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Gender as a Predictor of Difference in Problem Solving Ability of the Students

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Volume: 6

Issue: 4

Month: April

Year: 2019

ISSN: 2321-788X

Received: 16.03.2019

Accepted: 30.03.2019

Published: 02.04.2019

Citation:

Jakhar, Lilu Ram.
“Gender as a Predictor of Difference in Problem Solving Ability of the Students.” *Shanlax International Journal of Arts, Science and Humanities*, vol. 6, no. 4, 2019, pp. 52–55

DOI:

<https://doi.org/10.34293/sijash.v6i4.342>



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Abstract

Problem solving is one of the basic requirements for the adjustment and social well-being of an individual. The present study was conducted to ascertain whether there exists a difference in the problem solving ability of the students studying at the secondary stage on the basis of gender. The results of the study showed that the mean score on the problem solving ability test of the boys was 10.14 whereas the mean score on the problem solving ability test of girls was found to be 10.40. The difference in the mean scores of the problem solving ability was determined by applying a t-test and was found to be 0.26. This indicates that there is no significant difference in the problem solving ability of the students on the basis of gender at the secondary level.

Keywords: Gender, Difference, Reasoning, Problem Solving Ability, Secondary, Significant, t-test

Introduction

Problem solving is a situation for which the individual has no ready-made solution and the state of tension crops up in mind as and when an individual faces a problem. The person makes great effort and uses all the abilities, intelligence, thinking, creativity etc. to find an appropriate solution. Few individuals are able to solve problems sooner than others. The problem solving ability refers to the individual's capability to observe and analyze the causes of the problem at hand and tries to seek its solution. Problem solving is a unique framework or pattern of creative thinking and reasoning that takes place in the mind. The state of tension aroused by unsatisfied wants drives the individual to make efforts and motivate him to use his language and abilities such as observation, prediction, and inference to surmount the difficulties that interfere in the progress towards his goal of problem solving. Problem solving ability ranges from average ability to highest ability depending upon the difficulty level of the problem. Dubey (1971) found that the persons having higher intelligence and reasoning ability can solve the complex problems quickly. Dubey (2010) stated that problem solving is a process of overcoming difficulties that seems to interfere with the attainment of a desired goal. Simple problems can well be solved by instinctive characteristics and habitual behavior, whereas more difficult problems require a series of serious efforts till the solution is reached. However, complex problems require a greater degree of understanding and perception of the relationship between the significant factors of a problem. Different researchers have presented different views regarding the role of gender in determining the problem solving ability of the adolescents. Results of researches in the field are quite conflicting. The results of a study by Becker and Forsyth (1994) indicated fairly consistent differences in males and females in the score distributions in problem solving in mathematics and science. The study of Ajai and Imoko (2015) found that performance in problem solving is a function of orientation and not of gender.

This study revealed that when the male and female students were taught algebra using problem based learning there was no significant difference observed in mean achievement and retention scores, thereby showing that male and female students are equally capable of competing and collaborating in mathematics. Astur, Purton, Zaniewski, Cimadevilla and Markus(2016) found that problem solving ability is more in males as compared to their female counterparts. Mefoh, Nwoke, Chukwuorji and Chijioke(2017) also corroborated the results of Astur, Purton, Zaniewski, Cimadevilla and Markus(2016) and found that male had significant advantage in solving problem as compared to the female. The study of Cakir(2017) found that problem-solving ability of female participants in the research was found to be higher than male participants. The study of Sebastian (2017) showed that male and female students have no significant difference in conceptual difficulties in problem solving but male students have higher computational understanding than female students in problem solving. Sirait, Sutrisno, Balta and Mason (2017) found that most of students have the same attitudes and approaches in problem solving. Thus the results of most of studies are quite scattered and are in disagreement and need to relook it from the perspective of gender.

Rationale of the Study

The students' choice for different courses of study depends upon their problem solving skills and also the awareness about different career options. The success of an individual in a career is determined by the problem solving ability of the individuals. Each one of us take initiative and uses creativity to solve problems in daily life. The challenges one may face in his professional career are likely to be complicated than simple problem solving skills, however the skills and processes one uses to come out with definite solutions largely remains the same. Solution of a problem depends on the ability of an individual to analyse a situation and deciding on a suitable course of action. As boys and girls have different manners of solving problems. The different approach of problem solving followed by male and female may be due to their characteristic personality traits or may be due to their other ability differences.

To explore this, the present study was planned to find the difference in problem solving ability of the students with regards to the gender.

