

# Problem Solving Ability in Computer Science of Standard XI Students

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**Abstract: - Problem Solving is a form of thinking in which a person is confronted with problem. In Problem solving, the person recognizes his/her ideas or reconstructs his/her experiences in order to overcome obstacles and attain it. This study aims to find the problem solving ability in computer science of standard XI students. Survey method was adopted for the study. Three hundred standard XI students were selected randomly for the study. Descriptive and inferential statistics were employed for analysing the data. The findings of the study shows that there is a very low positive correlation between problem solving ability and academic achievement of standard XI students.**

## INTRODUCTION

Problem Solving is a form of thinking in which a person is confronted with problem. In Problem solving, the person recognizes his/her ideas or reconstructs his/her experiences in order to overcome obstacles and attain it. Mayer and Wittrock (2006), problem solving is "cognitive processing directed at achieving a goal when no solution method is obvious to the problem solver". Learning computer science and computer programming today as a kind of problem solving: the aim is not beauty or knowledge, but practical solution; ways to "get a job done ." In a globally competitive economy, as information technology periodically doubles the data-processing power at the fingertips of information tends to reorganize the way we perform many tasks. Computers and computer software are often sold as "solutions." Decades of experience in software development have taught that writing programs is more like constructing buildings than like writing poetry. The poet may find inspiration one evening and write a beautiful work of art. The software developer has more bases to touch. Some of the steps may seem tedious. Before even thinking about what to write in a computer program, the developer must be sure of what the problem is precisely. What is the input? What is the output? How should they relate?. Like a building, a complex piece of software must be designed. The design must be verified. Only after this stage is it cost effective to code the program in a language.

Ranjan Das and Gunendra Chandra (2013) conducted a study on math anxiety: the problem solving factor in school mathematics. The study revealed that math anxiety as an important factor of poor performance in terms of solving mathematical problems of school students in mathematics and how to assist in justifying math anxiety. Ronny Scherer and udiger Tiemann (2014) conducted a study on evidence on the effects of task interactivity and grade level on thinking skills involved in complex problem solving, which ended up with the finding of psychological theories of problem solving and

interactivity can be transferred to complex problem-solving situations in the domain of science. The investigator has reviewed many studies which are related to problem solving ability. As the review of related literature clearly shows that nobody has tried to investigate problem solving ability in computer science for standard XI students. Therefore the present investigation is unique in nature.

## NEED AND SIGNIFICANCE OF THE STUDY

Problem solving is a fundamental skill necessary for students. A problem that requires creative and logical thought, the method used in solving problem is the process that assists in eventually producing a product or a solution. A variety of views about thinking and problem solving has been proposed. Notable among them are behavioural, information processing and constructivism. The behavioural approach views problem solving as a stimulus and a response without intervening process. The information processing approach is defined as a form of means end analysis that aims at discovering a process description of the path that leads to a desired goal. The constructivist approach grounded in Piager's work describes problem solving as an ever knowledge construction and understanding process utilizing past experiences, resource as well as active assimilation of new information. Both constructivist and information processing approaches are branches of the cognitive perspective in which skills such as reasoning, comprehending and planning are central concepts in problem solving. Computer science instructors teach their students to develop the common skills of problem solving algorithms that are necessary to create solutions. These skills are what the instructors want their students to know. To develop useful algorithms, students should realize that problem solving is a recursive process along where information obtained and skills gained at any one point in the process may be revisited at other points along the way to a solution. For potential solutions should be reviewed to see that it satisfies the objectives revise the potential solutions if they

don't. Therefore the investigator wants to study the level of problem solving ability among standard XI students.

**OBJECTIVES OF THE STUDY**

1. To find out the level of problem solving ability in Computer Science among Standard XI students.
2. To find whether there is any significant relationship between problem solving ability and academic achievement of standard XI students.
3. To find out whether there is any significant difference in the Problem solving Ability in computer Science among Standard XI students with respect to nature of school, type of school and locality of the school.

**METHOD ADOPTED**

Survey method was adopted for the study.

**Samples Selected**

Three hundred standard XI students were selected randomly from various schools of Tirunelveli district for the study. Descriptive statistics and inferential statistics are used for analysing the data.

**Analysis and interpretation of the data**

There is no significant relationship between the problem solving ability and academic achievement of standard XI higher secondary students.

