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Impact of Gender on Problem Solving Ability

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Abstract: Everyone of us is constantly facing one problem or the other. There are needs and motives that ought to be satisfied. For this purpose definite goals or aims are set. In an attempt to realize them, one experiences obstacles and interferences. It poses a problem for him that needs serious attention and a deliberate effort on his part to overcome the obstacle or interference in the attainment of the objectives. For this purpose, one has to set oneself to think, reason and apply intelligence and proceed systematically in a scientific manner. The productive work as a whole discussed above is known as problem-solving. The present research done shows that gender has no significant impact on the problem solving ability of students. Many complex variables including biological, psychological and environmental variables are revealed to contribute to gender differences in problem solving ability in some specific areas.

Keywords: Problem solving ability, Gender growth

Introduction

Different children have different I .Q. level and according to that different problem solving ability that affects their academic achievement. Hence research related to the area of problem solving ability is ever growing concern of researchers. It is generally believed that a person with high intelligence level have high academic achievement and problem solving ability. Problem solving is the key to success and has been regarded as the most significant aspect of human behaviour. One of the major aims of education is to enable the individuals to handle a situation. No two individuals are like. There are individual differences in the problem solving ability. Some individual's life is spent in a struggle to find effective solution to his problems. A student having good problem solving ability will be properly adjusted in the class as well as at home. A problem cannot be solved without thinking. The need of problem solving behaviour is to create the power of thinking which helps to find out the solution of the problem. The main objective of problem solving is to go through the physical, psychological, social and environmental factors which hinder the progress of an individual to attain certain goals.

Problem: The Concise Oxford Dictionary (1995) defines a problem as: **"***A doubtful or difficult matter requiring a solution*" and "*Something hard to understand or accomplish or deal with."* All problems have two features in common: goals and barriers.

Goals: Problems involve setting out to achieve some objective or desired state of affairs and can include avoiding a situation or event. Goals can be anything that you wish to achieve, where you want to be. If you are hungry then your goal is probably to eat something, if you are a head of an organisation (CEO) then your main goal may be to maximise profits.

Barriers: If there were no barriers in the way of achieving a goal, then there would be no problem. Problem solving involves overcoming the barriers or obstacles that prevent the immediate achievement of goals. Following our examples above, if you feel hungry then your goal is to eat. A barrier to this may be

that you have no food available - you take a trip to the supermarket and buy some food, removing the barrier and thus solving the problem. Of course for the CEO wanting to increase profits there may be many more barriers preventing the goal from being reached. The CEO needs to attempt to recognise these barriers and remove them or find other ways to achieve the goals of the organisation.

Stages of Problem Solving

Effective problem solving usually involves working through a number of steps or stages, such as those outlined below:

Problem Identification: This stage involves: detecting and recognising that there is a problem; identifying the nature of the problem and defining the problem.

Structuring the Problem:

This stage involves: a period of observation, careful inspection, fact-finding and developing a clear picture of the problem.

Looking for Possible Solutions: During this stage you will generate a range of possible courses of action, but with little attempt to evaluate them at this stage.
Making a Decision: This stage involves careful analysis of the different possible courses of action and then selecting the best solution for implementation. Finally, make a decision on which course of action to taken.
Implementation: This stage involves accepting and carrying out the chosen course of action. Implementation means acting on the chosen solution. During implementation more problems may arise especially if identification or structuring of the original problem was not carried out fully.
Monitoring/Seeking Feedback: The last stage is about reviewing the outcomes of problem solving over a period of time, including seeking feedback as to the success of the outcomes of the chosen solution.

The final stage of problem solving is concerned with checking that the process was successful. This can be achieved by monitoring and gaining feedback from people affected by any changes that occurred. It is good practice to keep a record of outcomes and any additional problems that occurred.

Factors that contribute to gender differences in problem solving

Many factors were suggested by researchers to make a contribution to gender difference in problem solving. A main line of research has focused on the gender differences in problem solving abilities. In this area, spatial abilities were of major concern.

Cognitive abilities: Since 1974 when three cognitive abilities (verbal, quantitative and visual-spatial abilities) were identified. Examples of these are given below:

Spatial abilities: Spatial abilities generally refer to skill in representing, transforming, generating and recalling symbolic, nonlinguistic information. “Spatial skills involve the ability to think and reason using mental pictures rather than words”. Spatial intelligence is the ability to think in three dimensions. Core capacities include mental imagery, spatial reasoning, image manipulation, graphic and artistic skills, and an active imagination. Sailors, pilots, sculptors, painters, and architects all exhibit spatial ablities. Since observed patterns of mathematical problems solving for each gender may depend on the measure used in studies, this factor may need to be carefully examined.

Verbal abilities: The contribution of verbal skills to mathematical problem solving is evident. Many mathematics problems can be solved either by a spatial solution, or using a verbal approach .

Quantitative abilities: Quantitative ability to means to calculate, quantify, consider propositions and hypotheses, and carry out complete mathematical operations. It enables us to perceive relationships and connections and to use abstract, symbolic thought; sequential reasoning skills; and inductive and deductive thinking patterns. They are drawn to arithmetic problems, strategy games and experiments.

Various researches has shown that gender has no impact on problem solving ability

It is found that there is a significant relation between process outcomes in biology and attitude towards problem solving in maths, science, science interest and achievement motivation. No significant difference was seen among rural and urban students and among boys and girls.

Zheng Zhu (2007): A large body of literature reports that there are gender differences in mathematical problem solving favouring males. A reflection of different patterns in mathematical problem solving between genders, is found to be related to cognitive abilities, together with psychological characteristics and mediated by experience and education. Many complex variables including biological, psychological and environmental variables are revealed to contribute to gender differences in mathematical problem solving in some specific areas. This article suggests that the combined influence of all affective variables may account for the gender differences in mathematical problem solving patterns.

Biswajit Behera (2009): studied problem solving skills in mathematics learning, the major findings were:

1. The mean difference between high ability and low ability groups, between boys and girls within each ability group is quite large.
2. Students with high mathematical ability are far superior in mathematical problem solving skill to their counter parts in the lower ability irrespective of their gender.

Renu gupta (2013): Studied problem solving ability and academic achievement among the students belonging to scheduled tribe and scheduled caste categories. The present study was conducted to ascertain the main and interactional effects of Sex and Caste on the problem solving ability and academic achievement of students. A random sample of 200 students (Boys and Girls) belonging to scheduled tribe and scheduled caste categories was selected from govt. high schools of urban areas of Jammu District. Problem Solving Ability Test prepared and standardized by Dr. L.N. Dubey, Professor Deptt. of Psychology, University of Agra was administered to all of them individually and regarding the academic achievement, the investigator obtained annual examination marks of previous two classes (VIII and IX). The marks were pooled together, added and then percentages found in order to obtain academic achievement index scores of boys and girls belonging to scheduled tribe and scheduled caste categories. The data was analyzed by using two-way analysis of variance technique (ANOVA). The results revealed that Sex and Caste had significant impact on the problem solving ability of students. Sex had no significant impact on the academic achievement of students. Caste had significant impact on the academic achievement of students. However, no interactional effect of sex and caste was found on the problem solving ability and academic achievement of students.

Conclusion

After studying the above researches it is concluded that several efforts on problem solving ability have been made and the findings of these researches were helpful in our existing research. The studies related to impact of gender in problem solving ability indicates that there is found no significant difference in the problem solving of boys and girls.

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