

**A STUDY OF PROBLEM SOLVING ABILITY AMONG SECONDARY SCHOOL
STUDENTS IN RELATION TO THEIR SELF- EFFICACY**

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ABSTRACT

Problem solving is a process of overcoming difficulties that appear to interfere with the attainment of a goal. It is a procedure of making adjustment in spite of interferences. Learning is a cycle of being introduced to new information, organizing this information and understanding its real world applications, and finally integrating the material into our memory to develop problem solving ability for future decision making. Higher Secondary School students are at present developing their own problem solving ability and learning style. It has been found that persons having higher intelligence and learning capacity can solve the complex problems quickly. Therefore, it is necessary for developing better learning style on one hand and also on the other hand developing problem solving ability through proper education and training. People evaluate their experiences and thought process through self-reflection. The belief the people hold about their capabilities powerfully influence the way in which they behave. People can't accomplish task beyond their capabilities simply by their belief. For competent functioning individual needs harmony between self-beliefs, proper skills and knowledge. Hence self-perception of capabilities and self-efficacy beliefs help to stand first and acquire success in life. In the present study researcher selected four schools randomly. Further, 120 students of class 6th were selected by the researcher by random sampling technique. Problem solving ability test developed and standardized by L.N. Dubey and Self efficacy scale developed and standardized by Dr. G.B.Mathur& R. K. Bhatnagar were used to collect the data. Researcher concluded that a positive and significant relationship was found between self efficacy and problem solving ability among secondary school students.

PROBLEM SOLVING ABILITY

Problem solving means many things to many people. For some, it includes an attitude or predisposition toward inquiry as well as the actual processes by which individuals attempt to

gain knowledge. Usually, when teachers discuss problem solving on the part of students, they anticipate students will become involved with the thinking operations of analysis, synthesis, and evaluation (considered as higher-level thinking skills). Krulik and Rudnick (1980) also define problem solving as the means by which an individual uses previously acquired knowledge, skills, and understanding to satisfy the demands of an unfamiliar situation. The student must synthesize what he or she has learned, and apply it to a new and different situation. Real world situations require creativity. However, it has often been claimed that traditional classrooms or teaching approaches do not focus on developing the creative faculty of students.

An important goal of education is helping students learn how to while solving problems think more productively, by combining creative thinking (to generate ideas) and critical thinking (to evaluate ideas).

Usually everybody want to become the perfect individual, in the process one can face a lot of obstacles, humps, barriers etc. these are called as the problems for which one must have the ability to counter those problems by ones innate capacity which includes the creativity, intelligence, emotional intelligence and some other psychological factors. Through which one can able to counter the problems this innate capacity of the one individual is nothing but the “problem solving ability”. The education should provide the individuals innate capacities to make him a perfect human being with progressive development of one’s divergent thinking ability of the analysis. Problem solving is defined as “formulating new answers, going beyond the simple application of previously learned principles or rules to create a solution to a novel problem”. If students just apply a rule no real problem solving takes place. If students are given step-by-step instructions about how to reach an answer, no real problem is necessary. Thus problem solving leads to permanent change in students capabilities. In the hierarchical order of learning and acquisition of behaviour problem solving leaning denotes a higher type of learning this learning requires the use of the cognitive abilities like reasoning, thinking the power of observation, discrimination, generalization, imagination the ability to infer, draw conclusions and experimenting etc. based on earlier experiences effect of training formal or informal learning and acquisition of knowledge habits, attitudes, interests and learning sets etc. and students may be motivated to unfold the mystery of an unresolved problem. It is this type of learning which has essentially enabled human beings to contribute significantly to the progress and importance of society. In the process of learning one has to adopt and adequate technique in the form of certain methods and processes. In some cases connections or associations in the form of stimulus – response mechanism or conditioning may help while in others. Organization of the perceptual field and the use of cognitive ability may work. According to Woodworth & Marquis (1948) : Problem-solving behavior occurs in novel of difficult situations in which a solution is obtainable by the habitual methods of applying concepts and principles derived from past experience in very similar situations.

Approaches to Problem Solving

Traditionally two different approaches have been mentioned by psychologists, adhering to two families of learning theories:-

- (a) Cognitive field theory
- (b) Stimulus response theory.