Objectives of the Study

1. To find the mean score of problem solving ability of secondary school girls.
2. To find the mean score of the problem solving ability of secondary school boys.
3. To study the difference in problem solving ability of secondary school girls and boys.

Hypothesis of the Study

The following null hypothesis was tested in the study:

H_0 : There exists no significant difference in problem solving ability of the boys and girls secondary students.

Design and Procedure of The Study

The chief aim of the study was to find the difference in problem solving ability of the secondary stage students with respect to their gender. The present study was carried by employing the descriptive research method and survey techniques. Also, this study was confined only to the variable of problem solving ability and is based on the field survey carried out in 2017. The sample of the study selected randomly from the government schools of Chandigarh. Initially four schools were selected from all the government schools and then in next stage two sections selected randomly from each of the selected schools. The total sample consisted of 400 students and divided equally among boys and girls. The standardized tool used to conduct the research was the Problem Solving Ability test by L. N. Dubey (2010). The tool was administered to the target population i.e. 200 boys and 200 girls selected randomly from classes IX and X according to the gender, thereby fulfilling all the requirements mentioned in the manual.

Analysis and Interpretation of the Results

The data so collected by using the designated tool was analysed by employing descriptive as well as inferential statistics. The results thus obtained were interpreted as per the standard procedure prescribed

in the manual accordingly. The data concerning the Problem Solving Ability test for the total sample was analysed and the mean scores computed for boys as

well as girls and is shown in table 1 below. Table 1 also depicts the t-value to highlight the difference in problem solving ability of boys and girls.

Table 1 Difference in Mean Scores of the Problem Solving Ability of Boys and Girls

Variable	Gender	N	Mean Score	S. D.	t- value	Remark
Problem Solving Ability	Boys	200	10.14	2.39	0.257	*Not Significant
	Girls	200	10.40	2.57		

(*critical t-value= 1.653 at 0.05 level and critical t-value =2.345 at 0.01 level at df=199)

Source: Field Study 2017

The mean scores of problem solving ability for both the genders are graphically presented in the figure 1 below.

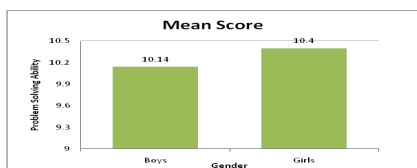


Figure 1: Bar Graph Showing Mean Scores of Problem Solving Ability of Boys and Girls

From the table 1 and fig.1, it is evident that the mean score of the Problem Solving Ability of boys is 10.14 and that of the girls is 10.40. This shows that there seems difference in the scores of problem solving ability test scores of boys and girls and the difference is favorable towards girls' students.

To find out the significance of difference of scores on problem solving ability of the boys and girls, t-test was employed and the t-value observed is 0.257, which is even less than table value of 1.653 at 0.05 level of significance. Hence the hypothesis "there exists no significant difference in problem solving ability of the boys and girls secondary students" is retained at 0.05 level of significance. Therefore the study reveals that the difference of 0.26 between the means of girls and boys on the learning style inventory is not significant even at 0.05 level of significance.

This shows that the boys and girls possess similar problem solving abilities. The problem solving is thus is not determined by the biological factors of the individual, rather other factors of the personality might be responsible for the processing skills. The role of the social environment, home environment, school climate, language comprehension along with

growth and development history cannot be ruled out in determining the problem solving ability of the individual.

The important implication of the study is the high dropout rate of in enrolment in higher education could be due to low level of problem solving ability among the secondary students. Another implication is that the study breaks the traditional line of thought that girls are poor problem solvers whereas the study shows that problem solving ability among girls is higher than boys.

Conclusions

The unsatisfied wants or desires creates uneasiness in the mind that derives the individual to make efforts and motivates him to use his language and abilities such as observation, prediction, and inference to surmount the difficulties that interfere in the progress towards his goal of problem solving. The data analysis and hence the interpretation of results of the study reveals that: i) there is a difference of 0.26 in the mean scores of problem solving ability scores of the secondary stage girls and boys, ii) there is no significant difference in the problem solving ability of the secondary level student with regards to the gender. The results of the study were found contrary to the researches of Becker and Forsyth (1994), Astur, Purton, Zaniewski, Cimadevilla and Markus (2016) and Mefoh, Nwoke, Chukwuorji and Chijioko (2017) showing that males possess more problem solving ability than females whereas the study of Cakir (2017) found that females possess more problem solving ability than males. The results of the present study are in conformity with the results obtained by Ajai and Imoko (2015), Sebastian (2017) and Mason (2017). The study suggests that the

gender have no significant bearing on the problem solving ability of the secondary students.

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