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Impact Of Parental Involvement And Self-Efficacy On Problem Solving Ability Of Secondary Level Students

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Abstract: This study examines the impact of parental involvement and self-efficacy on the problem-solving ability of secondary level students. Recognized as a key 21st-century skill, problem-solving ability is essential for academic success and effective decision-making. Despite extensive research on academic achievement, limited studies have explored the combined influence of parental involvement and self-efficacy on problem-solving ability.

A descriptive survey method was employed on a sample of 120 secondary students selected through purposive and random sampling from CBSE schools in Agra. Standardized tools were used to measure parental involvement, self-efficacy, and problem-solving ability. Data were analyzed using mean, standard deviation, and ANOVA techniques.

The findings indicate that both parental involvement and self-efficacy significantly influence problem-solving ability, with a notable interaction effect. The study highlights the importance of supportive home environments and strong self-belief in enhancing students' cognitive skills, offering implications for educators and policymakers.

Keywords: Parental Involvement, Self Efficacy, Problem Solving Ability, Academic Achievement

I. INTRODUCTION

A country's future is built on its children, and creating a progressive and sustainable society requires their complete development. In the quickly changing 21st century, education increasingly encompasses the development of critical life skills, including the capacity to solve problems, in addition to the acquisition of knowledge. This higher-order cognitive ability makes it possible for people to evaluate circumstances, make wise choices, and successfully handle difficulties that arise in both academic and real-world settings.

Environmental and psychological factors work together to influence the development of problem-solving skills. Among these, parental involvement is crucial in influencing students' motivation, attitudes, and learning habits. As the main socializers, parents actively participate in their children's education, creating a nurturing atmosphere that promotes critical thinking, independence, and curiosity. Higher levels of confidence and engagement are frequently displayed by students whose parents are interested in their academic pursuits, which benefits their cognitive development.

Self-efficacy is shown to be an important psychological factor that affects students' performance in addition to environmental factors. Self-efficacy is the conviction in one's own ability to carry out tasks and attain desired results. High self-efficacy students are more likely to take on obstacles head-on, use practical solutions, and keep up their efforts in the face of setbacks. Their capacity to effectively solve issues and adjust to challenging circumstances is greatly improved by this belief system. Even though parental involvement and self-efficacy are acknowledged to be important, most of the study that has been done on the subject has concentrated on how they affect academic accomplishment rather than how they affect problem-solving skills. Examining how these elements combine to influence students' cognitive abilities is crucial given the growing need for adaptive thinking and decision-making abilities in modern society.

Thus, the goal of the current study is to investigate how parental participation and self-efficacy affect secondary school children's capacity for problem-solving. By filling this knowledge gap, the study aims to advance knowledge of how learners' family environments and personal belief systems interact to develop critical life skills.

II. REVIEW OF LITERATURE

Studies on Parental Involvement

Ates, A. (2021) conducted a study on **"Meta-analysis of the relationship between parental involvement and academic achievement".** The purpose was to investigate the association between students' academic achievement and parental participation. 53 studies that were published between 2004 and 2020 met the requirements for the meta-analysis of the research. It was determined that course areas, school levels, and geographic locations had no discernible effects on the association between parental participation and academic achievement. Regardless of the topic area (mathematics, science, reading, and language abilities), both factors have a favorable association.

Singh, A (2017) researched to find out **"The role of parental involvement, Self efficacy and Educational aspirations on academic achievement among the students of secondary school".** 600 students from Jammu from both rural and urban areas made up the data sample. The research employed the descriptive survey method. The study revealed that there was a strong association between academic achievement and parental participation. This indicates that there is a positive relationship between parental participation and academic success; the more involved parents are, the better the student's academic performance will be.

Studies on Self-Efficacy

Fakhrou and Habib (2021) conducted the research about **"The relationship between academic Self-efficacy and academic achievement of students of special education".** The purpose of this study was to determine whether academic achievement and academic self-efficacy are correlated. The study's sample size consisted of 43 students from the special education department. The sample's answers were obtained using a self-efficacy questionnaire. The findings showed that academic achievement and academic self-efficacy were positively correlated, indicating that self-efficacy directly affects special education pupils' academic performance.