Cognitive field theory emphasizes the importance of perception of total situation and relationship among its components, and restructuring the cognitive field. Many studies have been conducted on children and adults who confirm that solution of a problem is reached, all of a sudden through insight into the situation. The second point of view has been advanced by stimulus-response theories who emphasize the importance of trial and error. They hold that the problem is solved through a gradual process of elimination of errors and putting together correct responses. There has been considerable controversy as regards superiority of one approach over the other as an interpretation of problem solving.

CONCEPT OF SELF EFFICACY

Self-efficacy is defined as "people's judgments of their capabilities to organize and execute courses of action required to attain designated types of performances". Often described as task-specific self-confidence, self-efficacy has been a key component in theories of motivation and learning in varied contexts. During the past two decades, self-efficacy has emerged as a highly effective predictor of students' motivation and learning. As a performance-based measure of perceived capability, self-efficacy differs conceptually and psychometrically from related motivational constructs, such as outcome expectations, self-concept, or locus of control. Its belief have been found to be sensitive to subtle changes in students' performance context, to interact with self-regulated learning processes, and to mediate students' academic achievement.

Bandura believed that the best way to develop self-efficacy toward a particular task was through mastery of the subject. Success leads toward additional successes, and failure can cast doubt on the outcome of future attempts. When you succeed at something, you are more likely to attempt it again. Receiving positive feedback from others is a great way to build self-efficacy. Self-efficacy has proven to be responsive to improvements in student's methods of learning and predictive of achievement outcomes. In the other words self-efficacy beliefs determine how people feel, think, motivate themselves and behave. Such beliefs produce these diverse effects through four major processes. They include cognitive, motivational, affective and selection processes.

a) People with a strong sense of self-efficacy:

- ❖ View challenging problems as tasks to be mastered.
- ❖ Develop deeper interest in the activities with a stronger sense of commitment.
- ❖ Worked with interests and recover quickly from setbacks and disappointments.

b) People with a weak sense of self-efficacy:

- ❖ Avoid challenging tasks
- ❖ Believe that difficult tasks and situations are beyond their capabilities
- ❖ Focus on personal failings and negative outcomes
- ❖ Quickly lose confidence in personal abilities
- ❖

JUSTIFICATION OF THE STUDY

It is said that if you identify the problems at its root, the solution is most effective besides at a time when world's population is on the rise the competition has become tougher and is thus affecting a child's mind adversely .we as teachers have the responsibility to nurture them and build their self-efficacy to develop strong problem solving capacity so that they can have better future in life.

People possess a self-efficacy that enables them to have control over their thoughts, feelings, and actions. This self system is comprised of cognitive and affective components including the ability to learn from others, plan alternative strategies, regulate one's own behavior, and engage in self-reflection.

All learning is a cycle of being introduced to new information, organizing this information and understanding its real world applications, and finally integrating the material into our memory to develop problem solving ability for future decision making. Higher Secondary School students are at present developing their own problem solving ability and learning style. It has been found that persons having higher intelligence and learning capacity can solve the complex problems quickly. Therefore, it is necessary for developing better learning style on one hand and also on the other hand developing problem solving ability through proper education and training.

Teachers must have some knowledge of students' perceived strengths and weaknesses not simply in general learning, but in very specific learning tasks, so that they can prepare the students to get success in their life.

Teacher must encourage students to adopt a reasonable risk taking attitude while solving problems. Risk-taking attitude leads the students to overcome mental fixation in solving problems. The school should make determined efforts to the development of problem solving ability among the students. Teachers should motivate the students to make creative effort while solving problems without any fear.The teachers can be given training on problem solving ability and learning style based teaching. The teachers can be trained to prepare learning materials which are compatible with the students brain.

This study will help us to identify the deficiency of students in their self efficacy and problem solving ability. When the deficiency has been identified, we can train our teachers to overcome these deficiencies and educate our students so that they can have better self efficacy and thereof problem solving ability and they can handle difficult situation, can make better decision and succeed in this competitive world.

OBJECTIVES OF THE STUDY

The following was the objectives of the study:-

1. To study the relationship between self- concept and problem solving ability among secondary school students.
2. To compare the self efficacy of male and female secondary school students.
3. To compare the problem solving ability of male and female secondary school students.
4. To compare the self- efficacy of urban and rural secondary school students.
5. To compare the problem solving ability of urban and rural secondary school student.

