Analysis of Secondary School students' Attitude towards Science in relation to Sex and Type of School

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Abstract: he purpose of this investigation is to examine the attitude of secondary school students towards science in relation to sex and location. The present research was followed by descriptive survey method. A sample of 180 students was selected using simple random sampling procedure. The number of boys would be 90 and girls would be 90 as a sample of research. Data was collected through Attitude Towards Science Scale (ATSS) developed by Dr. Anuradha Agnihotri (2009), was used to assess the attitude towards science of the secondary school students. The collected data was analyzed by utilizing independent 't' test. In all cases the level of significance was fixed at 0.05 confidence level. The results were obtained from the help of SPSS Package along with MS Excel. The statistical technique concluded that there was a significant difference in the Attitude towards Science of secondary school boys and girls students The study suggests to conduct parental awareness programs for boys that helps to develop attitude towards science and educate their parents about practices that can be adopted to support their children's learning. The study also confirmed that there was a significant difference in Attitude towards science of secondary school students studying in government and private aided schools; and government and private unaided schools; but there was no difference between students studying in private aided and private unaided schools. The study confirmed that the government school students had favourable attitude towards science when compared to private unaided and private aided school students. Therefore, science teachers of private institutions can use various approaches in making science fun and more likeable and they have to give more attention towards students to master science.

Index Terms – Secondary, School, Students, Attitude, Science, Sex, Type of School.

I. INTRODUCTION

India, with more than 1.4 million schools and more than 230 million enrolments, is home to one of the largest and complex school education systems in the world along with China. The Indian education system has made significant progress in recent years. Recognising the importance of education in national development, the Twelfth Plan (2012–2017) placed an unprecedented focus on the expansion of education, on significantly improving the quality of education imparted and on ensuring that educational opportunities are available to all segments of the society (Ghosh, 2014).

Nelson Mandela rightly said, "Education is the most important weapon to change the world." Education plays an important role in the development of an individual and making him a knowledgeable citizen. It is the education that makes an individual self-reliant, helps to suppress the social evils and contribute towards the development of the society and nation as a whole. People still don't realise what role does education and being educated plays in our lives and society. So, before making people aware of education and working for their access, it is very important to understand the need and importance of education. Education includes traditional learning methods that include theories and modern methods that include practical implementation of the subjects.

Science is the greatest invention of mankind. Modern world is scientific world. Science is a systematic process of gathering knowledge about the universe. It is a process of organizing the knowledge into testable laws and theories. Etymologically, the word science has been derived from a Latin word 'Scientia' which means knowledge. It is a systematic body of knowledge and highly skilled techniques and practices for accurate and objective prediction about future. To discover and increase human knowledge and understanding through disciplined research, science is needed. Science is a process of using controlled methods, collecting evidences of natural and social phenomena, recording measurable data relating to the observations, and analysing this information to construct theoretical explanations. Framing hypotheses, testing the hypotheses, observations, experimentations and to describe and explain natural phenomena accurately is science.

Sharma, (1990) defined Science as "An accumulated and systematized learning in general usage restricted to natural phenomena. The progress of science is marked by the emergence of scientific method and of the scientific attitude". Attitude refers to the mental state of readiness to respond. Science is one of the important subjects taught in schools. The use of science as the object or the stimulus of these feelings delineates a set of attitudes known as attitude towards science (Rao, 2004). Attitudes are mental predisposition toward people, objects, subjects and events. In science, attitudes are important because of three primary

factors (Martin, 1984). First a child's attitude carries a mental state of readiness with it. With a positive attitude, a child will perceive science objects, topics, activities and people positively. A child, who is unready or hesitant, for whatever reason, will be less willing to interact with people and things associated with science. Singh; Singh and Giri (2016) investigated to find out the relationship between scientific attitude and academic achievement of college girls in Varanasi district, Uttar Pradesh and concluded that academic achievement was positively and significantly correlated with scientific attitude. Lucas (2016) examined scientific attitude and academic achievement in science of secondary school students in Thane city and confirmed that the percentage of boys was more than girls for extremely favorable attitude towards scientific attitude.

