DO GENDER DIFFERENCES EXIST IN SCIENTIFIC ATTITUDE AND PROBLEM SOLVING ABILITY AMONG ADOLESCENTS?

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ABSTRACT

The present study was conducted to compare the Scientific Attitude and Problem Solving Ability among adolescent boys and girls. For this, a sample of 200 students (100 boys and 100 girls) of XI and XII was taken from the private schools of Ludhiana city. The data was analyzed by using t-ratio. The major finding of the study is that there exists significant difference between Scientific Attitude and Problem Solving Ability of Adolescent boys and girls.

INTRODUCTION

Human beings can solve any problem by applying intelligence. Success, efficiency and happiness in life depend to a large extent on the ability to solve problem. It is obvious enough that a child is not born with the ability but has to develop it in the course of his experience under the guidance of his parents, teachers and elders. Problem Solving is one such capacity which is a process of overcoming difficulties that appear to interfere with the attainment of a goal. For finding out solution to any problem, a person should be able to understand the relationship between cause and effect. He should have to give up outdated traditions, customs commonly known as superstitions. He should accept all thoughts on the level of facts and reality. Such a scientific approach should be developed in human beings. Scientific Attitude leads to the development of many abilities and one such ability is problem solving ability.

SCIENTIFIC ATTITUDE

Scientific Attitude is defined as ability (i) of critical thinking based on experiments, observations and conclusions and (ii) to critically judge the correctness or inappropriateness of the statements made about different forms of living organisms, objects, incidences and methods.

Munby (1983) defined scientific attitude as the thinking pattern generally characteristic of scientists such as objectivity, curiosity, questioning and justifying conclusions with evidences.

Vaidya (1999) explained that "Scientific Attitudes are open mindedness, curiosity, judgement based upon scientific facts alone, willingness to test and verify conclusions, faith in cause and effect relationship, honest reporting, rejection of the principle of authority and more faith in the books written by specialists in their respective fields etc".

OPERATIONAL DEFINITION

The science attitude has been operationally defined as generalized attitude toward the universe of science content and being measured in terms of its favourableness or unfavourableness estimated from the scores obtained by the subjects on an attitude scale toward science comprising of the four categories from the universe of content 'Science Attitude' (i) positive intellectual (ii) negative intellectual (iii) positive emotional and (iv) negative emotional attitudes.

PROBLEM SOLVING ABILITY

The productive work involved in the evaluation of the situation and the strategy worked out to reach one's set goals is collectively termed problem solving.

According to Skinner (1968), "Problem Solving is a process of overcoming difficulties that appear to interfere with the attainment of a goal. It is a process of making adjustment in spite of interferences".

Gagne (1985) defined problem solving as the "synthesis of other rules and concepts into

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higher order rules which can be applied to a constrained situation".

OPERATIONAL DEFINITION

Problem Solving is the frame-work or pattern within which creative thinking and reasoning take place. It is the ability to think and reason on given levels of complexity. People who have learned effective problem solving techniques are able to solve problems at higher levels of complexity than more intelligent people who have no such training. In general, the state of tension is created in mind when an individual faces a problem. He exercises his greatest effort and uses all his abilities, intelligence, thinking, imagination, observation etc.to solve the problem.

OBJECTIVES OF THE STUDY

1. To study the Scientific Attitude among Adolescents.
2. To study the Problem Solving Ability among Adolescents.
3. To find out the difference between Scientific Attitude among Adolescent boys and girls.
4. To find out the difference between Problem Solving Ability among Adolescent boys and girls.

HYPOTHESES OF THE STUDY

1. There exists no significant difference between Scientific Attitude of Adolescent boys and girls.
2. There exists no significant difference between Problem Solving Ability of Adolescent boys and girls.

DESIGN AND SAMPLE OF THE STUDY

In the present study, descriptive and survey method of investigation was employed on a randomly selected sample of 200 students (100 boys and 100 girls) of XI and XII of private schools of Ludhiana city.

TOOLS USED

I. Science Attitude Scale (SAS-GA) by Dr. (Mrs.) Avinash Grewal.

II. Problem Solving Ability Test (PSAT) by L.N. Dubey.

STATISTICAL TECHNIQUE USED

To find out significant difference between means, t-ratio was employed.