**Table 1**

Relationship between	Calculated value 'r'	Table value 'r'	Remarks
Problem Solving Ability and Tenth Mark	.605	0.182	S

It is inferred from the above table that the calculated value of r .605 is greater than table value of r (0.182) for at 5% level of

significant. Hence the null hypothesis is rejected. It shows that there is significant correlation between problem solving ability and tenth mark.

There is no significant difference in the problem solving ability in computer science among XI Standard students with respect to locality of the school

**Table:2**

Dimension	Locality of the residence	Variance	Sum of Squares	Mean Squares	df	F Value	Remarks
Problem solving Ability	Rural	Between	441.345	220.673	2,297	11.536	S
	Urban		5681.385	19.129			
	Semi Urban	Within					

(At 5% level of significant the table value of 'F' is 3.03) S-Significant

It is inferred from the above table that the calculated value of 'F' 11.536 is greater than table value of 'F' (3.03) for df 2,297 at 5% level of significant. Hence the null hypothesis is rejected. It shows that, there is significant difference among the mean score of Problem solving ability with respect to locality of school.

There is no significant difference in the problem solving ability in computer science among Standard XI students with respect to nature of school.

**Table:3**

Dimension	Nature school	Variance	Sum of Squares	Mean Squares	df	F Value	Remarks
Problem solving ability	Boys	Between	201.520	100.760	2,297	5.054	S
	Girls						
	Co education	Within	5921.210	19.937			

(At 5% level of significant the table value of 'F' is 3.03) S-Significant

It is inferred from the above table that the calculated value of 'F' 5.054 is greater than table value of 'F' (3.00) for df 2,297 at 5% level of significant. Hence the null hypothesis is rejected. It shows that, there is significant difference

among the mean score of the problem solving ability with respect to nature of school. It is inferred from the mean value that co education students had more problem solving ability than boy's school girl's school.

There is no significant difference in the problem solving ability in computer science among Standard XI students with respect to type of school.

**Table:4**

Dimension	Type of school	Variance	Sum of Squares	Mean Squares	df	F Value	Remarks
Problem solving ability	Government	Between	2464.983	1232.491	2,297	100.075	S
	Government Aided						
	Private	Within	3657.747	12.316			

(At 5% level of significant the table value of 'F' is 3.03) S-Significant

It is inferred from the above table that the calculated value of 'F' 100.075 is greater than table value of 'F' (3.00) for df 2,297 at 5% level of significant. Hence the null hypothesis is rejected. It shows that, there is significant difference among the mean score of the problem solving ability with respect to type of school. It is inferred from the mean value that private school students had more problem solving ability than government and government aided.

#### **Findings of the study**

- i. The students of Standard XI have relationship between the problem solving ability and the score of standard X.
- ii. The students of Standard XI from rural, urban and semi urban areas differ in the problem solving ability. On comparing their mean scores, urban students are better than other.
- iii. The students of Standard XI who are studied in rural, urban and semi urban differ in the problem solving ability. On comparing their mean scores, urban students are than others.
- iv. The students of Standard XI who are studied in boys school, girls school and co education differ in the problem solving ability. On comparing their mean scores, coeducation students are better than others.
- v. The students of Standard XI who are studied in government school, government aided school and private

school differ in the problem solving ability. On comparing their mean scores, private students are better than others.

#### **Educational Implication and interpretations**

From the analysis of the present study and on reviewing the related literature of the study, the investigator recommend the following as educational implications

- i. Students of standard XI are equal on handling problems, students of standard XI are similar in achieving marks. Further, urban students are better than rural and semi urban students., private students are better than others.
- ii. Problem solving ability is not based on age but on their interests and creativity.
- iii. Well educated father and mother can stimulate their children successfully in education.
- iv. Parents who are working in government sector can stimulate their children to concentrate on problem oriented approach.
- v. The poor income of the family also affects their students related activities.
- vi. Problem solving ability is correlated on achievement

#### **CONCLUSION**

The purpose of the present investigation is to study the level of problem solving ability in computer science among Standard XI higher secondary students. This indicated significant relationship among variables. The study may be found to be useful in the field of education. The findings of

this study may serve as database for the future research. Therefore this study suits to the above mentions to implement the findings, recommendations and suggestions in the higher secondary education level.

#### REFERENCES

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