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Effect of Gender Difference on Scientific Attitude of School Going Adolescents: A Comparative Study

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ABSTRACT

Science is the greatest invention of mankind. It is the systematic process of gathering knowledge about the universe. The major contribution of science is to impart scientific attitude among the learners. Scientific attitude is the attitude of being objective in observation and thinking. An individual with scientific attitude, revive himself/herself in accordance with the new findings. Scientific attitude of a person never allows himself/herself to belief blindly without having complete evidences. It is the tendency to test everything in the light of convincing proof. Scientific attitude is the attitude of being logical. Science is changing our life in a faster way. This study explored the effects of gender on scientific attitude of secondary level adolescents of district Shamli in Uttar Pradesh. A sample of 200 students (100 males and 100 females) from 20 schools of district Shamli in Uttar Pradesh was used for the study. The scientific attitude scale questionnaire was used for data collection, while t-test was used for statistical analysis. The result of analysis showed that there was no significant difference between scientific attitude of adolescent boys and girls. Gender difference was found to have no effect on scientific attitude of school going adolescents.

1. Introduction

We are living in a modern world which we can call scientific world. The science has become an integral part of our life. As a citizen of this modern world we see the countless manifestations of science all around us. Science has entered in our life and daily activities so much that our existences without science become impossible. Science is liberating and enriching the mind and enlarging the human spirit. Science is the reason based sensation upon our awareness. Science has helped to improve quality as well as quantity in many aspects of life. Science is no longer confined to a few seriously devoted persons. Nobody questions its inclusion as a subject in the school curriculum. Science inculcates certain special values, which no other subject can provide. It is science alone that can solve the problems of hunger and poverty, in-sanitation and illiteracy, of superstitions and rigid customs and tradition, of vast resources running waste, of a rich country inhabited by the starving people.

Scientific attitude is the most important outcome of science teaching. Some people view the scientific attitude as the by-product of teaching science, yet a large number of people consider it as equally important as knowledge aspects. A scientific attitude was linked with "an ardent curiosity, fertile imagination and tone of experimental inquiry". Using controlled methods; scientists collect data in the form of observation, record the observable physical evidence of natural phenomenon and analyze this information to construe theoretical explanation.

It has restored eyes to the blind, hearing to the deaf, legs to lame, even life to dead to say. It has found out ways of health. By finding out new ways of hybridization, science has helped to improve the quality of life as well as quantity of animals and plants, thereby putting us on a better standard of living.

2. Objectives

Following were the objectives of the study.

1. To study the scientific attitude of school going adolescents boys.
2. To study the scientific attitude of school going adolescents girls.
3. To study the significant difference of school going adolescent boys and girls in relation to their scientific attitude.

3. Hypothesis

There is no significant difference between school going adolescent boys and girls in relation to their scientific attitude.

4. Delimitations

1. The study was delimited to rural and urban areas of only one district i.e. Shamli(U.P.).
2. The study was delimited to 200 school going adolescents.
3. The students were selected from various rural schools and urban schools of Shamli district of Uttar Pradesh.
4. The study was restricted to only one variable i.e. scientific attitude.

5. Operational Definitions

Attitude

Attitude is a mental set or disposition, readiness to respond and the psychological basis of their permanence, their learned nature and their evaluative character. Bohner & Wanke

(2002) stated that the attitude is a central part of human identity, everyday people love, hate, like, dislike, favour, appease, agree, disagree, argue, and persuade etc. all these are evaluative responses to an object. Hence attitude can be defined as a summary evaluation of object of thoughts. According to Eagly and Chaiken (1998), "A psychological tendency that is expressed of evaluating a particularly entity with some degree of favour or disfavour is attitude".

Adolescents

Adolescence (from Latin *adolescere*, meaning "to grow up") is a transitional stage of physical and psychological human development that generally occurs during the period from puberty to legal adulthood (age of maturity). Adolescence is a formative stage of life. The period of adolescence is most closely associated with the teenage years, though its physical, psychological and cultural expressions may begin earlier or later.

According to Rogers (1981), "It is a process rather than a period, a process of achieving the attitudes, the beliefs needed for effective participation in the society". Adolescence is also known as revolutionary period of human life from which the child develops into a man or a woman.

Jersild (1963) says "Adolescence is that span of years during which boys and girls move from childhood to adulthood mentally, emotionally, socially and physically".

Scientific Attitude

Scientific attitude means a spirit of true critical inquiry that demands the freedom to inquire, to question the prevailing ideas and to after modify or discard them in favour of new ones. In other words, it implies freedom of speech, academic freedom and freedom of the press (a critical attitude that discourage blind submission), rationality, and attentiveness of truth, objectively and humanism.

According to NSSE (1947), scientific attitude can be defined as "Open-mindedness, a desire for accurate knowledge, confidence in procedures for seeking knowledge and the expectation that the solution of the problem will come through the use of verified knowledge". Such qualities once developed will prove very beneficial in the alter life of the pupil.

Nair (1971) said that "Scientific attitude is characterized by intellectual honesty, objectivity in drawing conclusions, adoption of scientific and systematic procedure, open mindedness in receiving new ideas and facts, curiosity, readiness to reconsider one's own judgments, spirit of team work, self help and self reliance, intellectual satisfaction from scientific pursuits, economy in use of materials, honest recording and reporting of observation, faith in cause and effect relationship, pursuing activities with consistency, preparedness to face hardships and difficulties, a sense of dedication and faith in specialists in their respective fields".

