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FOSTERING PROBLEM-SOLVING PROFICIENCY: A SURVEY OF SECONDARY STUDENTS IN TAMIL NADU, INDIA

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ABSTRACT

This research aimed to assess the level of Problem Solving Ability among Secondary Level Students and its relationship with various demographic variables. The study was conducted in Tamilnadu, India, with a sample size of 120 secondary school students selected through random sampling techniques. The research utilized the Problem Solving Ability Scale developed by the investigator as the tool for data collection. Descriptive statistics such as mean, standard deviation, and 't' test were employed for data analysis. The findings revealed that the overall level of Problem Solving Ability among Secondary Level Students was high. Interestingly, female students exhibited a higher level of Problem Solving Ability compared to male students. However, there were no significant differences observed in Problem Solving Ability based on factors such as locality of school, type of management, medium of instruction, type of family, and residence. Based on the results, it can be concluded that while secondary school students possess a good level of Problem Solving Ability.

KEY WORDS: Problem Solving Ability, Secondary Level Students, Demographic Variables, Educational Research**.**

INTRODUCTION

Education plays a crucial role in shaping individuals, and the effectiveness of educational environments in fostering measurable learning outcomes is undeniable. The intricate interplay between teaching and learning necessitates a focus on providing adequate resources for students, encompassing both physical infrastructure and technological tools. From classrooms equipped with necessary materials to educational software and hardware, every aspect contributes significantly to the overall learning experience. At the secondary level, nurturing problem-solving abilities takes center stage. These skills are not only

fundamental for academic success but also equip students to navigate challenges both personally and professionally. Inclusive education further underscores the importance of catering to the diverse needs of all learners, including those with special requirements. Therefore, exploring the impact of school facilities, teaching methodologies, and educational resources on developing problem-solving abilities in secondary students becomes crucial. By understanding the complex interplay between these factors, educators can better tailor their approaches to individual needs, fostering a more inclusive and enriched learning environment. This study delves into the complexities of problem-solving education at the secondary level, aiming to illuminate effective strategies and interventions that empower all students, regardless of background or ability, to become adept problem solvers.

NEED AND SIGNIFICANCE OF THE STUDY

This study addresses a critical gap in contemporary education: the need for research focused on developing and enhancing problem-solving skills specifically among secondary level students. In today's rapidly evolving world, the ability to effectively solve problems is indispensable for success in both academic and personal pursuits. The significance of this research extends beyond individual students, impacting both individual and societal levels. Strong problem solvers exhibit higher levels of critical thinking, creativity, and resilience, leading to improved academic performance. Problem-solving skills prepare students for future careers, equipping them to navigate complex challenges and adapt to changing environments. Proficient problem solvers exhibit greater adaptability and resilience, contributing to their overall personal development. A workforce equipped with strong problem-solving skills can drive innovation and foster economic growth. A population with strong problem-solving skills is better prepared to address pressing global challenges. By investigating the impact of various factors on problem-solving development and identifying effective interventions, this study aims to equip educators with evidence-based practices to cultivate a generation of competent problem solvers prepared for the future.

OBJECTIVES OF THE STUDY

The major objective of the study is to find out the level of Problems Solving Ability among Secondary Level Students

The specific objectives of the study are

1. To find out the significant difference between the Mean scores of Secondary Level Students towards Problem Solving Ability with respect to Gender.
2. To find out the significant difference between the Mean scores of Secondary Level Students towards Problem Solving Ability with respect to Locality of School.
3. To find out the significant difference between the Mean scores of Secondary Level Students towards Problem Solving Ability with respect to Type of Management.
4. To find out the significant difference between the Mean scores of Secondary Level Students towards Problem Solving Ability with respect to Medium of Instruction.

HYPOTHESES OF THE STUDY

From the above objectives, the following research hypotheses have been formulated.