ANALYSIS AND INTERPRETATION OF DATA

Table-1 Significance of the Difference between Means of Scientific Attitude of Adolescent Boys and Girls

S.No.	Group	Variable	N	M	S.D	SE_M	t-ratio
1.	Boys	Scientific Attitude	100	48.33	8.33	0.83	3.32**
	Girls		100	44.61	7.49	0.75	

**** Significant at .01 level**

Table-1 revealed that the mean scores of scientific attitude of adolescent boys and girls are 48.33 and 44.61 respectively and their standard deviations are 8.33 and 7.49 respectively. The t-ratio is 3.32 with df =198 which is significant at 0.01 level of confidence. This revealed that a significant difference exists between Scientific Attitude of adolescent boys and girls. Therefore the hypothesis 1 stating that there exists no significant difference between Scientific Attitude of adolescent boys and girls stands rejected. Again as the mean score of adolescent boys is significantly higher than that of adolescent girls on the variable of scientific attitude, it may be further concluded that boys have higher scientific attitude than their female counterparts.

Fig. 1 Bar Graph showing Difference between Means of Scientific Attitude of Adolescent Boys and Girls

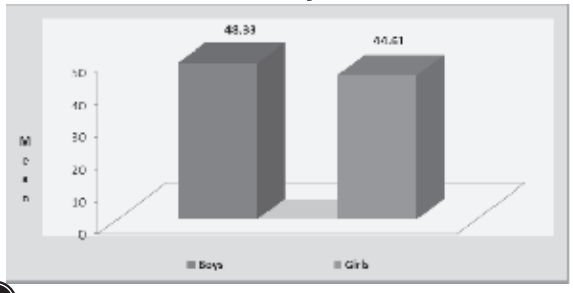


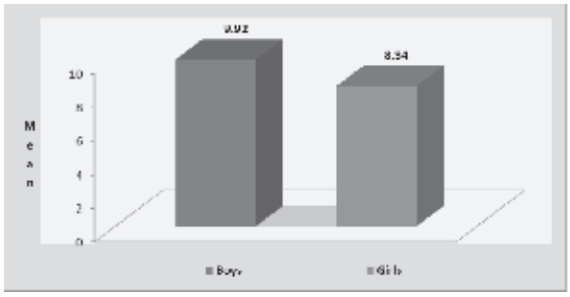
Table-2 Significance of the Difference between Means of Problem Solving Ability of Adolescent Boys and Girls

S.No.	Group	Variable	N	M	S.D	SE_M	t-ratio
1.	Boys	Problem Solving Ability	100	9.92	3.33	0.33	3.40**
	Girls		100	8.34	3.24	0.32	

**** Significant at .01 level**

Table-2 revealed that the mean scores of problem solving ability of adolescent boys and girls are 9.92 and 8.34 respectively and their standard deviations are 3.33 and 3.24 respectively. The t-ratio is 3.40 with df =198 which is significant at 0.01 level of confidence. This revealed that a significant difference exists between mean scores of Problem Solving Ability of adolescent boys and girls. Therefore the hypothesis 2 stating that there exists no significant difference between Problem Solving Ability of adolescent boys and girls stands rejected. Again as the mean score of adolescent boys is significantly higher than that of adolescent girls on the variable of problem solving ability, it may be further concluded that boys have higher problem solving ability than their female counterparts.

Fig. 2 Bar Graph showing Difference between Means of Problem Solving Ability of Adolescent Boys and Girls



CONCLUSIONS

1. There exists a significant difference between scientific attitude of adolescent boys and girls. As the mean score of adolescent boys is significantly higher than that of adolescent girls on the variable of scientific attitude, it may be concluded that boys have higher scientific attitude than their female counterparts. The result is in line with study of Srivastava (1980) and Budhdev (1989).
2. There exists significant difference between mean scores of problem solving ability of adolescent boys and girls. As the mean score of adolescent boys is significantly higher than that of adolescent girls on the variable of problem solving ability, it may be concluded that boys have higher problem solving ability than their female counterparts. The result is in tune with studies by Mary Jose, Nisha and Thomas, Rinal P (2011) and Gnanadevan and Selvaraj (2013).

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