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# A Study of Effect of Self- Concept and Problem Solving Ability on Academic Achievement of Higher Secondary School Students of Indore

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**Abstract:** *Education is one of the important transformation and effective input for nation building. One of the main purpose of the Education is to develop the students through providing proper conditions for them so to reach the highest levels of Academic Achievement .The purpose of the study is to investigate the effect of Self-concept and Problem Solving Ability on Academic Achievement of Higher Secondary School Students. The objective of the study was to study the effect of Self- Concept, Problem Solving Ability and their interaction on Academic Achievement of students. Hypothesis was "There is no significant effect of Self-Concept, Problem Solving Ability and their interaction on Academic Achievement of students". The students of class XI and XII standard studying in higher secondary schools of Indore District constitute the population of the study. The sample consists of 104 students of Class XI and standard from 2 different C.B.S.E. higher secondary schools of Indore District. The Self-Concept Rating Scale developed by R. Saraswat and The Problem Solving Ability Test (PSAT) developed by L. N. Dubey were used as a tool for data collection for the study. The marks obtained in the previous examination were considered as academic achievement of the selected students. Data was analyzed with the help of TWO WAY ANOVA. The finding of the study reveals that the Academic Achievement of Higher Secondary School Students was not effected with the interaction of Self-Concept and Problem Solving Ability of male and female students. The researcher found that students with high Problem Solving Ability were found to be superior to students with low Problem Solving Ability. The Academic Achievement of students with high and low Self-Concept to be on the same extent. The Academic Achievement of Higher Secondary School Students was not effected with the interaction of Self-Concept.*

**Keywords:** Self-Concept, Problem Solving Ability, Academic Achievement, Higher Secondary School Students.

## I. INTRODUCTION

Self-Concept and Problem Solving Ability are the most dominating factors influencing the behaviour of an individual. At present Self-Concept and Problem Solving Ability plays a very important role in shaping the impression of ourselves and our evaluation of our adequacy. To be aware of oneself is to have an idea of oneself. To be having skills of Problem Solving Ability is to give confidence to oneself. Self-concept consists of an individual's philosophy, viewpoint, perspective, belief and characteristics about themselves.

### 1.1 Self-Concept

Self-concept is also very important factor in interpersonal communication. It is like an operating system (OS) that run in a computer. A computer won't perform well if the OS is not really good and has so many bugs. In this case, self-concept is an OS that runs a mental computer that affects someone's ability to think. The better Self more the tendencies to be successful and vice versa. Negative self concept would give rise to inferior behaviour such as pessimistic, low self confidence, having no desire to try new things, and so on. As people with good Self Concept would seem to be optimistic having desire to try new things, think and behave positively, and capable to be a good leader. That would

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explain why intelligence without good self concept is like good software that runs in had operating system. Also, there is an effective connection between good self-concept and good emotional intelligence.

### 1.2 Problem Solving Ability

Problem Solving Ability is the key to success and has been regarded as the most significant aspect of human behavior. One of the major aims of education is to develop the ability to attain better performance. No two individuals are alike. The need of problem solving behavior is to create the power of thinking which helps to find out the solution of the problem. The main objective of problem solving ability is to go through the physical, psychological, social and environmental factors which hinder the progress of an individual to attain certain goals. The need of problem solving behavior is to create the power of thinking which helps to find out the solution of the problem. The main objective of problem solving ability is to go through the physical, psychological, social and environmental factors which hinder the progress of an individual to attain certain goals.

### 1.3 Academic Achievement

Academic Achievement is important because it prepares students for future careers. It also allows students to enter competitive fields. Academic Achievement is often a sign of a refined intellect, which can help students in all areas of their lives.

### 1.4 Objectives

To study the effect of Self- Concept and Problem Solving Ability and their interaction on Academic Achievement of students.

### 1.5 Hypotheses

There is no significant effect of Self-Concept and Problem Solving Ability and their interaction on Academic Achievement of students.