1. The level of Problem Solving Ability among Secondary Level Students is High.
2. There is no significant difference between the Mean scores of Secondary Level Students towards Problem Solving Ability with respect to Gender.
3. There is no significant difference between the Mean scores of Secondary Level Students towards Problem Solving Ability with respect to Locality of School.
4. There is no significant difference between the Mean scores of Secondary Level Students towards Problem Solving Ability with respect to Type of Management.
5. There is no significant difference between the Mean scores of Secondary Level Students towards Problem Solving Ability with respect to Medium of Instruction.

RESEARCH DESIGN

The study adopts a Survey Research Design method to examine problem-solving ability among secondary level students. Utilizing a random sampling technique, 120 students from various secondary schools in Tiruchirappalli district, Tamil Nadu, India, were selected as participants. The investigation aims to gauge problem-solving proficiency among these students using the Problem Solving Ability Scale, a questionnaire developed and standardized by the Investigator.

Stratified Random Sampling Technique ensures a representative sample, with ten secondary schools randomly chosen in Tiruchirappalli district. From these schools, students were selected, totaling 120 participants. The primary instrument, the Problem Solving Ability Scale, comprises 20 items rated on a Five-Point Rating Scale. Additionally, a General Data Sheet with six items gathers basic demographic information from respondents. Statistical techniques such as Mean, Standard Deviation, and 't' test were employed to analyze collected data, aiming to unveil insights into problem-solving proficiency among secondary level students.

TESTING OF HYPOTHESES

Hypothesis: 1

The level of Problem Solving Ability among Secondary Level students is high.

Table 1

MEAN AND STANDARD DEVIATION SCORES ON THE PROBLEM SOLVING ABILITY AMONG SECONDARY LEVEL STUDENTS IN TOTAL

S. No	Variables		N	PROBLEM SOLVING ABILITY	
				Mean	SD
01.	Total		120	50.04	3.72
02.	Gender	Male	56	58.23	4.31
		Female	64	61.42	3.49
03.	Locality of School	Rural	79	60.14	4.23
		Urban	41	60.24	4.44
04.	Type of Management	Private	60	60.82	3.92
		Govt.	60	61.45	3.33
05.	Medium of Instructions	English	60	61.54	3.91
		Tamil	60	60.23	3.87
06.	Type of Family	Nuclear	70	59.24	4.61
		Joint	50	60.12	3.74
07.	Residence	Home	73	60.21	3.73
		Hostel	47	58.43	4.92

Table 1 show that Mean and SD of the total sample in Problem Solving Ability were 50.04 and 3.72. The obtained Mean value is 61.54 out of maximum value 100. It shows that the level of Problem Solving Ability among Problem Solving Ability among Secondary Level students is high. Hence the framed null hypothesis, “The level of Problem Solving Ability among Secondary Level students is high” is accepted.

Hypothesis: 2

There is no significant difference between the Mean scores of Secondary Level Students towards Problem Solving Ability with respect to Gender.

Table –2

‘t’ VALUE BETWEEN THE MEAN SCORES ON THE PROBLEM SOLVING ABILITY AMONG SECONDARY SCHOOL STUDENTS WITH RESPECT TO THEIR GENDER

Category	Gender	N	Mean	SD	‘t’ value
Problem Solving Ability	Male	56	58.23	4.31	2.64*
	Female	64	61.42	3.49	

* - Significant at 0.05 level

Table 2 shows that the 't' value, 2.64 is significant at 0.05 level. It is understood from the results that there is a significant difference between Male and Female Secondary Level Students towards Problem Solving Ability. Female Secondary School Students are having higher level of Problem Solving Ability when compare to Male Secondary Level Students. Therefore, the framed null hypothesis, "There is no significant difference between the Mean scores of Secondary Level Students towards Problem Solving Ability with respect to Gender." is rejected.

Hypothesis: 3

There is no significant difference between the Mean scores of Secondary Level Students towards Problem Solving Ability with respect to Locality of School.

