Problem Solving Ability and Academic Achievement among IX Standard Students in Ariyalur District

Dr. R. Muthaiyan
Assistant Professor, Department of Education and Management, Tamil University, Thanjavur, Tamil Nadu, India

ABSTRACT
The present study explores the Problem solving ability and academic achievement in mathematics among IX standard students in Ariyalur District. The investigator has executed survey method in view of realizing the objectives of the study. The population for the present study has been selected as 400 students from various schools in Ariyalur district of Tamil Nadu. The population has been further limited to the high school students who are studying in IX standard. Using simple random technique from the list of schools the researcher identified. The result revealed that there is significant difference in gender. Female students achieve more in their mathematics subject (Mean value is 78.69). Government employee's children are doing well in their problem solving ability when compare to private employee, agriculture, cooli, and non government parents' children. The result also revealed that there is no significant difference in locality, and parent's educational qualification both in problem solving ability and academic achievement. And the result pointed out that there exist a moderate Positive Correlation between Problem solving ability and Academic achievement.

KEYWORDS: Problem solving Ability, Utilize Knowledge, Natural Capability, Academic Achievement

INTRODUCTION
Problem solving ability is to be a natural emotion that pervades man's feelings and thoughts and indicates to him when he is in an untenable position with respect to god. It is the emotion that leads and accompanies his wish to leap to a higher state of existence. Kierkegaard distinguished between horror and dread; dread is experienced in the absence of a touchable cause of danger, while fear involves a tangible cause of danger.

Academic achievement means those traits or attributes or distinctiveness of an individual which supply to or have a straight bearing or effect or power on the accomplishment or achievement of IX students. Finally, the study will provide as an Open Access article distributed under the terms of the Creative Commons Attribution License (CC BY 4.0) (http://creativecommons.org/licenses/by/4.0)

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STATEMENT OF THE PROBLEM
In view of the above facts, the investigator has tried to study problem solving ability and academic achievement among IX students. Psychologically and emotionally balanced, intellectually sound and socially mature IX students have higher degree of problems solving ability and academic achievement. Consequently, to make it more effective and productive, the present study has been stated as "Problem Solving Ability and Academic Achievement among IX Standard Students in Ariyalur District".

NEED AND SIGNIFICANCE OF THE STUDY
The study aims to make some positive addition to the increase of knowledge connected with the academic achievement of IX students. Precisely, it will try to gather clinching evidence through the sample of the study to know whether problem solving ability has any relation positive or negative with the academic achievement of IX students. Depending upon the environment and quantum of this relationship and the perceptive of the variables under study, the teachers, administrators, and policy makers can develop their teaching methods, curriculum and selection criteria respectively. It would also assist the students to carry desired alters in their socio-psychological behaviour.

The Counselors and psychologists can also be benefited from the findings of the study, if and when some IX students are referred to them to enhance their social and emotional maturity, to raise their confidence, to remove their problems of problem solving ability and depression. Even sociologists and public workers stand to expand by the findings of the study. They can plan ways in which to replenish the personal, interpersonal and social adequacies of IX students, if they are found wanting in these traits. The study will surely contribute towards improving problem solving ability and academic achievement of IX students. Finally, the study will provide as a valuable feedback for one and all connected with teaching faculty, besides appropriate a useful part of decisive research literature.
OBJECTIVES OF THE STUDY
The present investigation is undertaken with the following objectives.
1. To study the problem solving ability of the students belonging to different categories.
2. To examine, is there any relationship and difference between IX standard students and problem solving ability.
3. To analyze the Mathematics achievement of IX standard students belonging to different categories.
4. To correlate and compare the difference between the problem solving ability and academic achievement.

HYPOTHESES OF THE STUDY
1. There is no significant difference between Gender of IX students and their Problem Solving Ability and Academic Achievement.
2. There is no significant difference between Locality of IX students and their Problem Solving Ability and Academic Achievement.
3. There is no significant difference between Parent Educational Qualification of IX students and their Problem Solving Ability and Academic Achievement.
4. There is no significant difference between Parent’s Occupation of IX students and their Problem Solving Ability and Academic Achievement.
5. There is no Correlation between the Problem Solving Ability and Academic achievement.

RESEARCH DESIGN
In the present study the researcher adopts descriptive research design to explain record, analyze and interpret the data.

TOOL USED IN THE STUDY
The standardized tool developed by L. N. Dubey for problem solving ability of secondary students is used to evaluate problem solving ability of IX students. The scale is five point standardized scale and items of the scale are in questionnaires form.

