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PROBLEM SOLVING ABILITY OF HIGHER SECONDARY SCHOOL STUDENTS

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Abstract:

Problem-Solving refers to the process of finding a solution to a problem or challenge. It involves identifying the problem, analysing the situation, and generating potential solutions or strategies to resolve the issue. Problem-solving may involve critical thinking, creativity, and decision-making skills. Problem-solving is a crucial skill in many areas of life, including work, education, and personal relationships. By developing effective problem-solving skills, individuals can improve their ability to overcome challenges and achieve their goals. This study aimed to investigate the problem-solving ability of 270higher secondary school students (130 males and 140 females) in Perambalur district, using stratified random sampling to ensure demographic representation. The Problem-Solving Ability Test (PSAT) by Dr. L.N. Dubey (1971) was used. The study reveals that there is no significant difference between the gender, nature of school, medium of school, locality of residence, parental occupation and type of family of higher secondary school students on their problem-solving ability. It was found that there is a significant difference between the rural and urban locality of the school of higher secondary school students on their Problem-Solving Ability

Key Words: Problem-Solving Ability, Higher Secondary School Students.

Introduction:

Problem-solving ability is the capacity to effectively identify, analyze, and solve problems. It is a valuable skill that is essential in many areas of life, including work, education, and personal relationships. Problem-solving ability involves a combination of critical thinking, creativity, and decision-making skills, as well as the ability to gather and analyze relevant information and data. Individuals with strong problem-solving ability are typically able to identify problems quickly and accurately, and are able to generate a variety of potential solutions to solve them. They are also able to evaluate the pros and cons of each solution, and select the best option based on a variety of factors, such as feasibility, potential effectiveness, and resources required. Additionally, individuals with strong problem-solving ability are able to implement and monitor the chosen solution, adjusting it as necessary to ensure it is effective in resolving the problem. Problem-solving ability is a highly valued skill in many professions, such as engineering, science, business, healthcare, and law. It is also an important life skill that can help individuals overcome challenges, make informed decisions, and achieve their goals. Problem Solving Ability is the cognitive capability of the problem solver to perform physical or mental operations based upon his knowledge so as to achieve the goal of solving problem. Problem-solving ability is a vital cognitive skill that enables individuals to analyze situations, generate alternatives, and make informed decisions. In the field of education, especially at the higher secondary level, this skill plays a crucial role in academic success, career planning, and personal development. As students prepare for competitive examinations and life beyond school, their ability to tackle complex problems effectively becomes increasingly important.

Need and Justification of the Study:

Problem solving is a process of overcoming difficulties that appears to interface with the attainment of a goal. Simple problems can be well solved by instructive and habitual behaviour. More difficult problems enquire a series of attempts, until the successful solutions are reached, a problem like any problem in life is defined as a problem because it causes is much difficulty in attaining a solution. The beliefs of students, parents, policy makers and the general public about the roles of problem solving it become prerequisite or co requisite to develop problem solving. Problem solving ability helps in solving the problem constructively. This skill assists in resolving conflict, reaching a solution and settles an issue. It develops the ability to get out of difficult situation and achieve the goal without using anger, coercion, defiance and aggressive behaviour. Problem solving is a process that provides an opportunity for a positive act. It enables a student to solve the problem by adopting creative and critical thinking.

Sample Size:

In this study, the sampling unit of 270 higher secondary school students from Perambalur district in Tamilnadu. The sample size was selected to represent the whole population and also to give the real picture. The total size of the sample was 270. The samples were collected using Random sampling technique. Out of the 270 samples, male sample consist of 140 and female sample consist of 140.

Sample of the Study:

The investigator had used random sampling for selecting the sample. The investigator randomly selected from higher secondary school students. The selection was done on the basis of the gender, locality of the school, nature of school, medium of school, locality of residence, parental occupation and type of family.