NEED OF THE STUDY

According to National Policy on Education (NPE) of 1986, science should be visualized as a vehicle to train a student in thinking, reasoning, analyzing and articulating logically. One of the several universally recognized aims of teaching science is helping the students in developing scientific attitude to meet the demands of daily life, new scientific knowledge and in work related to field of knowledge has special significance. It is reality that, science is felt to be difficult to absorb. Many students find science very difficult and uninteresting and perform poorly in it. The study will be useful in locating the objectives of curricula of teaching of science. This may help in setting some issues and misbelieves. Attitudes toward science are shaped by different factors such as ability, motivation, quality of instruction, the content of courses, teachers' personalities, home and school environments, the place where students live, race and sex. Sex seems to be one of the important predictors of students' achievement in science learning and attitude toward science. Students attitude towards learning affect their achievement. When attitudes are positive, students tends to have a better learning outcome. A significant relation was discovered between students' interest towards learning and their academic achievement (Prokop, Tuncer and Chudá (2007). It is vital to identify the type of perceptions of students towards science; this will improve their academic performance. Hence, the present study isto know the students' attitude towards science learning with few variables.

II. STATEMENT OF THE PROBLEM

The problem identified by the researcher is as follows:

"**Analysis of Secondary School students' Attitude towards Science in relation to sex and location**"

III. PURPOSE OF THE STUDY

The purpose of this investigation is to examine the attitude of secondary school students towards science in relation to sex and location.

IV. OBJECTIVES OF THE STUDY

1. To find out the differences in secondary school students' attitude towards science.

2. To find out the whether differences in Type of School of Secondary School students would account for significant difference in Attitude towards science.

V. RESEARCH HYPOTHESES

1. There is no significant difference in the attitude of secondary school boys and girls towards science learning.

2. There is no significant difference in the attitude of secondary school students studying in government and private aided institutions towards science learning.

3. There is no significant difference in the attitude of secondary school students studying in private aided and private unaided institutions towards science learning.

VI. METHODOLOGY

The present research was followed by descriptive survey method. A sample of 180 secondary schools students was selected using simple random sampling procedure. The number of boys would be 90 and girls would be 90 as a sample of research. Data was collected using Attitude towards Science Scale (ATSS) developed by Dr. Anuradha Agnihotri (2009), which was used to assess the attitude towards science of the secondary school students. The collected data was analyzed through utilizing independent 't' test. In all cases the level of significance was fixed at 0.05 confidence level. The results was obtained from the help of SPSS Package along with MS Excel.

VII. DATA ANALYSIS AND INTERPRETATION

Table 1: Shows sample of secondary school students distributed over sex, type of management and attitude levels of attitude towards science.

| Sl. No.	Variable	Groups	Frequency (N=180)	Percentage (%)
1.	Sex	Boys	90	50.0
		Girls	90	50.0
2.	Type of Management	Government	60	33.3
		Private Aided	60	33.3
		Private Unaided	60	33.4
3.	Attitude Levels	Low	13	7.2
		Average	157	87.2
		High	10	5.6

