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Problem Solving Ability Among Government Higher Secondary School Students Based On Gender

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Abstract

This study aims to investigate the problem-solving ability of Government Higher Secondary School students in Thrissur District. The ability to solve problems is a critical cognitive skill necessary for effectively tackling the difficulties and complexities of modern life. It gives people the ability to think critically, come up with answers and make wise choices that will affect their success in the classroom, on the personal level, and in society at large. However due to a variety of socio-cultural influences, the way in which problem-solving talents develop and manifest might differ greatly among distinct people. This study compares the problem-solving ability of Higher Secondary School students in Thrissur District, which is located in the culturally diverse Indian state of Kerala. This study examines the ways in which Boys and Girls students differ in this crucial skill. Thrissur District provides an intriguing background for our investigation because of its distinct demographic mosaic. The study investigates the problem-solving abilities of students focusing on gender differences. The sample for the study was chosen from five Higher Secondary Schools in the Thrissur District. There were 180 students in the sample. 88 female students and 92 male students were selected. L.N. Dubey's Problem Solving Ability Test (PSAT) was employed as a data collection tool. The data were examined using the mean and t-test. The study's conclusions showed that there was no discernible gender difference and that Government Higher Secondary School students had a high aptitude for solving problems.

Keywords: *Problem Solving Ability,Government Higher Secondary Students, gender*

PROBLEM SOLVING ABILITY AMONG GOVERNMENT HIGHER SECONDARY SCHOOL STUDENTS BASED ON GENDER

The most fundamental need for any human being is education. It aids in a person's development so that he can adapt mentally, emotionally, and physically to this intricate and dynamic culture. The people who work with students during this critical period are their families and teachers. As they transition from infancy to adulthood, adolescents must deal with a variety of challenges related to their physical, emotional, and social development, among others. An individual's entire personality is substantially impacted by all of the ongoing events in their environment. When an issue arises, a person makes every effort and uses every skill, including reasoning, creativity and observation, to find a solution. To solve a problem is to be able to reason at a certain level of complexity. It is only a procedure for resolving challenging or complicated problems. The ability to recognize and characterize a problem come up with potential solutions, assess and choose the best one and put the chosen solution into action are all parts of the problem-solving ability. Students with higher problem-solving skills can therefore function better in everyday situations. The ability to solve problems depends on both the environment and the immediate surroundings. Therefore one might conclude that youngsters need to be taught problem-solving techniques from an early age.

One such skill is the ability to solve problems, which is the process of getting beyond obstacles that seem to stand in the way of achieving a goal. The capacity to solve problems is a process or action that involves determining the optimal value for an unknown under particular conditions. It's a way for someone

to meet the needs of an unknown scenario by drawing on prior information, abilities, and comprehension. The definition of problem solving ability is a higher-order cognitive function that calls for the regulation and control of more routine basic talents. All easier learning is thought to contribute to the development of problem solving skills and reflective thinking. It necessitates reasoning, which is what all easier learning leads to. It calls for reasoning capacity, which is what makes intellectual activity unique. The ability to solve problems arises as soon as the problem is recognized by the problem solver and is directed towards achieving the objective that the problem has stated. According to Meyers (1980), problem solving is a multi-step process in which the issue solver must first identify connections between the current situation and prior experiences (schema) before coming up with a solution. Mayer proposed three qualities of problem solving ability: (1) It is derived from behaviour but is cognitive. (2) The ability to solve problems leads to actions that produce an answer. (3) The ability to solve problems entails manipulating or operating on prior knowledge. According to Mayer and Wittrock (2006), "cognitive processing directed at achieving a goal when no solution method is obvious to the problem solver" is what problem solving is.

Every state in India has a Department of Education that oversees the operation of its own educational system, complete with textbooks and assessment tools. The SCERT in the state makes most of the decisions about the curriculum, pedagogy, and assessment strategy, adhering to the national standards established by the NCERT. There are three types of state-approved schools in each state. The government manages its schools on government-owned property and pays its employees using public funds. Most people refer to these as government schools. These schools have very affordable tuition. There are also privately held schools that have their facilities and grounds. Management pays the teachers here, and the fees are quite hefty. These schools primarily serve middle-class urban households. The third category includes schools that receive government grants-in-aid even though they were founded by private organizations on their property and with their buildings. The purpose of the grant-in-aid is to assist in lowering the cost and enable low-income families to send their kids. Therefore based on the conversation above it was determined to try researching higher secondary school student's problem-solving skills in Thrissur District of Kerala with gender.