Objectives of the Study:

To find out the difference if any between the following sub samples of higher secondary school students in respect of their problem-solving ability

- Gender : Male / Female
- Locality of the school : Rural / Urban
- Nature of school : Government / Aided / Private

- Medium of school : Tamil / English
- Locality of residence : Rural / Urban
- Parental occupation : Government employed / Self employed
- Type of family : Joint / Nuclear

Hypotheses of the Study:

There is no significance difference if any between the following sub samples of higher secondary school students in respect of their problem-solving ability

- Gender : Male / Female
- Locality of the school : Rural / Urban
- Nature of school : Government / Aided / Private
- Medium of school : Tamil / English
- Locality of residence : Rural / Urban
- Parental occupation : Government employed / Self employed
- Type of family : Joint / Nuclear

Tools Used for the Present Study:

The tool used in the present study is given below:

- Problem Solving Ability by L.N. Dubey, 1971.

Description of the Tool:

Problem Solving Ability:

Problem solving ability is a process of overcoming difficulties that appear to interference with the attainment or a goal. Simple problems can be solved by instinctive and habitual behaviours. It is found that persons having higher intelligence and reasoning ability and on the other hand.

Scoring:

There are 20 problems in the test. Each problem has four alternative answers. Out of these four answers only one is correct. If the pupil writes the correct answer he should be given one mark, and he writes a wrong answer zero should be given.

Descriptive Analysis - Problem Solving Ability:

Table 1: 't' Test Values for Problem Solving Ability Scores - Higher Secondary School Students Based on Gender

Categories	Sub-Samples	N	Mean	S.D	't' Value
Gender	Male	130	11.10	2.69	1.013
	Female	140	11.46	3.05	NS

Table 1 further reveals the mean, standard deviation and 't' values of male and female higher secondary school students on problem solving ability. The calculated 't' value is 1.013, which is lower than the table value of 1.97 to be significant at 0.05 level. Therefore, the research hypothesis is rejected and null hypothesis is accepted. Further it is found that both male and female higher secondary school students not differ significantly in their problem solving ability.

Table 2: 't' Test Values for Problem Solving Ability Scores - Higher Secondary School Students Based on Locality of School

Categories	Sub-Samples	N	Mean	S.D	't' Value
Locality of the school	Rural	137	11.73	2.95	2.593
	Urban	133	10.83	2.75	S

Table 2 further reveals the mean, standard deviation and 't' values of rural and urban higher secondary school student on problem solving ability. The calculated 't' value is 2.593, which is greater than the table value of 1.97 to be significant at 0.05 level. Therefore, the research hypothesis is rejected and null hypothesis is accepted. Further it is found that both rural and urban higher secondary school students do not differ significantly in their problem solving ability.

Table 3: 'f' Test Values for Problem Solving Ability Scores - Higher Secondary School Students - Based on Nature of School

Nature of School	Sum of Squares	df	Mean Squares	'F' Value	Level of Significance
Between Groups	22.131	2	11.066	1.329	NS
Within Groups	2223.754	267	8.329		
Total	2245.885	269			

Table 3, the calculated 'F' value is 1.329, which is not significant at 0.05 level. Hence, the framed null hypothesis is accepted and research hypothesis is rejected. It is inferred that there is no significant difference among sub samples of nature of school with respect to their problem solving ability of higher secondary school students.

Table 4: 't' Test Values for Problem Solving Ability Scores - Higher Secondary School Students Based on Medium of School

Categories	Sub-Samples	N	Mean	S.D	't' Value
Medium of school	Tamil	167	11.48	2.87	1.396
	English	103	10.98	2.90	NS

Table 4, further reveals the mean, standard deviation and 't' values of English and Tamil medium of higher secondary school students on problem solving ability. The calculated 't' value is 0.396, which is lesser than the table value of 1.97 to be significant at 0.05 level. Therefore, the research hypothesis is rejected and null hypothesis is accepted. Further it is found that the English medium and Tamil medium of higher secondary school students do not differ significantly in their problem solving ability.

Table 5: 't' Test Values For Problem Solving Ability Scores - Higher Secondary School Students Based on Locality of Residence

Categories	Sub-Samples	N	Mean	S.D	't' Value
Locality of residence	Rural	91	11.16	2.80	0.517
	Urban	179	11.35	2.93	NS

Table 5, further reveals the mean, standard deviation and 't' values of rural and urban higher secondary school students on problem solving ability. The calculated 't' value is 0.517, which is lesser than the table value of 1.97 to be significant at 0.05 level. Therefore, the research hypothesis is rejected and null hypothesis is accepted. Further it is found that both rural and urban higher secondary school students do not differ significantly in their problem solving ability.