HYPOTHESES OF THE STUDY

1. There exists no significant relationship between self- concept and problem solving ability among secondary school students.
2. There exists no significant difference of self efficacy among male and female among secondary school students.
3. There exists no significant difference of problem solving ability among male and female secondary school students.
4. There exists no significant difference of self- efficacy among rural and urban secondary school students.
5. There exists no significant difference of problem solving ability among rural and urban secondary school students.

DELIMITATIONS OF THE STUDY

The study is delimited to:-

1. The present study is delimited only to four secondary schools of Yamuna-Nagar district of Haryana.
2. The present study is delimited only to 6th class students.
3. The study is delimited only to 120 students.

RESEARCH METHOD T USED

Descriptive survey method was used for the collection of data.

POPULATION AND SAMPLE

It is not possible to future encompass the entire population, research was conducted by the mean of sample drawn from the target population on the basis of which generalize are drawn and made applicable to the population as a whole. In the present study the investigator has selected secondary school students studying in different schools of district Yamuna-Nagar as population. Four schools (two govt. and two private) of Yamuna-Nagar has been selected. From these schools the investigator has selected 120 students with the help of random sampling technique.

TOOLS USED

For conducting research the researcher uses different types of tools and techniques. The selection of suitable tools for particular study is great importance for successful research and depends upon certain factor such as objectives of studies, the amount of time to the disposal of investigator availability of suitable tests to find out the requires results, techniques of scoring and the like .The investigator has used:

- a) **Problem solving ability test developed and standardized by L.N.Dubey.**
- b) **Self efficacy scale developed and standardized by Dr. G.B.Mathur& R. K. Bhatnagar.**

STATISTICAL TECHNIQUES USED

For analysis of any data we have used different methods and techniques here:

- 1.To analysis the data the descriptive statistical techniques have used by researcher.
2. t-test has used by researcher for making the comparison.
- 3.Pearson's coefficient of correlation has used.

RESULTS

TABLE-4.1

CO-EFFICIENT OF CORRELATION BETWEEN SELF EFFICACY AND PROBLEM SOLVING ABILITY OF SECONDARY SCHOOL STUDENTS

| Variables | Degree of Freedom | Co-efficient of correlation "r" | Level of Significance |
|-------------------------|-------------------|---------------------------------|-----------------------|
| Self Efficacy | 118 | 0.256** | P>0.01 |
| Problem Solving Ability | | | |

***Significant at 0.01 level of significance with df/118**

Table Value= 0.194 at 0.05 Level

Table Value= .254 at 0.01 Level

Table 4.1 shows that the calculated 'r' value is 0.256 between self efficacy and problem solving ability of Secondary School Students is significant at 0.05 level of significance. The calculated value is greater than the table value. Hence, the null hypothesis is stated earlier that "There is no significant relationship between self efficacy and problem solving ability of Secondary School Students" is not retained. This shows that there exists a significance relationship between self efficacy and problem solving ability of Secondary School Students.

TABLE-4.2: SIGNIFICANCE DIFFERENCE OF SELF EFFICACY AMONG MALE AND FEMALE OF SECONDARY SCHOOL STUDENTS

| Self Efficacy | N | Mean | S.D. | t- Test | Level of Signification |
|---------------|----|-------|------|---------|------------------------|
| Male | 56 | 62.65 | 4.02 | 0.033** | P<0.05 |
| Female | 64 | 64.16 | 2.75 | | |

****Not Significant at 0.05 level of significance with df/118**

Table Value= 1.98 at 0.05 Level

Table Value= 2.62 at 0.01 Level

Table 4.2 depicts that mean self efficacy score of male and female students are 62.65 and 64.16 with S.D. 4.02 and 2.75 respectively. The calculated t-value comes out to be 0.033 is less than the table value at 0.05 level of significance. Hence, the null hypothesis which is state earlier that “There exists no significant difference of self- efficacy among male and female secondary school students” is accepted.