Jain, S & Desai, T (2020) studied "The linkage of self-efficacy and general wellbeing of the adolescents". Purposive sampling was used to pick the sample, which included 50 boys and 50 girls, for a total of 100 students. The General Well-Being Scale by Ashok K. Kalia and Anita Deswal and the Self-efficacy Scale by A.K. Singh and Shruti Narain were employed. The study's t-test revealed that there is no difference in the self-efficacy levels of adolescent boys and girls. Additionally, there is no difference between the general well-being of boys and girls in adolescence. Self-efficacy has an impact on teenagers' general wellbeing, according to the results of the correlation analysis performed to determine the effect of the independent variable on the dependent variable.

Studies on Problem-Solving Ability

Devi, A. (2020) surveyed about **"The effect of Reasoning ability and Problem-solving ability in relation to study habits and learning styles of secondary students".** The study was limited to 600 Haryana State secondary school pupils. A multi-stage random sampling procedure was used to choose the sample. The descriptive survey method was used in the current study. Four standardized instruments were employed in this investigation. Regarding the variable problem-solving ability, the research found that while locale had no significant impact on students' problem-solving ability, study habits and gender did. According to the researcher, compassionate students' learning styles and study habits can enhance secondary school students' reasoning and problem-solving skills.

Kumar M. (2020) examined **"The relationship of Problem Solving Ability and Creativity with reference to senior secondary students".** To get information from higher secondary school pupils, the researcher employed a survey approach. There were 159 girls and 141 guys in the sample. Students in grades XI and XII were chosen using a stratified random sampling method. Higher secondary school pupils were shown to possess a significant level of creativity and problem-solving skills. Both creativity and problem-solving abilities are closely related, notwithstanding their differences.

III. RESEARCH OBJECTIVES

- To study the impact of Parental Involvement on Problem solving ability of secondary level students.
- To study the impact of Self efficacy on Problem solving ability of secondary level students.
- To study the interaction of Parental involvement and Self efficacy on Problem solving ability of secondary level students.

1V. HYPOTHESIS OF THE STUDY

- There is no significant impact of Parental Involvement on the Problem Solving Ability of secondary level students.
- There is no significant impact of Self-Efficacy on the Problem Solving Ability of secondary level students.
- There is no significant interaction of Parental Involvement and Self Efficacy on the Problem Solving Ability of secondary level students.

V.RESEARCH METHODOLOGY

The descriptive survey method has been employed in the present investigation. It describes the current position of the research work.

VI. SAMPLE AND SAMPLING METHOD

In the present research the researcher used simple random sampling and purposive sampling. Because the researcher could easily reach these schools, purposeful sampling was used in the selection process. They were only a little distance apart. In order to determine the impact of parental involvement and self-efficacy on secondary school students' problem-solving skills, the researcher used simple random sampling to pick 120 students in class IX and purposeful sampling to select schools.

