Study of Scientific Attitude of Rural and Urban school Students in the Union Territory of Chandigarh

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ABSTRACT

The aim of the study was to investigate the scientific attitude of the rural and urban school students and to find the difference if any among the two groups of students. The field study was carried out by selecting a sample of 160 students of two government schools of the city Chandigarh one from rural area and other from urban area selected randomly by employing the Scientific Attitude Scale (SAS-BM) developed and standardized by S. K. Bajwa and Monika Mahajan (2012) to collect the data. The difference of 5.55 in the mean scores of the scientific attitude of the rural and urban students in favour of the rural group was tested for significance by calculating t-value for the two groups. The calculated t- value of 1.991for the two groups for df = 79 is more than critical value of 1.96 at 0.05 level of significance and hence it can be concluded that the difference in the scientific attitude of the rural and urban students is significant at 0.05 level in favour of the rural students. The interpretation of the analyzed data indicates that there is significant difference in the scientific attitude of the male and female rural school students at 0.05 level of significance. The study also shows significant difference in the scientific attitude of the rural and urban students in favour of the rural female students at 0.01 level of significance. The study also finds that the difference in the scientific attitude of the male and female urban students is not significant.

Key words: Scientific Attitude, Rural, Urban, Gender, School Students, Difference

INTRODUCTION

Developing scientific attitude among students is one of the aims of science curriculum teaching. Science teaching learning demands favorable and positive attitude towards the science. Positive attitude towards science leads to interest in science and commitment for science learning among students. Scientific attitude is the most desirable trait for learning science. An individual acquires knowledge of scientific terms, facts and principles and laws on the basis of extent of development of scientific attitude.

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Person having scientific attitude is curious, critical observant, unbiased, honest and keen to learn. Siddiqui(2003)emphasized that with the development of scientific attitude an individual is able to have the understanding and intellectual integrity to shift truth form falsehood, facts from propaganda and to reject the dangerously appealing fanaticism and prejudice. Kaur (1997)in her study on the scientific attitude of the adolescents found that scientific attitude of girls is more than that of the boys and the difference is significant at 0.01 level in favour of girls. The results in the study of Yadav (2012) found significant difference in the scientific attitude of male and female students and also among the rural and urban high school students. Ataha and Ogumogu (2013) revealed in their study that the level of scientific attitude is not significantly influenced by sex (gender). Chakraborty and Gogoi(2014) conducted a study on scientific attitude and observed that there is significant difference between the mean scientific attitude scores of boys and girls of secondary students in the Dibrugarh District of Assam. However, a significant difference in scientific attitude was revealed between urban and rural students as well as among the students studying through different medium of instruction.Reddy and Harinath (2014) in their study on scientific attitude of IX class students found significant influence of sex (gender) on the scientific attitude of IX class students in favour of the girls. They also concluded in their findings that no significant difference exist in the scientific attitude of the students of different locality i.e. urban and rural areas.

RATIONALE OF THE STUDY

Science and technology is changing the life of the people at very fast pace which is not only opening the new opportunities but creating numerous challenges in the field of science education. The interest in science and technology is always an important issue as it is linked to the academic achievement and pursuing a career in science and technology. Numerous studies across the world revealed the declining interest of the students in science and technology. "This decline has been attributed to lack of positive attitude, motivation and interest in assigned tasks and scientific subject matters (Potvin &Hasni, 2014)".

The attitude of a person determines the level of achievement and success in the field of science and technology. The quality of learning is determined by the approach of seeking knowledge. The attitude of the learner is quite important for conceptual learning and more so

in case of the science learning. Scientific attitude is a way of logical and clear thinking systematic reasoning without any biasness or prejudice. Scientific attitude is equally important for clear and systematic learning in all subjects of social sciences, humanities or sciences. In general developing positive attitudes toward science and generating interest in science is one of the major goals for science teaching and learning. Many studies have been conducted on the issue of scientific attitudes which shows conflicting results. The study by Kaur (1997),Yadav (2012), Chakraborty and Gogoi(2014), Reddy and Harinath (2014)found that there is significant difference in the scientific attitude of the adolescents on the basis of gender. However, the study by Ataha and Ogumogu (2013) revealed that scientific attitude is not significantly influenced by gender. The study by Yadav (2012) and Chakraborty and Gogoi (2014) shows that there is significant difference in the scientific attitude of urban and rural students. Similarly, Reddy and Harinath (2014) in their study concluded that there is no significant difference in the scientific attitude of the students belonging to urban and rural areas. This shows that there is no conformity in the opinions of the experts about the scientific attitude and hence it needs to be explored. The present study was thus planned to assess the scientific attitude of the students and also to find whether there is any variation in the scientific attitude of students studying in rural and urban areas.

