far less interesting to many students as compared to other subjects (Padhi, 1994). A low interest in science is a problem in learning and understands science, because it is not easy to achieve in science without interest. Hence, the investigator has selected the problem, "Interest in Science and Achievement in Science of High School Students" as suitable to its relevance and need in today's competitive world.

Objectives:

The present investigation has been undertaken with the following objectives.

1. To assess the level of interest in science and achievement in science of high school students.
2. To find out the significant difference among high school students interest in science and achievement in science with respect to gender.
3. To find out the significant difference among high school students interest in science and achievement in science with respect to community.
4. To find out the significant relationship between interest in science and achievement in science of high school students.

Hypotheses:

Based on the objectives of the study, the following hypotheses were formulated for the present study.

1. The high school students' level of interest in science is high.
2. The high school students' level of and achievement in science is high.
3. There is no significant difference in interest in science among high school students with respect to gender.
4. There is no significant difference in achievement in science among high school students with respect to gender.
5. There is no significant difference in interest in science among high school students with respect to community.
6. There is no significant difference in achievement in science among high school students with respect to community.
7. There is no significant relation between interest in science and achievement in science among high school students.

Methodology:
In the present investigation, the investigators have adopted normative survey method. The normative survey describes and interprets what exists at present. And it is concerned with conditions or relationship that exists, practices that prevail, beliefs, points of view or attitudes that are held, processes that are going on, influences that are being felt, and trends that are developing.

Population, Sampling Procedure and Sample Size:
For this investigation, 1006 IX Std students were selected from 17 high and higher secondary schools in Cuddalore District of Tamil Nadu out of the total population of 30,933 during the academic year 2015-2016. The sample is to be selected very carefully so as to enable the researchers to draw meaningful conclusions and generalizations. The size of the sample should be adequate and it should also be a true representative of the population. The researchers have adopted random sampling technique in the selection of sample, various base for sampling such as gender (Male and Female) and community (OC, BC, MBC/DNC, SC/ST) were taken into consideration.

Tools Used in the Study:
1. Interest in Science Scale developed and validated by the Investigators.
2. Achievement Test in Science developed and validated by the Investigators.

Main Study:
The investigators administered the research tools in the form of a booklet containing personal data sheet, interest in science scale, achievement test in science and collected data with prior permission from the heads of the high and higher secondary schools in Cuddalore District of Tamil Nadu. The booklet was distributed to the IX Std students with proper instruction. Whenever they sought clarifications, the investigators provided them with necessary information.

Statistical Techniques Used:
For the analysis of the collected data, the following statistical techniques have been used.
a. Descriptive analysis, and
b. Inferential analysis.

Results:
The results of this investigation are plotted in the table.

Table 1: Levels of interest in science of high school students.

Interest in Science	N	Percentage
Low	237	23.5
Moderate	525	52.2
High	244	24.3
Total	1006	100

It is observed from the above table that 23.5% of high school students have low, 52.2% of them have moderate, and 24.3% of them have high level of interest in science. Hence, it is inferred that majority of the IX standard students have moderate level of interest in science.

Table 2: Levels of achievement in science of high school students.

Achievement in Science	N	Percentage
Low	248	24.6
Moderate	512	50.9
High	246	24.5
Total	1006	100

It is observed from the above table that 24.6% of high school students have low, 50.9% of them have moderate, and 24.5% of them have high level of achievement in science. Hence, it is inferred that majority of the IX standard students have moderate level of achievement in science.

Table 3: Mean, SD and t-value for interest in science of high school students with respect to gender

Gender	N	Mean	SD	t-value
Male	448	128.21	16.92	3.67*
Female	558	131.83	14.36	

(* Significant)
The above table noted that the calculated 't' value (3.67) is greater than the table value (1.96) at 5% level of significance. Hence, the formulated null hypothesis is rejected. Therefore, it is concluded that there exists significant difference between male and female high school students in their interest in science. While comparing the mean scores of male (Mean=128.21) and female (Mean=131.83) high school students, the female high school students are better than the male students in their interest in science.

Table 4: Mean, SD and t-value for achievement in science of high school students with respect to gender.

Gender	N	Mean	SD	t-value
Male	448	56.96	21.25	4.99*
Female	558	63.37	19.37	

(* Significant)
It is noted from the above table that the calculated 't' value (4.99) is greater than the table value (1.96) at 5% level of significance. Hence, the formulated null hypothesis is rejected. Therefore, it is concluded that there exists significant difference between the male and female high school students in their achievement in science. While comparing the mean scores of male (Mean=56.96) and female (Mean=63.37) high school students, the female high school students are better than the male high school students in their achievement in science.

Table 5: Mean square and F-value for interest in science of high school students with respect to community.

Source of variation	df (2, 1003)	'F' value	
	Sum of squares	Mean square	
Between	579.764	289.882	1.18*
Within	245647.56	244.913	

(* Not Significant)
It is observed from the above table that the calculated 'F' value (1.18) is less than the table value (2.99) for df 2, 1003 at 5% level of significance. Hence, the formulated null hypothesis is accepted. Therefore, it is concluded that there exists no significant difference among BC, MBC/DNC and SC/ST high school students in their interest in science.

Table 6: Mean square and F-value for achievement in science of high school students with respect to community.

Source of variation	df (2, 1003)	'F' value	
	Sum of squares	Mean square	
Between	823.866	411.933	0.98*
Within	420485.275	419.228	

(* Not Significant)
It is observed from the above table that the calculated 'F' value (0.98) is less than the table value (2.99) for df 2, 1003 at 5% level of significance. Hence, the formulated null hypothesis is accepted. Therefore, it is concluded that there exists no significant difference among BC, MBC/DNC, and SC/ST high school students in their achievement in science.

Table 7: Relationship between achievement in science and interest in science of high school students.

Variable	N	Df	r - value
Interest in science Vs Achievement in science	1006	1004	0.084*

(* Significant)
It is observed from the above table that the calculated 'r' value (0.084) is greater than the table value (0.063) for df 1004 at 5%

level of significance. Hence, the formulated null hypothesis is rejected. Therefore, it is concluded that there exists significant positive relationship between interest in science and achievement in science of high school students.

Discussion and Conclusion:

This study has reported that the female students are having better interest in science, however the contradictory finding was observed by Marcia C. Linn and Janet S. Hyde (1989) and Catsambis (1995). In the achievement in science concern, the female students are having shown better achievement in science. Similar findings were observed by Sekar, P, (2014) and Paramasivam, P, (2014). There exits positive and significant relationship between interest in science and academic achievement. The similar findings are observed by Hulleman (2009), Rachel Mamlok-Naaman (2011) and Shaljan Areepattamannil (2012). They found the substantial positive effects of science achievement and interest in science. However, Chris S. Hulleman (2009) and Judith M. Harackiewicz (2009) found contradictory results; they found no relation among science achievement and interest in science. The study indicates that majority of the IX standard high school students tend to have moderate level of interest in science and also moderate level of achievement in science. The study has also clearly revealed the importance of interest in science in enhancing achievement in science. The present study shows that female students' are having better interest in science and achievement in science than male students. With respect to community there is no significant difference in school environment and achievement in science. Therefore the interest of the students' in science is very important to achieve in science.

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