TEST OF SIGNIFICANT DIFFERENCE BETWEEN GENDER WITH RESPECT TO THEIR PROBLEM SOLVING ABILITY AND ACADEMIC ACHIEVEMENT

<table>
<thead>
<tr>
<th>Variable</th>
<th>Gender</th>
<th>N</th>
<th>Mean</th>
<th>S.D</th>
<th>SED</th>
<th>/M1-M2/</th>
<th>t Value</th>
<th>Level of Significance</th>
</tr>
</thead>
<tbody>
<tr>
<td>Problem Solving Ability</td>
<td>Male</td>
<td>200</td>
<td>66.88</td>
<td>9.75</td>
<td>0.9212</td>
<td>1.18</td>
<td>1.2809</td>
<td>Not Significant</td>
</tr>
<tr>
<td></td>
<td>Female</td>
<td>200</td>
<td>68.06</td>
<td>8.64</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Academic Achievement</td>
<td>Male</td>
<td>200</td>
<td>73.24</td>
<td>10.74</td>
<td>1.0037</td>
<td>5.45</td>
<td>5.43</td>
<td>Significant at 0.01 level</td>
</tr>
<tr>
<td></td>
<td>Female</td>
<td>200</td>
<td>78.69</td>
<td>9.28</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

➢ Critical Value for “t” at 0.05 level is 2.58 and at 0.01 level is 1.96

From the above table, it was clear that for Problem solving ability, the calculated t value was 1.2809. It was lower than the critical value of “t”. Hence null hypothesis was accepted for Gender.

From the above table, it was clear that for Academic Achievement, the calculated t value was 5.43. It was greater than the critical value of “t”. Hence null hypothesis was rejected for Gender.

HYPOTHESIS NO.2
There is no significant difference between Locality of IX students and their Problem Solving Ability and Academic Achievement. This hypothesis was tested by using ‘t’ test.

TEST OF SIGNIFICANT DIFFERENCE BETWEEN LOCALITY WITH RESPECT TO THEIR PROBLEM SOLVING ABILITY AND ACADEMIC ACHIEVEMENT

<table>
<thead>
<tr>
<th>Variable</th>
<th>Locality</th>
<th>N</th>
<th>Mean</th>
<th>S.D</th>
<th>SED</th>
<th>/M1-M2/</th>
<th>t Value</th>
<th>Level of Significance</th>
</tr>
</thead>
<tbody>
<tr>
<td>Problem Solving Ability</td>
<td>Rural</td>
<td>286</td>
<td>66.94</td>
<td>8.66</td>
<td>1.0088</td>
<td>0.12</td>
<td>0.1190</td>
<td>Not Significant</td>
</tr>
<tr>
<td></td>
<td>Urban</td>
<td>114</td>
<td>67.06</td>
<td>9.28</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Academic Achievement</td>
<td>Rural</td>
<td>286</td>
<td>75.13</td>
<td>9.64</td>
<td>1.0324</td>
<td>0.74</td>
<td>0.7168</td>
<td>Not Significant</td>
</tr>
<tr>
<td></td>
<td>Urban</td>
<td>114</td>
<td>75.87</td>
<td>9.19</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>
Critical Value for “t” at 0.05 level is 2.58 and at 0.01 level is 1.96
From the above table, it was clear that for problem solving ability, the calculated t value was 0.1190. It was lower than the critical value of “t”. Hence null hypothesis was accepted for Locality.

From the above table, it was clear that for Academic Achievement, the calculated t value was 0.7168. It was greater than the critical value of “t”. Hence null hypothesis was accepted for Locality.

HYPOTHESIS NO.3
There is no significant difference between parent educational qualification of IX students and their Problem Solving Ability and Academic Achievement.

This hypothesis was tested by using ‘F’ test.

TEST OF SIGNIFICANT DIFFERENCE BETWEEN PARENT EDUCATIONAL QUALIFICATION WITH RESPECT TO THEIR PROBLEM SOLVING ABILITY AND ACADEMIC ACHIEVEMENT

<table>
<thead>
<tr>
<th>Variable</th>
<th>Source of Variance</th>
<th>Sum of Squares</th>
<th>df</th>
<th>Mean Square</th>
<th>F Ratio</th>
<th>Level of Significance</th>
</tr>
</thead>
<tbody>
<tr>
<td>Problem Solving Ability</td>
<td>Between Sample</td>
<td>443.45</td>
<td>3</td>
<td>147.82</td>
<td>1.607</td>
<td>N.S</td>
</tr>
<tr>
<td></td>
<td>Within Sample</td>
<td>36428.04</td>
<td>396</td>
<td>91.99</td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>Total</td>
<td>36871.49</td>
<td>399</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Academic Achievement</td>
<td>Between Sample</td>
<td>1498.75</td>
<td>3</td>
<td>499.58</td>
<td>0.981</td>
<td>N.S</td>
</tr>
<tr>
<td></td>
<td>Within Sample</td>
<td>201574.77</td>
<td>396</td>
<td>509.03</td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>Total</td>
<td>203073.52</td>
<td>399</td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

Critical Value for “F” at 0.05 level is 3.00 and at 0.01 level is 4.61
From the above table, it was clear that for problem solving ability, the calculated “F” value was 1.607. It was lower than the critical value of “F”. Hence null hypothesis was accepted for parent educational qualification.