The table-1 shows frequency and percentage wise distribution of secondary school students over sex, type of management and attitude levels. The same is represented in graphical presentation in Graph No.-1.
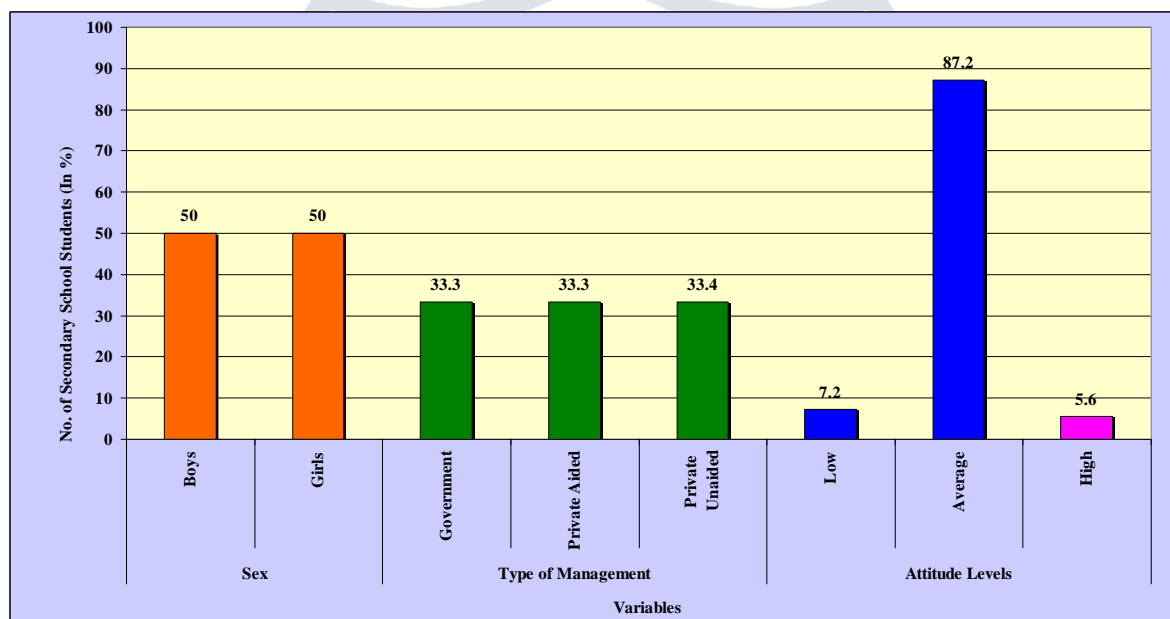
Graph-1: Graph shows sample distribution over few variables

Table-2: Shows the Groups Number, Mean Scores, Standard Deviation, 't' value and Significance Level of Attitude towards Science Scores of secondary school boys and girls.

Group : (Sex)	Number	Mean	Standard Deviation	't' Value	Sig. Level
Boys	90	87.555	15.360	3.41	*
Girls	90	94.988	13.863		