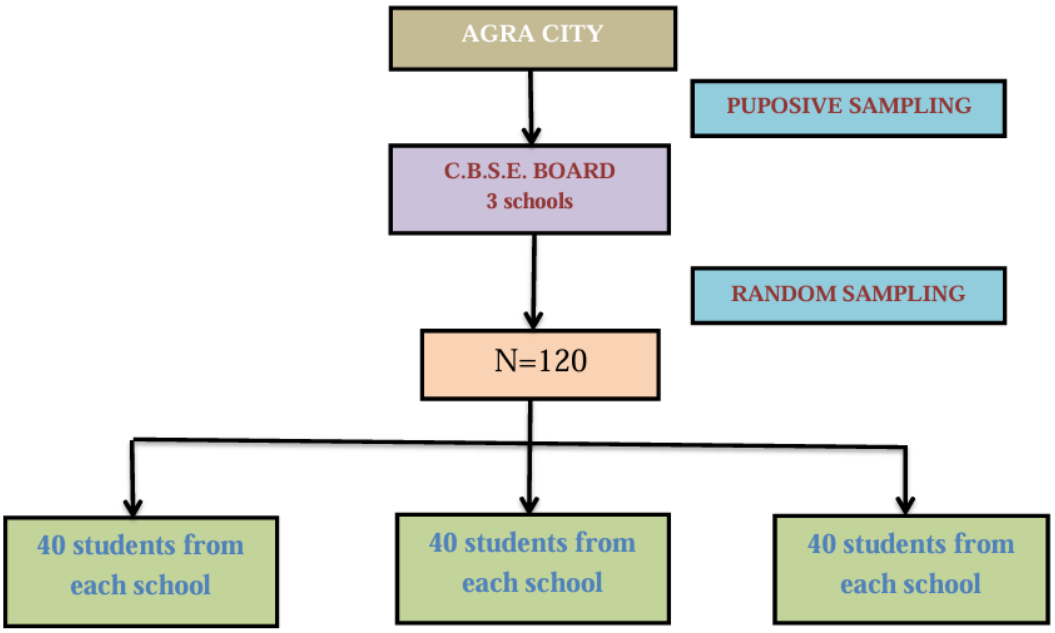

Figure 1 showing sample selection procedure

VII. TOOLS USED IN THE STUDY

- Parental-involvement scale by Vijaya laxmi chauhan & Gunjan Ganotra Arora (2001)
- Self –efficacy scale by G.P Mathur & R.K Bhatnagar (2007)
- Problem solving ability test by L.N. Dubey (2005)

VIII. DATA ANALYSIS AND DISCUSSION

OBJECTIVE 1- TO STUDY THE IMPACT OF PARENTAL INVOLVEMENT ON PROBLEM SOLVING ABILITY
Statistical technique one-way ANOVA has been calculated and its summary has been shown in the table below:

Table 4.1 showing one way ANOVA calculations for independent impact of Parental Involvement on Problem Solving Ability with High, Average & Low Parental Involvement groups

Parameter	Statistical Techniques				
	Sum of Squares	dF	Mean Squares	F	p-value
Between Groups	145.246	30	4.842	1.335	0.150
Within Groups	322.746	89	3.626		
Total	467.992	119			

The value of F at 30 and 89 degree of freedom i.e. F (30,89) is 1.335, which reaches significance with a p-value of 0.150. The p-value of F ratio for independent effect of parental involvement on problem solving ability was found to be more than 0.05, so the F-value is said to be 50 significant at this level. If the p-value is greater than the significance level, it indicates the acceptance of the null hypothesis. So the framed null hypothesis (there is no significant impact of parental involvement on problem solving ability of secondary level students) is accepted as no significant impact of parental involvement was found. All of this occurs because pupils' ability to think and brainstorm deteriorates when parents become more involved because they prevent their children from making decisions on their own. Students use a modern approach to problem-solving, whereas parents are seen using a traditional method. They have a broader view of the issue.

OBJECTIVE 2- TO STUDY THE IMPACT OF SELF-EFFICACY ON PROBLEM SOLVING ABILITY
Statistical technique one-way ANOVA has been calculated and its summary has been shown in the table below:

Table 4.2 showing one way ANOVA calculations for independent impact of Self-Efficacy on Problem Solving Ability with High, Average & Low Parental Self-Efficacy groups

Parameter	Statistical Techniques				
	Sum of Squares	dF	Mean Squares	F	p-value
Between Groups	199.688	44	4.538	1.269	0.180
Within Groups	268.303	75	3.577		
Total	467.992	119			

The value of F at 44 and 75 degree of freedom i.e. F (44,75) is 1.269, which reaches significance with a p-value of 0.180. The p-value of F ratio for independent effect of self efficacy on problem solving ability was found to be more than 0.05, so the F-value is said to be significant at this level. If the p-value is greater than the significance level, it indicates the acceptance of the null hypothesis. So the framed null hypothesis (there is no significant impact of self efficacy on problem solving ability of secondary level students) is accepted as no significant effect of self-efficacy was found. In general, a person who believes in his or her own skills will be better able to handle the challenging circumstances that are presented to him or her, although this is not always the case. When faced with a challenge, students may experience terror or become overconfident or overly intelligent due to their awareness of their own abilities.