Need and Significance of the Study

Problem-solving ability is crucial for navigating life's complexities. Previous studies have highlighted the significance of problem-solving skills for academic achievement and overall development. This study aims to explore gender differences in problem-solving abilities among Government Higher Secondary School Students in the Thrissur District, Kerala. The realization that comprehending and resolving differences in problem-solving skills is essential for promoting educational equity and allowing every student to succeed serves as the driving force for this research. The investigators wanted to know if there are any notable differences between the problem-solving abilities of boys and girls in the Thrissur District. The goal of this research is to make a significant contribution to the disciplines of sociocultural studies, psychology, and education. It aims to clarify the complex relationship between social environment and cognitive development, illuminating the elements that could influence problem-solving abilities. The outcomes of this study may influence educational policies and practices more broadly. They may also guide interventions meant to promote fair educational opportunities for kids from a variety of backgrounds. Here problem solving ability refers to assessing a student's capacity to pick up new information or comprehend a challenging scenario. It also encompasses the abilities of students their degree of knowledge application to control their surroundings and their capacity for abstract thought as determined by objective standards. We deal with a variety of issues in our everyday lives some of which may be more complex than others depending on our lifestyles. We make every effort to resolve these issues as best we can on our own. Only appropriate thinking and reasoning which rely on an individual's level of intelligence can provide the correct solution to a problem. "Problem Solving Behavior occurs in Novel or Difficult Situations in Which a Solution is Not Achievable by the Habitual Methods of Applying Concepts and Principles Derived from Past Experience in Very Similar Situations" (Woodsworth and Marquis 1948).The study "Problem Solving Ability:

Significance for Adolescents" was carried out by Devi and Hooda (2014). The study's conclusions showed that parents should support their kids in discovering autonomous solutions to challenges at their own speed.The study "Effect of problem solving ability on the achievement in mathematics of high school students" was carried out in 2014 by Mehraj Ahmed Bhat. When sex was removed as a demographic variable, the study's results showed that problem-solving skills are the best indicator of high school students' mathematical achievement. A study titled "Problem Solving Ability among Senior Secondary School Students of Himachal Pradesh" was carried out by Agnihotri (2015). The study's conclusions showed that, in comparison to students in the Arts stream, students in the Science and Commerce streams are better at addressing problems.The study "Effect of Problem Solving Ability on Academic Achievement of High School Students: A Comparative Study" was carried out in 2015 by Gupta, M., Pasrija, P., and Kavita. The study's conclusions showed that academic attainment was significantly influenced by problem-solving skills and that female students outperformed male students in this regard. "Problem Solving Ability of Secondary School Students in relation to their attitude towards Mathematics" was the subject of a study done in 2015 by Dr. Ehtesham Anwar. Students' attitudes towards mathematics and their capacity for problem solving in secondary school were found to be somewhat correlated. The study "Problem Solving Ability and Achievement Motivation among Secondary School Students" was carried out in 2018 by Praveen G. Manoj and R. Smitha. The study's conclusions showed that adolescent problem-solving skills are not significantly different based on their gender, location, or type of institution. A study on creativity and problem-solving skills among Upper Secondary students was carried out by Kumar, M. (2020). The study's conclusions showed that upper secondary pupils have a high degree of problem-solving proficiency. A study on the problem-solving skills of higher secondary school students in the Puducherry region was carried out by Kamatchi & Stanly in 2021. The study's conclusions showed that pupils in upper secondary schools struggle to solve problems. pupils from science streams, rural pupils, and higher secondary private school students are better at solving problems. The study "Problem Solving Ability and Academic Achievement on Mathematics Among IX Standard Students" was carried out in 2021 by Sathishkumar & Prema. According to the study's findings, girls and students from rural regions are more adept at addressing problems. Additionally, it was discovered that government school pupils are less adept at addressing problems. Additionally, it was discovered that government school pupils are less adept at addressing problems. This previously mentioned research shows that an individual's capacity for problem-solving varies depending on their upbringing.

The goal of the current study is to determine the level of problem-solving ability among Higher Secondary School students in Thrissur district. To further enhance government schools, it is also necessary to compare and solve problems pertaining to gender in male and female Higher Secondary School students. In general, Higher Secondary School students range in age from 16 to 18. The adolescent years are characterized by the development of emotional, social, and cognitive changes. The process of thinking can be very challenging at times. Adolescent learners encounter numerous challenges in their daily lives and attempt to find solutions. It cannot be completed through independent thought. Even yet, there are numerous subjects to learn in school. The ability to think critically is necessary to address a variety of issues in both daily life and academic pursuits.It is the duty of the instructor to assess each student's proficiency in problem solving to determine the level of assistance each student needs. Do male and female students vary in any way? is a crucial query. Studying Higher Secondary School students' problem-solving skills is so essential. Studies on the capacity for problem-solving have been conducted both domestically in India and beyond. Teachers of mathematics may find the research study on the problem-solving skills of Government Higher Secondary School students to be beneficial in their instruction. Since problem solving is mostly a cognitive function, the study's findings can provide detailed insight into the characteristics of its participants. The researchers believed that further research in such areas is necessary and hence the study is carried out.