Table 6: 't' Test Values for Problem Solving Ability Scores -Higher Secondary School Students Based on Parental Occupation

Categories	Sub-Samples	N	Mean	S.D	't' Value
Parental Occupation	Government Employed	139	11.36	2.73	0.435
	Self Employed	131	11.21	3.05	NS

Table 6, further reveals the mean, standard deviation and 't' values of government employ and self employ of parental occupation of higher secondary school students on problem solving ability. The calculated 't' value is 0.435, which is lower than the table value of 1.97 to be significant at 0.05 level. Therefore, the research hypothesis is rejected and null hypothesis is accepted. Further it is found that government employ and self employ of parental occupation of higher secondary school students do not differ significantly on problem solving ability.

Table 7: 't' Test Values for Problem Solving Ability Scores -Higher School Students Based on Type of Family

Categories	Sub-Samples	N	Mean	S.D	't' Value
Type of family	Joint	113	11.43	2.97	0.680
	Nuclear	157	11.19	2.83	NS

Table 7, further reveals the mean, standard deviation and 't' values of joint and nuclear of type of family of higher secondary school students on problem solving ability. The calculated 't' value is 0.680, which is lower than the table value of 1.97 to be significant at 0.05 level. Therefore, the research hypothesis is rejected and null hypothesis is accepted. Further it is found that joint and nuclear type of family of higher secondary school students do not differ significantly on problem solving ability.

Major Findings of the Study:

- It is found that both male and female higher secondary school students do not differ significantly in their problem-solving ability.
- It is found that both rural and urban higher secondary school students differ significantly in their problem-solving ability.
- It is inferred that there is no significant difference among sub samples of nature of school with respect to their problem-solving ability of higher secondary school students.
- It is found that the English medium and Tamil medium of higher secondary school students do not differ significantly in their problem-solving ability.
- It is found that both rural and urban higher secondary school students do not differ significantly in their problem-solving ability.
- It is found that government employ and self-employ of parental occupation of higher secondary school students do not differ significantly on problem solving ability.
- It is found that joint and nuclear type of family of higher secondary school students do not differ significantly on problem solving ability.

Conclusion:

Problem solving ability is a vital force, which is in combination with mental setup and interest towards a fruitful education. The problem is the actual evidences of life that everybody in the world has tactlessly, problems are not always insulated. They tend to be like onions where difficulties disappear one after another. In short, they always face difficulties, complications chase people every day and night, even youngsters have their own problems they face in the classroom and at home. Children can deal with any type of difficulty in their own way. Some of the methods they use can be very systematic, while others are much lower. In many cases, the methods that children use to solve their difficulties are at best elementary for children; this can mean a lot of things. If children do not solve their problems, they may feel disappointed and frustrated. On the other hand, children who solve problems can feel very safe and courageous. Problem solving helps the individual develop a stronger and more cohesive sense of self among students. In this way the current research mainly focus on various problem-solving abilities of higher secondary students. Hence the present problem is need of the hour. Problem Solving is a skill which comprises logical inquiry of the facts and drawing conclusions in consistent with the data and evidences. Problem-solving is an individual phenomenon that requires the use of higher-order cognitive abilities, is a constant and persistent struggle on both conscious and unconscious levels in order to be successful.

References:

1. Barak, M. (2010). Motivating self-regulated learning in technology education. International Journal of Technology and Design Education, 20(4), 381-401.
2. Funkhouser, C, & Dennis, J. (1992). The effects of problem -solving software on problem solving ability. Journal of Research on Computing in Education, 24(3), 338-356.
3. Ganandevan, R. (2006). A Study of Problem-Solving Ability of higher secondary students. The International Journal of Indian Psychology, 4(1), 2-3.
4. Koul, L. (2009). Methodology of Educational Research (4th ed.).Vikas Publishing House.
5. Mangal, S.K. (2008). "Advanced Educational Psychology", New Delhi: Prentice Hall of India learning. Private limited, pp.495-502.
6. Mayer, R. (1983). Thinking, problem solving, cognition. New York: W.H Freeman and Company.
7. Özkaya, S. S. (2002). Investigation of tenth grade students' problem-solving strategies ingeometry. Unpublished Master Thesis, ODTU, Ankara.