Table – 3

't' VALUE BETWEEN THE MEAN SCORES ON THE PROBLEM SOLVING ABILITY AMONG SECONDARY LEVEL STUDENTS WITH RESPECT TO THEIR LOCALITY OF SCHOOL

Category	Locality of School	N	Mean	SD	't' value
Problem Solving Ability	Rural	79	60.14	4.23	0.36**
	Urban	41	60.24	4.44	

** - Not Significant at 0.05 level

It is seen from the Table 4.2 that the 't' value 0.36 is not significant at 0.05 level. It is understood from the results that there is no significant difference between rural and urban Secondary Level Students towards Problem Solving Ability. Rural and urban Secondary School Students are similar in Problem Solving Ability. Therefore, the framed null hypothesis "There is no significant difference between the Mean scores of Secondary Level Students towards Problem Solving Ability with respect to Locality of School" is accepted.

Hypothesis: 4

There is no significant difference between the Mean scores of Secondary Level Students towards Problem Solving Ability with respect to Type of Management.

Table – 4

't' VALUE BETWEEN THE MEAN SCORES ON THE PROBLEM SOLVING ABILITY AMONG SECONDARY LEVEL STUDENTS WITH RESPECT TO TYPE OF MANAGEMENT

Category	Type of Management	N	Mean	SD	't' value
Problem Solving Ability	Private	60	60.82	3.92	0.67**
	Govt.	60	61.45	3.33	

** - Not Significant at 0.05 level

It is obviously seen from the Table - 4 that the 't' values, 0.67 is not significant at 0.05 level. The result highlights that there is no significant difference between Private and Govt. Secondary level Students towards Problem Solving Ability. Private and Govt. Secondary Level Students are having similar level of Problem Solving Ability. Therefore, the framed null hypothesis "There is no significant difference between the Mean scores of Secondary Level Students towards Problem Solving Ability with respect to Type of Management" is accepted.

Hypothesis: 5

There is no significant difference between the Mean scores of Secondary Level Students towards Problem Solving Ability with respect to Medium of Instruction.

Table – 5

't' VALUE BETWEEN THE MEAN SCORES ON THE PROBLEM SOLVING SBILITY AMONG SECONDARY LEVEL STUDENTS WITH RESPECT TO MEDIUM OF INSTRUCTION

Category	Medium of Instruction	N	Mean	SD	't' value
Problem Solving Ability	English	60	61.54	3.91	0.31**
	Tamil	60	60.23	3.87	

**- Not Significant at 0.05 level

It is seen from the Table 5 that the 't' value, 0.31 is not significant at 0.05 level. It implies from the results that there is no significant difference between English and Tamil Medium Secondary Level Students towards Problem Solving Ability. The Secondary School Students who are studying in English and Tamil Medium Schools are having similar level of Problem Solving Ability. Therefore, the framed null hypothesis "There is no significant difference between the Mean scores of Secondary Level Students towards Problem Solving Ability with respect to Medium of Instruction" is accepted.

EDUCATIONAL IMPLICATIONS

The findings of this research hold significant educational implications for secondary level education in Tamil Nadu, India, and potentially beyond. Firstly, the observed high level of problem-solving ability suggests existing educational practices effectively nurture critical thinking skills crucial for success. Furthermore, the observed gender disparity highlights the need for targeted interventions, such as tailored teaching methods or activities, to empower male students and promote gender equity in problem-solving skills. The lack of significant differences based on various demographics suggests that effective interventions aimed at enhancing problem-solving skills can be broadly implemented, fostering equity and inclusivity across diverse backgrounds. The null hypotheses relating to demographics affirm the importance of equitable access to quality education, which caters to individual needs and promotes inclusivity for all students. This research emphasizes the need for ongoing efforts to strengthen problem-solving skills in

secondary education, equipping students with the essential tools to navigate life's challenges and achieve success in various aspects of their lives.

CONCLUSION

This study explored the problem-solving abilities of secondary level students in Tamil Nadu, India. The findings emphasize the importance of continuously fostering problem-solving skills in secondary education. By prioritizing the development of these crucial skills, educational institutions can better equip students to navigate the complexities of the 21st century and become successful learners, adaptable professionals, and engaged citizens ready to tackle future challenges. To achieve this, collaboration among educators, policymakers, and stakeholders is critical, focusing on implementing evidence-based interventions that empower students to become competent problem solvers.

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