Definitions of key terms

Problem Solving Ability

"Problem solving involves a series of mental computations, so a theory of problem solving must specify the specific mental process used to solve a problem as well as the methods that problem solvers employ for selecting and controlling their cognitive process." Gardener (1985)

In the present study, Problem Solving Ability refers to The skill of the students in understanding and analyzing a problem and applying scientific knowledge and methods to solve the problem. Gagne's model of the hierarchy of learning has identified problem solving as a kind of learning that requires internal events usually called thinking. Problem solving is recognized to be at the highest level of learning. Development of Problem Solving capabilities must be regarded as the main practical concern of theory and research. In the present study, Problem-solving ability refers to the capacity to identify analyze and resolve problems efficiently and effectively. It involves a combination of cognitive skills such as critical thinking, creativity, logic, and reasoning as well as practical skills like decision-making and resourcefulness.

Government Higher Secondary Students

"Government Higher Secondary Students" typically refers to students enrolled in higher secondary education (grades 11 and 12) in government-run or public schools. These students are typically between the ages of 16 and 18, although this can vary depending on the educational system and country.

Gender

Gender refers to the social, cultural, and psychological characteristics, roles, and expectations associated with being male, female, or non-binary. It is distinct from biological sex, which is based on physical attributes such as chromosomes, hormones, and reproductive organs.

Objectives of the Study

The objectives of the research are as follows

To find out the level of Problem-solving ability of Governments Higher Secondary School Students in the Thrissur District.

To find out the level of Problem-solving ability of male students of Governments Higher Secondary School in the Thirussur District.

To find out the level of Problem-solving ability of female students of Governments Higher Secondary school in the Thrissur District.

To compare problem solving ability of Government Higher Secondary School students in relation to gender.

Hypothesis

There is no significant difference between problem-solving ability of male and female students of Government secondary school students in Thrissur District.

Methodology

For this study, the investigators used a descriptive survey approach to gather data on Higher Secondary school Student's capacity for problem-solving.

Population And Sample

The study employed a descriptive survey method to collect data from Higher Secondary School Students. A sample of 180 Higher Secondary School students was selected through incidental sampling. These 180 students were enrolled in the eleventh grade in the five schools of Thrissur District.

Tools Used

PSAT-d (English version) consumable booklet.

Reliability

The test's reliability coefficient was determined using two different methods: The Kudar-Richardson formula (the rational equivalent approach) yielded a reliability coefficient of.76, while the Spearman-Brown formula (the split-half method) yielded a reliability coefficient of .78.

Validity

The Group Intelligence Test (R.K Tondon) and the Test of Reasoning Ability yielded scores of .68 and

.85 respectively according to correlation analysis. The L.N. Dubey Problem Solving Ability Test was utilized as the research tool. Descriptive statistics and t-tests were used for data analysis.

Data Collection

The researchers visited five randomly chosen Higher Secondary Schools in Thrissur district to get permission from the principal to administer the tool with class XI sample students. The investigators established a solid rapport with the children and gave the test after obtaining authorization. The test results were gathered and recorded in their raw form for additional examination.

Data Analysis

The hypothesis was tested using t-test statistical analysis. To determine the student's degree of problem-solving ability, percentage and mean were used.

Analysis and Interpretation

The following analysis and interpretation were conducted in accordance with the study's objectives:

1. **To investigate the level of Problem-solving ability of Governments Higher Secondary School Students in the Thrissur District**.

   Table 1 shows the results of the analysis and interpretation of the scale's scores which were conducted in accordance with the guidelines included in the scale's manual to determine the problem-solving ability of Higher Secondary School students in Thrissur district.

Table 1: **Level of Problem-solving Ability of Government Higher Secondary School Students**

Sl No	Level of PSAT	Number of students	Percentage
1	Very High Ability	84	46
2	High Ability	42	23.2
3	Average Ability	32	18.7
4	Low Ability	10	5.5
5	Very Low Ability	12	6.6

Based on an analysis of Table 1, it was observed that 46% of students have a very high problem-solving ability 23.2% have a high ability 18.7% have average ability 5.5% have a low ability and 6.6% have a very low ability.

2. To investigate the level of Problem-solving ability of government higher secondary school Male students in Thrissur District.