OBJECTIVES OF THE STUDY

1. To study the scientific attitude of the school students
2. To study the difference in the scientific attitude of the rural and urban school students
3. To study the difference in scientific attitude of the male and female rural school students
4. To study the difference in scientific attitude of the male and female urban school students

HYPOTHESES OF THE STUDY

The following null hypotheses were tested in this descriptive study:

1. There is no significance difference in the scientific attitude of the rural and urban school students.
2. There is no significance difference in scientific attitude of the male and female rural school students.

3. There is no significance difference in scientific attitude of the male and female urban school students.

PROCEDURE OF THE STUDY

To carry out the study descriptive survey research method was used to collect data from two schools, one from the rural area and other from the urban area selected randomly from the list of available government schools. The present field study was carried out by selecting a sample of 160 students of two government schools of the city Chandigarh. The 80 students each were randomly selected from two schools from class IX and X out of which 40 were male and 40 female. The test of Scientific Attitude Scale (SAS-BM) developed and standardized by S. K. Bajwa and Monika Mahajan (2012) was employed to collect the data for the study. The scale was administered to the two groups in each of the rural and urban school students after clarifying the purpose of the study to the subjects. The data collected was manually scored and entered in the computer for analyzing. The data was analyzed after computing the basic and elementary statistics like mean, median, standard deviation etc. Graphical and tabular presentation was made to simplify the results. Two groups were compared by applying t-test to know the difference in the scientific attitude of rural and urban students as well as the difference in the scientific attitude of the male and female in the rural and urban areas.

ANALYSIS AND INTERPRETATION OF THE RESULTS

The data collected by employing the scientific attitude scale was tabulated, categorized and analyzed. The result of the descriptive analysis was entered into appropriate tables as given in the proceeding paragraphs. The calculated values of mean, median, mode, standard deviation etc. are shown in table 1 below.

Table 1: Descriptive Statistics of scientific attitude of the rural and urban students

Variable	Students	N	Mean	SD	Median	Mode	Skewness	Kurtosis
Scientific attitude	Rural	80	160.53	19.52	158.3	181	0.207	-0.778
	Urban	80	154.98	15.48	153.5	150	1.04	1.44

As shown in the Table 1 the mean, median and mode of the scientific attitudescores of sample of rural students are 160.53, 158.3 and 181 respectively and thus can be considered approximately equal. Whereas the mean, median and mode of the scientific attitude scores of the sample of the urban students are 154.98, 153.5 and 150 respectively and thus can be considered as approximately equal. The standard deviation of the scientific attitude scores of rural and urban sample is 19.52 and 15.48 respectively the value of skewness of the rural sample is 0.207 and that of the urban is 1.04. The value of kurtosis of the rural sample is -0.778 (negative value) which is less than 0.263 and hence the distribution of scientific attitude is leptokurtic curve. However, the value of kurtosis of the urban sample is 1.44 (positive value) which is more than 0.263 and hence the distribution of scientific attitude is platykurtic curve.

To ascertain the difference in the scientific attitude of the rural and urban students the t-value was calculated for the two groups and is entered in the below given table 2.

Table 2: Difference in scientific attitude of the two groups of students

Variable	Type	N	Mean	S. D.	t-value	Level of significance
Scientific attitude	Rural	80	160.53	19.52	1.991	p< 0.05
	Urban	80	154.98	15.48		

The bar graph of the mean scores of the scientific attitude scores of the two groups is plotted and is depicted in figure 1 below.