From the above table, it was clear that for Academic Achievement, the calculated “F” value was 0.981. It was lower than the critical value of “F”. Hence null hypothesis was accepted for parent educational qualification.

HYPOTHESIS NO.4
There is no significant difference between parent’s occupation of IX students and their Problem Solving Ability and Academic Achievement.

This hypothesis was tested by using ‘F’ test.

TEST OF SIGNIFICANT DIFFERENCE BETWEEN PARENT’S OCCUPATION WITH RESPECT TO THEIR PROBLEM SOLVING ABILITY AND ACADEMIC ACHIEVEMENT

<table>
<thead>
<tr>
<th>Variable</th>
<th>Source of Variance</th>
<th>Sum of Squares</th>
<th>df</th>
<th>Mean Square</th>
<th>F Ratio</th>
<th>Level of Significance</th>
</tr>
</thead>
<tbody>
<tr>
<td>Problem Solving Ability</td>
<td>Between Sample</td>
<td>2846.73</td>
<td>4</td>
<td>711.68</td>
<td>8.26</td>
<td>0.01 Level</td>
</tr>
<tr>
<td></td>
<td>Within Sample</td>
<td>34024.76</td>
<td>395</td>
<td>86.14</td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>Total</td>
<td>36871.49</td>
<td>399</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Academic Achievement</td>
<td>Between Sample</td>
<td>2160.72</td>
<td>4</td>
<td>540.18</td>
<td>1.062</td>
<td>N.S</td>
</tr>
<tr>
<td></td>
<td>Within Sample</td>
<td>200912.8</td>
<td>395</td>
<td>508.64</td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>Total</td>
<td>203073.52</td>
<td>399</td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

Critical Value for “F” at 0.05 level is 3.00 and at 0.01 level is 4.61
From the above table, it was clear that for problem solving ability, the calculated “F” value was 8.26. It was greater than the critical value of “F”. Hence null hypothesis was rejected for parent’s occupation.

From the above table, it was clear that for Academic Achievement, the calculated “F” value was 0.981. It was lower than the critical value of “F”. Hence null hypothesis was accepted for parent’s occupation.

CORRELATION
There is no correlation between the Problem Solving Ability and Academic Achievement.

CORRELATION BETWEEN PROBLEM SOLVING ABILITY AND ACADEMIC ACHIEVEMENT

<table>
<thead>
<tr>
<th></th>
<th>Problem Solving Ability</th>
<th>Academic Achievement</th>
</tr>
</thead>
<tbody>
<tr>
<td>Problem Solving Ability</td>
<td>0.5836**</td>
<td>1</td>
</tr>
<tr>
<td>Academic Achievement</td>
<td>1</td>
<td>0.5836**</td>
</tr>
</tbody>
</table>

Critical Value at 0.05 level is 0.113 and at 0.01 level is 0.148
From the above table, it was clear that the calculated correlate value was 0.5836 which was greater than the critical value. Hence the assumption was rejected. It is revealed that r-value for Problem solving ability with Academic achievement was 0.5836. The result reveals that there exists a moderate Positive Correlation between Problem solving ability and Academic achievement.

MAJOR FINDINGS
The investigator applies the necessary statistical techniques for analysis of data. The major findings of the study are:

- The result revealed that there is significant difference in gender. Female students achieve more in their mathematics subject (Mean value is 78.69)
- Government employee’s children are doing well in their problem solving ability when compare to private
employee, agriculture, coili, and non government parents’ children.

- The result also revealed that there is no significant difference in locality, and parent’s educational qualification both in problem solving ability and academic achievement.
- And the result pointed out that there exist a moderate Positive Correlation between Problem solving ability and Academic achievement.

**SUGGESTIONS FOR FURTHER RESEARCH**

1. The finding of the present study influenced the investigator to suggest the following points for further research.
2. Similar study can be undertaken in other districts of Tamil Nadu.
3. Similar study can be undertaken on primary, middle and higher secondary students in Tamil Nadu.
4. Similar study can be undertaken in order to find out factors influencing problem solving abilities of IX students.
5. Interaction effect of economic status and students studying at different levels of education (primary, secondary and higher) on their problem solving ability and academic achievement can be taken into consideration for further studies.
6. Study may be extended to larger sample drawn from the Tamil Nadu state as a whole.

**CONCLUSION**

The above findings reveal that the IX students can understand the extent of problem solving ability. It is also seen that problem solving ability of IX students are influence to their Academic Achievement. In restricted sense only the IX students are utilizing knowledge in their day to day problem solving ability. Hence, this study concludes that problem solving ability of IX students still to be effectively improved, monitored, encouraged and modified from time to time to go on par with the developed states in our country.

**REFERENCES**