Table 2 shows the results of the analysis and interpretation of the scale scores, which were conducted in accordance with the guidelines provided in the scale manual, to determine the degree of problem-solving ability of male students enrolled in government higher secondary schools in Thrissur district:

Table 2: **Level of Problem-solving ability of government higher secondary school Male students in the Thrissur District.**

Sl No	Level of PSAT	Number of students	Percentage
1	Very High Ability	44	47.8
2	High Ability	22	23.9
3	Average Ability	16	17.3
4	Low Ability	6	6.5
5	Very Low Ability	4	4.5

Based on an analysis of Table 2, it was observed that 47.8% of students have very high problem-solving ability followed by 23.9% with high ability Meanwhile 17.3% of students have average ability 6.5% have low ability and 4.5% have the very low ability.

3. To investigate the level of Problem-solving ability of government higher secondary school female students in Thrissur District.

Table 3 presents the results of the analysis and interpretation of the scale's scores, which were conducted in accordance with the guidelines included in the scale's manual, to determine the problem-solving ability of higher secondary school students in Thrissur District.

Table 3: Level of Problem-solving ability of government higher secondary school female students in Thrissur District.

Sl No	Level of PSAT	Number of students	Percentage
1	Very High Ability	42	47.7
2	High Ability	21	23.8
3	Average Ability	15	17.12
4	Low Ability	5	5.69
5	Very Low Ability	5	5.69

An analysis of Table 3 above reveals that 47.7% of students have very high problem-solving ability 23.8% have high ability 17.12% have average ability 5% have low ability and 5% have the very low ability.

4. To compare problem solving ability of government higher secondary school students in relation to Gender

Male and female students' levels of interest in the subject matter were contrasted. This mean was determined, and the "t" test was used to evaluate the mean differences. The specifics are shown in Table 5 below.

Table 4: **Comparison of problem-solving Ability of Male and Female Students.**

Problem Solving ability	N	Mean	SD	Mean difference	t-value	Level of significance
Male	92	12.15	2.77	.78	1.32	NS
Female	88	11.37	2.42			

The results of the test measuring the major disparities in problem-solving abilities between male and female secondary school students are shown in Table 4 analysis of the data. For both male and female students, the mean value is 12.15 and 11.37 respectively. The table also shows the non-significant t-value of 1.32 for the mean scores of male and female students towards the problem-solving skill level.

Consequently, the null hypothesis number one that there are no appreciable variations in male

and female higher secondary school student's levels of problem-solving ability remains valid. This result suggests that there is no discernible difference between male and female students' levels of problem-solving ability. There is no discernible difference between male and female student's problem-solving skills.

MAJOR FINDINGS

1. According to L.N. Dubey's interpretation, the average problem-solving ability test score of government higher secondary school students in Thrissur District is 12.15 which falls into the high-level ability category. In the meantime, the majority of students did not possess a very high degree of problem-solving ability. 126 out of 180 lie above average. As a result, higher secondary students in Thrissur District had strong problem-solving skills.
2. Male student's average score on the problem-solving ability test is 12.15, which falls into the High-level ability category based on L.N. Dubey's evaluation of boys' performance.In the meantime, the majority of students did not possess a very high degree of problem-solving ability. 66 out of 92 students, or 72%, are above average. As a result, higher secondary school students in Thrissur District had strong problem-solving abilities
3. The average score on the problem-solving ability test is 11.37 which, in L.N. Dubey's interpretation of the girls' score falls into the High-level ability category. In the meantime, the majority of students did not possess a very high degree of problem-solving abilities. 63 out of 88 students or 71.5% are above average. As a result, Higher Secondary School Students had strong problem-solving abilities.
4. There is no difference in the problem-solving skills of male and female students at Thrissur District Government Higher Secondary Schools based on gender.

References

Behra, B. (2009). problem-solving skills in mathematics learning. Edutracks, 8(7), 34.

Dubey, L.N. (2015). Manual for problem-solving Ability Test- D (English Version). Agra, India: National Psychological Corporation.

Kumari, J. (2016). A study on problem-solving ability of senior secondary school students. Edutracks, 15(7), 21-23.

Mangal, S.K. (2010). Advanced educational psychology. (2 nd ed.). Delhi, India: PHI learning.

Manohara, J.L., & Ramganesh, E. (2009). Creative problem-solving ability of standard XI students, Edutracks, 9(4), 29-31.

M.S.Dawngliani.(2020).A Study on problem solving ability of government secondary school students in Aizawl city with reference to gender, International Journal of Research and Development (IJRD)Volume: 5 | Issue: 9 | September 2020.

Singh, P., & Gopalkhrishnan, V.S. (2017). Effect of gender on problem-solving skills through integrated teaching program. Edutracks, 17, 37-40. Doi:10.21474/IJAR01/5842.

Woodworth, J. & Marquis, P. (1948). Psychology of Adults. In S.K.Mangal (Ed.) Advanced educational psychology (pp. 121-125). Delhi:PHI.

Kumar, V.S. (2011). The education system. Retrieved from https://www.gnu.org/education/edu-system-india.en.html.