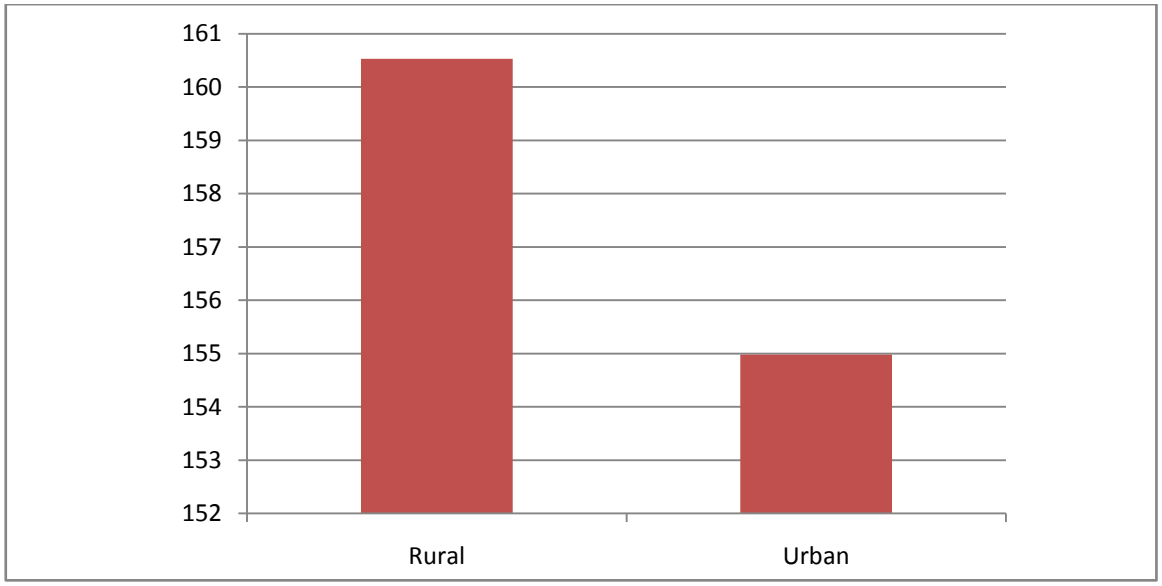

Figure 1: Mean Scores of the scientific attitude of the rural and urban students

There is a difference of 5.55 in the mean scores of the scientific attitude of the rural and urban students in favour of the rural group as depicted in the table 2 and figure 1.To ascertain this difference in the mean scores of the two groups is significant or not, t-value was calculated for the two groups and was found to be 1.991. The calculated t- value for the two groups for df=79 is more than critical value of 1.96 at 0.05 level of significance and hence the null hypothesis "there is no significant difference in the scientific attitude of rural and urban school students" is rejected at 0.05 level. Therefore, it can be concluded that the difference in the scientific attitude of the rural and urban students is significant at 0.05 level in favour of the rural students.

To ascertain the difference in the scientific attitude of the male and female rural students the t-value was calculated for the two groups and is entered in the below given table 3.

Table 3: Difference in scientific attitude of the two groups of rural students

Variable	Group	N	Mean	S. D.	t-value	Level of significance
Scientific attitude of Rural Students	Male	40	156.55	18.46	2.615	p< 0.01
	Female	40	164.50	19.96		

The bar graph of the mean scores of the scientific attitude scores of the two groups is plotted and is depicted in figure 2 below.

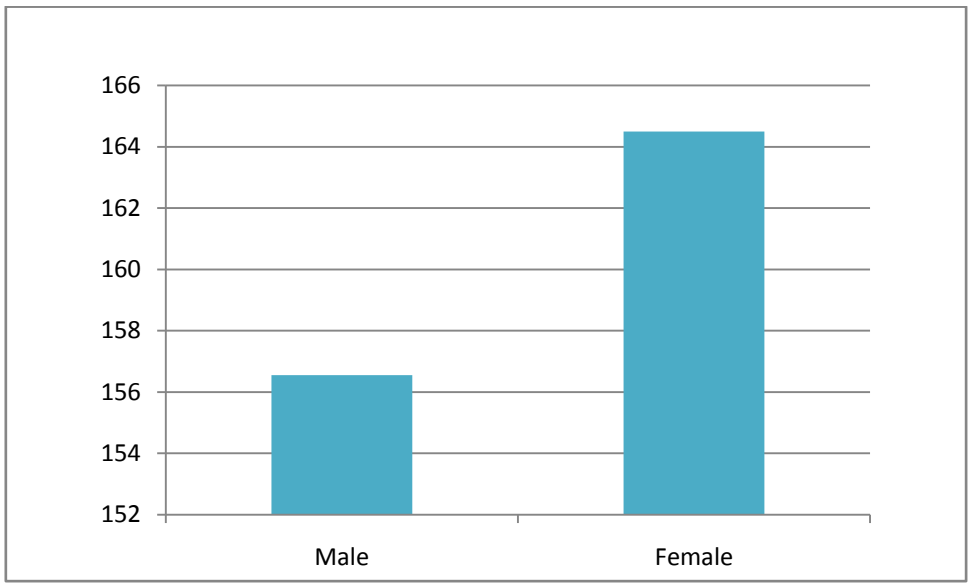

Figure 2: Mean Scores of the scientific attitude of the ruralmale and female students

There is a difference of 7.95 in the mean scores of the scientific attitude of the rural male and female students in favour of the female group as depicted in the table 3 and figure 2.This difference in the mean scores of the two groups is significant or not, t-value was calculated for the two groups and was found to be 2.615. The calculated t- value for the two groups for df=39 is more than critical value of 2.58 at 0.01 level of significance and hence the null hypothesis "there is no significant difference in the scientific attitude of male and female rural students" is rejected at 0.01 level. Therefore, it can be concluded that the difference in the scientific attitude of the male and female rural students is significant at 0.01level in favour of the rural female students.

