PROBLEM SOLVING ABILITY OF SECONDARY SCHOOL STUDENTS IN RELATION TO SCIENTIFIC INTEREST AND SOCIAL MATURITY

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ABSTRACT

The present study was designed to assess the Problem Solving Ability of Secondary School Students in relation to Scientific Interest and Social Maturity. A sample of 100 students studying in class IX was selected from one of the Government Model Senior Secondary Schools of Chandigarh Administration. Problem Solving Ability Test by Dubey (2010) was used to assess the Problem Solving Ability of the students, Scientific Interest Inventory by Misra (2012) was used to assess the Scientific Interest of the students and Social Maturity Scale by Rao (2009) was used to assess the Social Maturity of the students. Appropriate statistical tools were employed to analyze the results. Results of the study revealed that there is no significant relationship between Problem Solving Ability and Scientific Interest (r= .128) and Problem Solving Ability and Social Maturity (r= .161), leading to the inference that both the null hypotheses cannot be rejected as per this study.

Keywords: Problem Solving Ability, Scientific Interest and Social Maturity

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INTRODUCTION

Children's growth is greatly influenced by the lifelong learning process that is education. The instruction they receive in school aids in bringing forth their latent skills and capabilities

which also forms and nurtures their attitude. Science, technology, social sciences, mathematics, and languages are all covered in the educational curriculum. Education serves as a tool to instil confidence in students and affect positively the necessary changes in their lives. In conclusion, education aims to equip pupils with the necessary skills to live efficiently and comfortably in society in the future.

PROBLEM SOLVING ABILITY

"Problem-solving ability" refers to the capacity to solve problems. Persons with problem-solving abilities can improve their personality and live a better, more intelligent life by making the necessary adjustments.

Polya (1945) *defines, problem-solving as "the process used to solve a problem that does not have an obvious solution."*

SCIENTIFIC INTEREST

Scientific interest refers to the desire to conduct research to obtain precise knowledge for conducting tests and implementing new ideas. **Piaget (1952)** *defines scientific interest as "a process closely tied to cognitive development, evolving as children progress through different stages of cognitive growth."*

SOCIAL MATURITY

Social maturity refers to a person's ability to possess the appropriate attitudes for participation in society. It is a behavioural concept that demonstrates how well a person interacts with his or her social environment. **Hurlock (1968)**, *says that "Social-development means attaining maturity in social-relations. It means the process of learning to confirm to group standards, morals, and traditions and becoming imbued with a sense of oneness, intercommunication and co-operation".*

REVIEW OF RELATED LITERATURE

PROBLEM SOLVING ABILITY AND SCIENTIFIC INTEREST

Some of the significant recent related studies are abstracted below.

Treepob, Hemtasin & Thongsuk (2023) conducted a study to investigate the impact of inquiry-based learning on the development of scientific problem-solving skills among Grade 9 students. According to the findings, students who engaged in prediction, observation, and data interpretation showed significant improvements in their problem-solving ability and scientific interest.

Hafizah, Putri & Annur (2018) conducted a study to evaluate the relationship between students' problem-solving abilities and scientific work. This study discovered a significant association between students' problem-solving abilities and their scientific output. It denotes that the student's problem-solving abilities improve with each level of scientific work.

Frey et al., (2022) conducted a study to investigate the importance of problem-solving in scientific disciplines and how instructional practices might boost students' scientific curiosity. The study underlined that engaging student in discipline-specific problem-solving activities improves their conceptual knowledge. The findings revealed no statistically significant differences in overall performance but did demonstrate favourable trends in students' engagement and enthusiasm in science.

Jakhar & Singh (2017) conducted a study to obtain answers to three questions: whether there is a difference in problem-solving skill and interest in science between boys and girls and whether there is a link between problem-solving ability and scientific curiosity. According to the data, there is no substantial difference between girls' and boys' problem-solving ability. The findings also imply that girls and boys have very different scientific interests.

Kaur & Kaur (2017) conducted a study to examine the relationship between problem-solving ability and scientific interest among adolescents. The researchers discovered a

significant positive association between these two variables, showing that kids with stronger problem-solving abilities are more interested in science. Furthermore, the survey discovered that female pupils had a greater interest in science than boys.

PROBLEM SOLVING ABILITY AND SOCIAL MATURITY

Chen & Lee (2024) conducted a study to investigate the development and interrelationship of problem-solving abilities and social competence among university students. The study showed a strong positive relationship between problem-solving skills and social competence, meaning that students with better problem-solving abilities are more socially mature.

Arshi (2022) conducted a study on adolescents to better understand the relationship between social problem-solving abilities, self-compassion, and social adjustment. The study discovered that both problem-solving skills and self-compassion contributed significantly to better social adjustment. However, problem-solving abilities were more effective in predicting how well children adapted to their social situations

Dashti, Panahali & Azemoudeh (2021) conducted a study to examine how problem-solving skills training with a social-cognitive approach affected social self-empowerment and social adjustment in female high school students. The findings found that students who received problem-solving training had a significant increase in their ability to shift socially and empower themselves in social situations.