6. Methodology

After preparing the conceptual background, the objective, the hypothesis and the delimitations of the study were decided. Broadly, normative survey method was followed. The data pertaining to the scientific attitude of the school going adolescents was determined by using science attitude scale. Statistical methods like mean, standard deviation and 't-test' were applied to analyze the scores and to find out requisite solutions pertaining to the various objectives delineated for the problem. Finally the data were interpreted and conclusions drawn.

Sample of the study

The sample of the present study comprised 200 students in all. Out of these, 100 were boys and 100 were girls. Out of 100 boys, 50 were from rural area and 50 were from urban area. Similarly, out of 100 girls, 50 were from rural area and 50 were from urban area.

Tool used

For the present investigation, questionnaire developed by **Dr. Sukhwant Bajwa** and **Monika Mahajan** from Department of Education, Punjab University Chandigarh was used as a tool. A questionnaire is a device consisting of a series of questions dealing with some psychological problems or issues. It contains 49 items. There are 28 negative items and 21 positive items.

Scoring of the questionnaire

Scientific Attitude Scale can be scored by hand. A positive item weighed of 5 for strongly agree **(SA)**, 4 for agree **(A)**, 3 for undecided **(UD)**, 2 for disagree **(D)** and 1for strongly disagree **(SD)**. Similarly a negative item weighed 1 for strongly agree **(SA)**, 2 for agree **(A)**, 3 for undecided **(UD)**, 4 for disagree **(D)** and 5 for strongly disagree **(SD)**.

7. Analysis and Interpretation of Data

To investigate the significance of difference between the means, if any, of the scientific attitude of school going adolescent boys and girls, the variables were assessed in terms of their scores in the Scientific Attitude Scale Test and the t-test was employed. The analysis of data is presented given below.

1. Significance of the difference between the mean scores of SAS among rural adolescent boys and girls: The table showing the Significance of the difference between the mean scores of SAS among rural adolescent boys and rural adolescent girls is given below. Table 1 revealed that the mean scores of Scientific Attitude Scale test among rural adolescent boys and girls are 157.88 and 157.90 and their standard deviation values are 15.57161 and 13.01373 respectively.

Table 1: Comparison of Scientific Attitude between rural boys and girls

Groups	N	M	Std. Deviation	Mean Difference M_1-M_2	SEd	t-value
RURAL BOYS	50	157.8800	15.57161	-0.0200	3.13642	-0.006
RURAL GIRLS	50	157.9000	13.01373			

The calculated value of t-value for the above set of data is -0.006 while the theoretical value for the same data at 0.05 level of significance is 2.010 and at 0.01 level of significance is 2.680. This shows that the t-value is not significant at 0.05 level

of significance as well as at 0.01 level of significance. This reveled that no significant difference exists between mean scores of Scientific Attitude Scale test among rural adolescent boys and girls.

2. Significance of the difference between the mean scores of SAS among urban adolescent boys and girls: The table showing the Significance of the difference between the mean scores of SAS among urban adolescent boys and girls is given below. Table 2 revealed that the mean scores of Scientific Attitude Scale test among urban adolescent boys and girls are 171.04 and 170.26 and their standard deviation values are 15.86803 and 14.33678 respectively. The calculated value of t-value for the above set of data is 0.402 while the theoretical value for the same data at 0.05 level of significance is 2.010 and at 0.01 level of significance is 2.680. This shows that the t-value is not significant at 0.05 level of significance as well as at 0.01 level of significance. This reveled that no significant difference exists between mean scores of Scientific Attitude Scale test among urban adolescent boys and girls.

Table 2: Comparison of Scientific Attitude between urban adolescent boys and girls

Groups	N	M	Std. Deviation	Mean Difference M_1-M_2	SEd	t-value
URBAN BOYS	50	171.0400	15.86803	0.7800	1.94187	0.402
URBAN GIRLS	50	170.2600	14.33678			

3. Significance of the difference between the mean scores of SAS among adolescent boys and girls: The table showing the Significance of the difference between the mean scores of SAS among adolescent boys and adolescent girls is given below. Table 3 revealed that the mean scores of Scientific Attitude Scale test among adolescent boys and adolescent girls are 164.46 and 164.08 and their standard deviation values are 16.98152 and 14.97114 respectively.

Table 3: Comparison of Scientific Attitude between adolescent boys and girls

Groups	N	M	Std. Deviation	Mean Difference M_1-M_2	SEd	t-value
ADOLESCENT BOYS	100	164.460	16.98152	0.38000	1.83555	0.207
ADOLESCENT GIRLS	100	164.080	14.97114			

The calculated value of t-value for the above set of data is 0.207 while the theoretical value for the same data at 0.05 level of significance is 1.99 and at 0.01 level of significance is 2.595. This shows that the t-value is not significant at 0.05 level of significance as well as at 0.01 level of significance. This reveled that no significant difference exists between mean scores of Scientific Attitude Scale test among adolescent boys and girls

8. Major findings of the study

After applying the statistical methods on collected data, the major findings of the study were as under.

1. The urban adolescent boys and girls do not differ in their level of scientific attitude. The mean scores of scientific attitude scale test were nearly equal for them.
2. The rural adolescent boys and girls do not differ in their level of scientific attitude. The mean scores of scientific attitude scale test were nearly equal for them.
3. The adolescent boys and girls do not differ in their level of scientific attitude. The mean scores of scientific attitude scale test were nearly equal for them.

9. Conclusion

The study in hand was conducted to find out the difference in scientific attitude of school going adolescent boys and girls. The present study shows that there is no significant difference between the scientific attitude of adolescent boys and girls. The urban boys were found to have similar scientific attitude to that of urban girls. Similarly the rural boys and rural girls were found to have similar scientific attitude. This shows that no significant difference in scientific attitude exist between boys and girls.

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