*Significance at 0.05 level

The table-2 shows that, the obtained 't' value 3.41 is greater than the table value 1.97 at 0.05 (df=178) level of significance. Hence, the null hypothesis is rejected and alternate hypothesis has been accepted that, "there is a significant difference in the Attitude towards Science of secondary school boys and girls." It also shows that the attitude towards science of secondary school girls (M=94.988) had favourable attitude towards science when compared with boys (M=87.555). The same is represented in graphical presentation in Graph No.2.
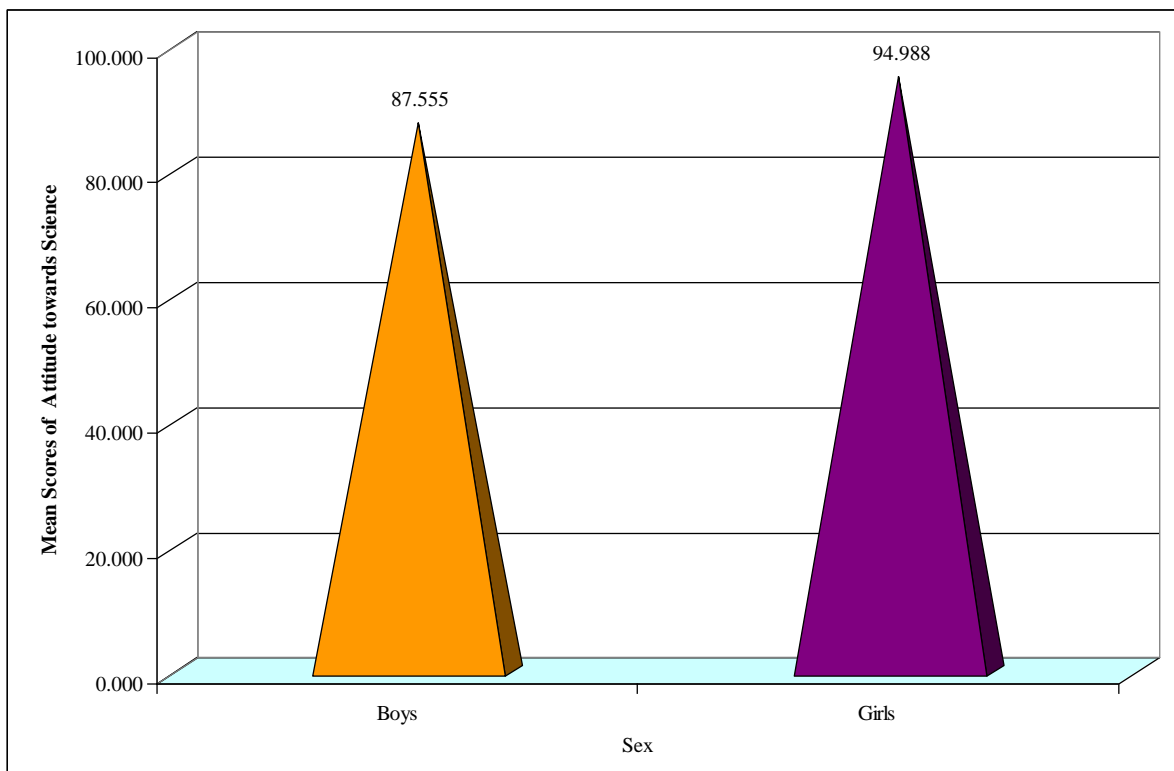
Graph-2: The bar shows the Attitude towards science mean scores of secondary school students with regard to sex.

Table-3: Shows Groups, Number, Mean Scores, Standard Deviation, 't' Value and Significance Level of Attitude towards Science Scores of secondary school students studying in different type of school.

Group (Type of Management)	Number	Mean	Standard Deviation	't' Value	Sig. Level
Government	60	97.000	13.215	3.52	*
Private Aided	60	87.933	14.914		
Private Aided	60	87.933	14.914	0.34	NS
Private Unaided	60	88.883	15.504		
Government	60	97.000	13.215	3.09	*
Private Unaided	60	88.883	15.504		

*Significant at 0.05 level; [NS]Not significant

The table-3 shows that, the obtained 't' value 0.34 is less than the table value 1.98 (df=118) at 0.05 level of significance. Hence, the null hypothesis is accepted that is, "there is no significant difference in the Attitude towards Science of secondary school students studying in private aided and private unaided schools."

Also the table shows that, the obtained 't' value 3.52 is greater than the table value 1.98 (df=118) at 0.05 level of significance. Hence, the null hypothesis is rejected and alternate hypothesis has been accepted that, "there is a significant difference in the Attitude towards Science of secondary school students studying in government and private aided schools." It further shows that the students studying in government school (M=97.000) had favourable attitude towards science when compared to private aided school students (M=87.933).