Thus, we find that almost all studies point to significant correlation among the variables problem solving ability, scientific interest and social maturity for the samples for which these studies were undertaken.

OBJECTIVES OF THE STUDY

The present study was conducted to attain the following objectives:

1. To study the Problem Solving Ability, Scientific Interest and Social Maturity of secondary school students.
2. To study the relationship between Problem Solving Ability and Scientific Interest of secondary school students.

3. To study the relationship between Problem Solving Ability and Social Maturity of secondary school students.

HYPOTHESES OF THE STUDY

The study was conducted to test the following hypotheses:

1. **H_{o1}**: There is no significant relationship between Problem Solving Ability and Scientific Interest of secondary school students.
2. **H_{o2}**: There is no significant relationship between Problem Solving Ability and Social Maturity of secondary school students.

DESIGN OF THE STUDY

Descriptive survey method was used for conducting the present study. The present study covered three variables:

1) Problem Solving Ability
2) Scientific Interest
3) Social Maturity

SAMPLE OF THE STUDY

A sample of 100 secondary school students from government school of Chandigarh were taken for this study.

TOOLS USED

The following tools were used for conducting this study:

1. Problem Solving Ability Test by Dubey (2010)

2. Scientific Interest Inventory by Misra (2012)

3. Social Maturity Scale by Rao (2009)

RESULTS AND DISCUSSION

Hypothesis 1

There is no significant relationship between Problem Solving Ability and Scientific Interest of secondary school students.

TABLE 1

Pearson Correlation Coefficient between Problem Solving Ability and Scientific Interest of Secondary School Students.

Variables	N	Pearson Correlation
Problem Solving Ability	100	.128
Scientific Interest		

INTERPRETATION

Table 1 shows the coefficient of correlation between Problem Solving Ability and Scientific Interest of secondary school students to be .128 which is not significant at both the 0.01 and 0.05 levels of significance. Therefore, the null hypothesis is not rejected, indicating no significant relationship between the two variables.

Hypothesis 2

There is no significant relationship between Problem Solving Ability and Social Maturity of secondary school students.

TABLE 2

Pearson Correlation Coefficient between Problem Solving Ability and Social Maturity of Secondary School Students.

Variables	N	Pearson Correlation
Problem Solving Ability	100	.161
Social Maturity		

INTERPRETATION

Table 2 shows the coefficient of correlation between Problem Solving Ability and Social Maturity of secondary school students to be .161 which is not significant at both the 0.01 and 0.05 levels of significance. Therefore, the null hypothesis is not rejected, indicating no significant relationship between the two variables.

DISCUSSION OF THE RESULT AND CONCLUSION

The present study examined the relationship between Problem Solving Ability and Scientific Interest as well as Social Maturity both among 9^{th} grade students. Results show that there is no significant relationship between Problem Solving Ability and Scientific Interest (r= .128) and Problem Solving Ability and Social Maturity (r= .161), leading to the inference that both the null hypotheses cannot be rejected as per this study. This means that problem solving ability of the students of class IX was not found to be significantly related to their scientific interest, which may look surprising because we generally assume that scientific interest or interest in science leads to better problem solving ability or vice versa, i.e. higher level of problem solving ability makes one more interested in science related topics/ endeavours as one of the basic purposes of science is to help develop better problem solving ability. But results of this study do not support this common assumption. Similarly for the second hypothesis, the result of this study show no significant relationship between problem solving ability and social maturity which is again contrary to our popular belief that higher level of social maturity may lead to better problem solving ability and vice versa.

The result of the study may be taken in two ways-firstly that our common assumptions may be contrary to research findings as in the present case or it may be that the limitations of our sample of the population may be such that generalization of the results may not be possible. In both the cases, we need to be more careful in using the results of our study for generalized conclusions.

EDUCATIONAL IMPLICATIONS

The present study has some of the implications as following:

1. The study discovered no significant association between problem-solving ability, scientific interest, and social maturity, implying that problem-solving skills may be fostered through direct instructional tactics.
2. Although scientific interest may not have a direct correlation with problem-solving ability as per this study, inquiry-based learning via hands-on experiments and research projects can nevertheless foster critical thinking, which is an important component of problem solving ability.
3. As per this study, social maturity has no significant correlation with problem-solving ability, although collaborative activities like group talks and collaboration can help with overall cognitive and interpersonal development.

SOCIETAL IMPACT OF THE PRESENT STUDY

This study on secondary school students' problem-solving abilities and its relationship to scientific interest and social maturity could have a significant impact on society. When children develop interest in science, they learn to think critically and logically, which will benefit them in their education and future jobs, particularly in science and technology. At the same time, social maturity allows individuals to comprehend and manage their emotions, collaborate well with others, and make sound judgements. Students can become confident and capable individuals if schools emphasise both scientific study and social skills.

The implications of this research extend beyond the classroom. When young people learn to think clearly and solve issues successfully, they can benefit society in a variety of ways, including advancing technology, protecting the environment, and making themselves happier with healthier choices in life. A society with intelligent and socially responsible people can move faster and make better decisions. The study's findings can also assist schools and policymakers in developing better education systems that educate students not only for tests but also for real-world issues, thereby making the world a better place for everybody.

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