OBJECTIVE 3- TO STUDY THE INTERACTION OF PARENTAL INVOLVEMENT AND SELF-EFFICACY ON PROBLEM SOLVING ABILITY

Statistical technique two way ANOVA has been calculated and its summary has been shown in the table below:

Table 4.3 showing two way ANOVA for the interaction of Parental Involvement and Self Efficacy on Problem solving Ability

Sources of Variation	SS	dF	MS	F value	Level of Significance
Parental Involvement	178.394	29	6.152	142.364	0.000
Self-efficacy	230.699	43	5.365	124.164	0.000
Parental Involvement* Self-efficacy	88.714	19	4.669	108.058	0.000
Error	1.167	27	0.043		
Total	467.992	119			

Table 4.3 shows that the significance value (p-value) of the F-ratio is p=0.000 and the F value for the interaction effect is 108.058 for dF (19,27). The interaction between parental participation and self-efficacy is significant at both the 0.01 and 0.05 levels of significance, as indicated by the p-value of the F-ratio being less than 0.01. It shows that there is a substantial difference in the average scores for problem-solving ability between parental involvement (M=84.4) and self-efficacy (M=71.32). This is the case because a number of factors influence students' capacity to solve problems. The ability to solve problems cannot be affected by a single element. The ability to solve problems is inevitably impacted by appropriate self-efficacy and a moderate degree of parental engagement.

IX. CONCLUSION

The findings indicate that parental involvement and self-efficacy, when considered separately, do not significantly influence the problem-solving ability of secondary school students. Adolescence is a crucial developmental stage, yet excessive parental involvement may restrict independent thinking and decision-making, limiting students' ability to develop problem-solving skills. Moreover, differences in traditional parental approaches and students' modern perspectives, along with limited meaningful parental engagement, further reduce its impact.

Similarly, self-efficacy alone does not ensure effective problem-solving. Although it reflects belief in one's abilities, students may either panic or become overconfident when facing problems. Therefore, self-efficacy by itself is not a reliable predictor of problem-solving ability.

However, a significant interaction effect exists between parental involvement and self-efficacy. When students have confidence in their abilities and receive balanced, supportive parental involvement, their problem-solving skills improve. Thus, it is the combined and moderated influence of both factors that enhances problem-solving ability.

X. EDUCATIONAL IMPLICATIONS OF THE STUDY

According to the findings, families and schools must work together to develop problem-solving abilities. Teachers and school administrators should explain to students the benefits and shortcomings of these abilities before integrating them into the curriculum in a meaningful way. To teach parents how to support their children without going overboard, schools might host workshops. Teachers must incorporate engaging, practical exercises into their lessons since each child approaches difficulties in a different way. Creativity, self-assurance, and a can-do attitude are all enhanced by a supportive environment at home and at school. Children who have supportive parents develop self-confidence, awareness, and the courage to deal with difficult situations. Allowing children to take calculated risks improves their critical thinking skills and reduces second-guessing. Strong problem-solving skills ultimately help children develop their brains, improve their grades, and prepare them for successful careers in the future.

XI. SUGGESTIONS FOR FURTHER RESEARCHES

The study was limited to a small group of secondary school students from Agra, so the findings may not be widely generalizable. Future research can be conducted with a larger and more diverse sample to improve its scope. Similar studies can also include students from primary and senior secondary levels to understand differences across age groups. In addition, research may be extended to students from other educational boards such as ICSE and various state boards for broader comparison. A comparative analysis based on gender can also be undertaken to examine differences between male and female students.

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