Further the table also reveals that, the obtained 't' value 3.09 is greater than the table value 1.97 (df=118) at 0.05 level of significance. Hence, the null hypothesis is rejected and alternate hypothesis has been accepted that, "there is a significant difference in Attitude towards Science of secondary school students studying in government and private unaided schools." It shows that the government school students (M=97.000) had favourable attitude towards science when compared to private unaided school students (M=88.883). The same is represented in graphical presentation in Graph No.3.
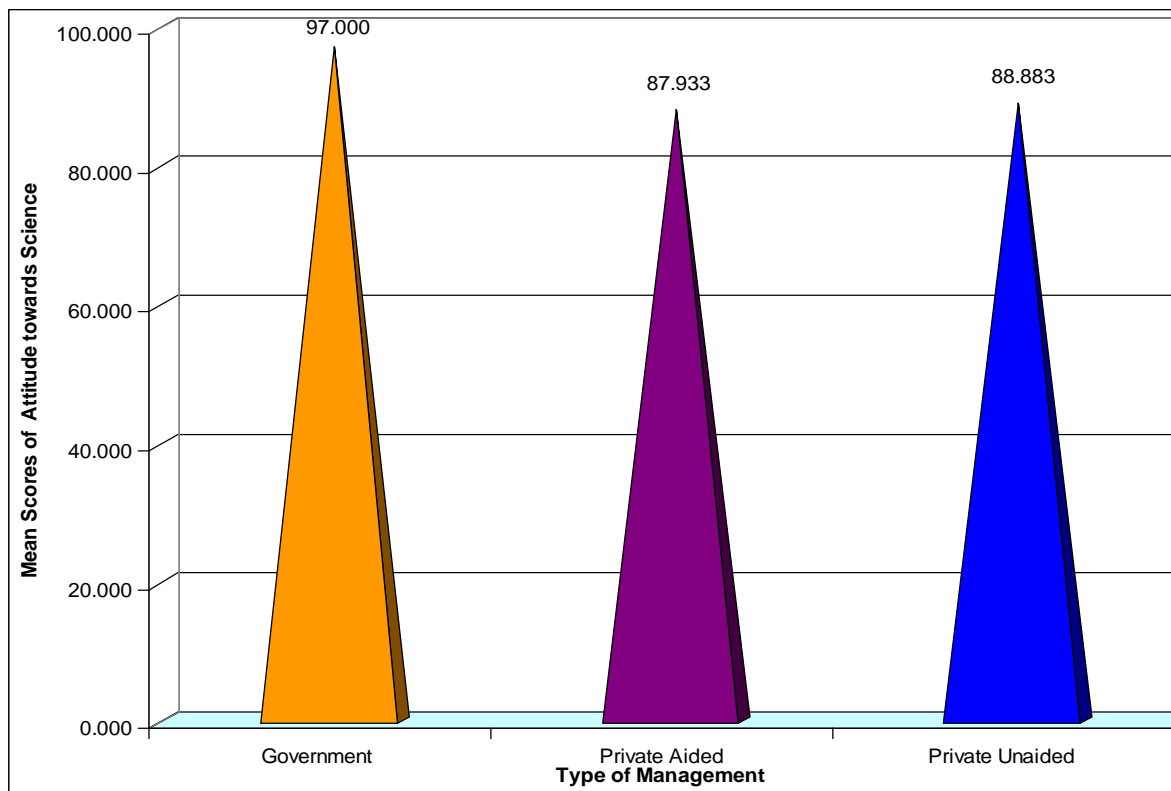
Graph-3: Bar Graph shows mean scores in the Attitude towards science of secondary school students from Government, Private Aided and Private Unaided schools.

RESULTS

1. There was a significant difference in the Attitude towards Science of secondary school boys and girls ('t'=3.41; P<0.05).

2. There was a significant difference in the Attitude towards Science of secondary school students studying in government and private aided school s ('t'=3.52; P<0.05).

3. There was no significant difference in the Attitude towards Science of secondary school students studying in private aided and private unaided schools ('t'=0.34; P>0.05).

4. There was a significant difference in the Attitude towards Science of secondary school students studying in government and private unaided schools ('t'=3.09; P<0.05).

CONCLUSION AND EDUCATIONAL IMPLICATIONS

The statistical technique concluded that there was a significant difference in the Attitude towards Science of secondary school boys and girls students The study suggests to conduct parental awareness programs for boys that helps to develop attitude towards science and educate their parents about practices that can be adopted to support their children's learning. The study also confirmed, that there was a significant difference in Attitude towards science of secondary school students studying in government and private aided schools; and government and private unaided schools; but there was no difference between students studying in private aided and private unaided schools. The study confirmed that the government school students had favourable attitude towards science when compared to private unaided and private aided school students. Therefore, science teachers of private institutions can use various approaches in making science fun and more likeable and they have to give more attention towards students to master science.

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