TABLE- 4.3: SIGNIFICANCE DIFFERENCE OF PROBLEM SOLVING ABILITY AMONG MALE AND FEMALE SECONDARY SCHOOL STUDENTS

| Problem Solving Ability | N | Mean | S.D. | t- Test | Level of Signification |
|--------------------------------|----------|-------------|-------------|----------------|-------------------------------|
| Male | 56 | 4.84 | 1.54 | 0.80 ** | P<0.05 |
| Female | 64 | 4.93 | 2.02 | | |

****Not Significant at 0.05 level of significance with df/118**

Table Value= 1.98 at 0.05 Level

Table Value= 2.62 at 0.01 Level

Table 4.2 depicts that mean problem solving ability score of male and female students are 4.84 and 4.93 with S.D. 1.54 and 2.02 respectively. The calculated t-value comes out to be 0.080 is less than the table value at 0.05 level of significance. Hence, the null hypothesis which is stated earlier that “There exists no significant difference of problem solving ability among male and female secondary school students.” is accepted.

TABLE-4.4: SIGNIFICANCE DIFFERENCE OF SELF EFFICACY AMONG URBAN AND RURAL SECONDARY SCHOOL STUDENTS

| OAS | N | Mean | S.D. | t- Test | Level of Signification |
|-------|----|-------|------|---------|------------------------|
| Urban | 45 | 65.66 | 3.37 | 0.843** | P<0.05 |
| Rural | 75 | 63.41 | 3.44 | | |

****Not Significant at 0.05 level of significance with df/118**

Table Value= 1.98 at 0.05 Level

Table Value= 2.62 at 0.01 Level

Table 4.4 depicts that mean self efficacy score of urban and rural students are 65.66 and 63.41 with S.D. 3.37 and 3.44 respectively. The calculated t-value comes out to be 0.843 is less than the table value at 0.05 level of significance. Hence, the null hypothesis which is state earlier that “There exists no significant difference of self- efficacy among urban and rural secondary school students” is accepted.

TABLE- 4.5: SIGNIFICANCE DIFFERENCE OF PROBLEM SOLVING ABILITY AMONG URBAN AND RURAL SECONDARY SCHOOL STUDENTS

| Problem Solving Ability | N | Mean | S.D. | t- Test | Level of Signification |
|-------------------------|----|------|------|----------|------------------------|
| URBAN | 45 | 4.7 | 1.80 | 0.422 ** | P<0.05 |
| RURAL | 75 | 5.0 | 1.87 | | |

****Not Significant at 0.05 level of significance with df/118**

Table Value= 1.98 at 0.05 Level

Table Value= 2.62 at 0.01 Level

Table 4.5 depicts that mean problem solving ability score of urban and rural students are 4.7 and 5.0 with S.D. 1.80 and 1.87 respectively. The calculated t-value comes out to be 0.422 is less than the table value at 0.05 level of significance. Hence, the null hypothesis which is stated earlier that “There exists no significant difference of problem solving ability among urban and rural secondary school students.” is accepted.

MAIN FINDINGS OF THE STUDY

1. A positive and significant relationship was found between self efficacy and problem solving ability among secondary school students.
2. No significant difference in Self Efficacy among male and female secondary school students was found.
3. No significant difference in problem solving ability among male and female secondary school students was found.
4. No significant difference in Self Efficacy among urban and rural secondary school students was found.
5. No significant difference in problem solving ability among urban and rural secondary school students was found.

EDUCATIONAL IMPLICATIONS

Self-efficacy is referred to the confidence in a person's ability to exercise control over his own motivation, behavior, and social environment. It can also be defined as the belief in one's capabilities to organize and carry out a task successfully.

Generally, motivation consists of the internal and external factors that stimulate the desire to attain a goal and therefore acts as a driving force for a person to achieve his goal. It has been observed that people with high self-efficacy tend to work harder and with perseverance, in order to achieve a goal. Even in the case of a setback, they tend to recover faster and are more likely to achieve a goal or an outcome.

Every teacher wants their students to be highly motivated to learn, which requires them to maintain high self-efficacy in students, not only in ones who come first, but more importantly in ones who come last. This is because students with high self-efficacy tend to grasp knowledge and concepts faster, which makes it easier for both teachers and students to ensure a collective development of the class. It has been found that high self-efficacy acts as a catalyst to a student's problem solving ability.

The term problem-solving is a mental process that people go through to discover, analyze, and solve problems. Here, before problem-solving can occur, it is important to first understand the exact nature of the problem itself because, if your understanding of the issue is faulty, your attempts to resolve it will also be incorrect or flawed. After understanding and solving the problem, the other most important part is evaluation of the results. This is because often our perspective changes when we are evaluating something and it is always better to analyze the solution with different perspectives in order to detect any hidden flaw in the "solution"

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