To ascertain the difference in the scientific attitude of the urban male and female students the t-value was calculated for the two groups and is entered in the below given table 4.

Table 4: Difference in scientific attitude of the two groups of urban students

Variable	Group	N	Mean	S. D.	t-value	Level of significance
Scientific attitude of urban students	Male	40	155.7	17.53	0.589	p> 0.05
	Female	40	154.25	13.31		

The bar graph of the mean scores of the scientific attitude scores of the two groups is plotted and is depicted in figure 1 below.

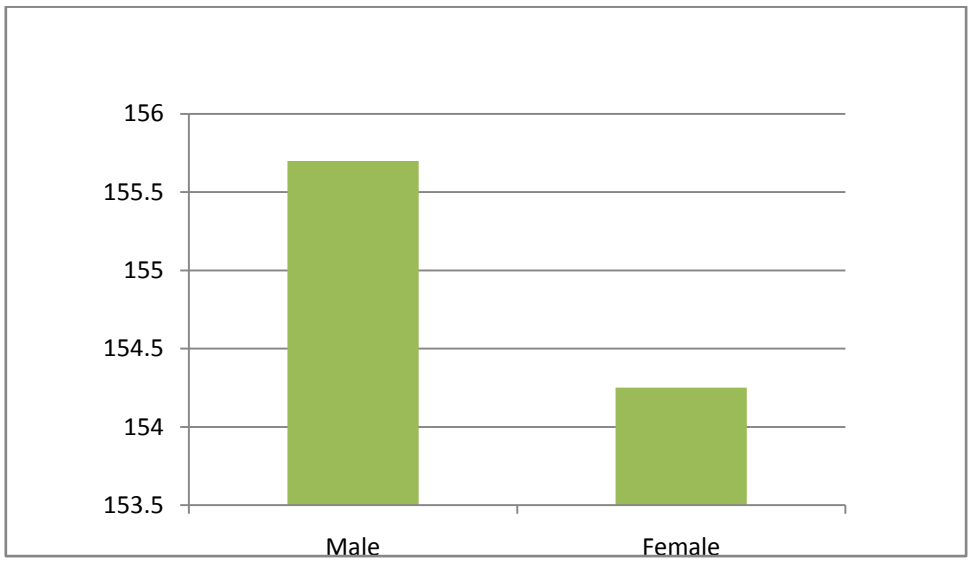

Figure 3: Mean Scores of the scientific attitude of the male and female urban students

There is a difference of 1.45 in the mean scores of the scientific attitude of the male and female urban students in favour of the male group as depicted in the table 4 and figure 3.This difference in the mean scores of the two groups is significant or not, t-value was calculated for the two groups and was found to be 0.589. The calculated t- value for the two groups for df=39 is even less than critical value of 1.96 at 0.05 level of significance and hence the null hypothesis "there is no significant difference in the scientific attitude of male and female urban students" is retained at 0.05 level. Therefore, it can be concluded that the difference in the scientific attitude of the male and female urban students is not significant.

FINDINGS AND CONCLUSION

The difference of 5.55 in the mean scores of the scientific attitude of the rural and urban students in favour of the rural group as depicted in the table 2 and figure 1 was ascertained to be significant or not by calculating t-value for the two groups and was found to be 1.991. The calculated t- value for the two groups for df = 79 is more than critical value of 1.96 at 0.05 level of significance and hence it can be concluded that the difference in the scientific attitude of the rural and urban students is significant at 0.05 level in favour of the rural students.

The difference of 7.95 in the mean scores of the scientific attitude of the rural male and female students in favour of the female group as depicted in the table 3 and figure 2was ascertained to be significant or not by calculating t-value for the two groups and was found to be 2.615. The calculated t- value for the two groups for df=39 is more than critical value of 2.58 at 0.01 level of significance and hence it can be concluded that the difference in the scientific attitude of the rural and urban students is significant at 0.01 level in favour of the rural female students.

The difference of 1.45 in the mean scores of the scientific attitude of the male and female urban students in favour of the male group as depicted in the table 4 and figure 3 was ascertained to be significant or not by calculating t-value for the two groups and was found to be 0.589. The calculated t- value for the two groups for df=39 is even less than critical value of 1.96 at 0.05 level of significance and hence it can be concluded that the difference in the scientific attitude of the male and female urban students is not significant.

The study indicates that the distribution of the scientific attitude among rural and urban students vary differently. The results show that the there is significant difference in the scientific attitude of the rural and urban school students in favour of the rural school students. The study also revealed no significant difference in the scientific attitude of the male and female school students of the urban area in Chandigarh. However, the study shows significant difference among the male and female students in favour of the female in the rural area of Chandigarh.

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