### 1.6 Rationale

Various studies have been conducted on Self Concept, Problem Solving Ability and Academic Achievement separately. Some of them listed below-

Rao, Moely, & Sachs, (2000),Deshmukh (2004)Sharma. Subramaniam & Narayana (2006) Mahashevta (2007),Purohit & Praveen(2008), Prakash (2009), Gurubasappa (2009), Jagpreet Kaur, Rana and RupinderKaur (2009)Zahra Arif and Yousuf (2010),Mahajan(2011),Ghazvini 2011),Rath and Nanda (2012), Dhar(2012), Akram, Mohammad Khan(2012), Shabir and Yashpal (2012) ,Harish(2013), Prema(2013),Mansingbhai and Yashvantbhai(2014),Madhu Gupta & pooja Parsi(2015), Binu & sudha Sharma(2016),Rani(2017),Fauzi and Widjajanti (2018),Praveen lata (2019), Veerasamy, Ashok Kumar (2019) ,Zulkarnain (2021), Venkatrathanam(2021),Sathish, Subramaniam (2021)

But, while reviewing the related literature the investigator could not lay her hands on such studies that explored the effect of self- concept and problem solving ability of Higher secondary school students on their Academic Achievement by having all these variables together. Keeping this in mind, the investigator visualized a need to study Academic Achievement in relation to the Self Concept and Problem Solving Ability of higher secondary school students.

## II. METHODOLOGY

### 2.1 Sample

The population of the present study comprised of Higher Secondary C.B.S.C.School Students of Indore. The sample comprised 104 Students.Researcher have selected students from higher secondary schools as samples for the research work using stratified random sampling technique. They were selected randomly from 2 private (C.B.S.E.) school. Among them, 52 students were male and the remaining 52 were female. This forms the size of the sample. The samples were selected from Private(C.B.S.E.) schools in Indore district.

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### 2.2 Tools

**Self-Concept**

Self-Concept Rating Scale is developed by R.SARASWAT**.** The checklist contains 58 personality traits based on dimensions, such as; physical, power, ability, social, and psychological characteristics. The responses are to be given on three points rating scales. i.e. high, average, and low for each trait and under each self-concept for i.e. Real, Ideal and Social. The test –retest **reliability** of tool is 0.83.

**Problem Solving Ability**

Problem Solving Ability Test (PSAT), developed by L.N. Dubey and C.P. Mathur, enables us to measure the problem solving ability of the participant. Problem solving ability is highly correlated with intelligence, reasoning ability and mathematical ability. This test has a productive value. It helps to develop problem solving ability by providing adequate training and practice. The reliability of the problem solving test was calculated by split half method and Kudar-Richardson formula. The test has a reliability of 0.78 using Spearman-Brown Formula( split half method) and 0.76 using Kudar-Richardson method(Rational equivalance method).

**Academic Achievement**

Researcher considered previous class marks of students as Academic Achievement.

## III. PROCEDURE OF DATA COLLECTION

For the purpose of collecting data, the researcher went to the C.B.S.E. schools of Indore. Researcher took permission in written duly signed by the concerned authorities. The students were told to read and respond to each item solely on the basis of how the item applies to his or her own feelings. The time limit for the completion of total test was 1 hours. For collecting data, rapport was established with the 104 students by giving self introduction, purpose and objectives of the study in brief. They were assured of the maintenance of secrecy of their responses and statements. It was made clear to them that the result will be kept confidential and will be used for research purpose only. After establishing rapport with the students, they were asked to fill the top columns of personal particulars before the test started. They were told to mark the responses on the prescribed answer sheets. Before the administration of the questionnaire, the purpose of the study was explained to them well in advance orally so that they may direct the students and teachers to come with frank and fair mind.

## IV. DATA ANALYSIS AND INTERPRETATION

The statistical designs were chosen keeping in the view the requirement of the objectives and corresponding hypotheses of the study. To study the effect of Self- Concept and Problem Solving Ability and their interaction on Academic Achievement of students. Two Way ANOVA was used for the present study. According to the objective and hypothesis of the present study, TWO WAY ANOVA was applied for data analysis and the result is shown in the table below.

**Table: 4.1 A study of effect of Self-Concept Problem Solving Ability and their interaction on Academic Achievement of Higher Secondary school Students-**

| Source of variable | df | Sum of square | Mean of square | f | significance |
|---|---|---|---|---|---|
| Self-Concept | 1 | 11459.63 | 11456.62 | 2.58 | 0.11 |
| Problem Solving Ability | 1 | 139722.87 | 139722.88 | 31.47 | 0.00 |
| Self-Concept*Problem Solving Ability | 1 | 7524.51 | 7524.61 | 1.69 | 0.17 |
| Error | 100 | | | | |
| Total | 100 | | | | |

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**The interpretation of these results are as follows-**

**(a)**Effect of Self-Concept on Academic Achievement of Higher Secondary School Students. From the table4.1 it is clear that the 'f' value for Self-Concept is 2.58 and their significant value is 0.11 significance which is greater than 0.05 level with degree of freedom 1/100.Therefore the Null Hypothesis "There is no significant difference between the mean score of Academic Achievement of students with high and low Self-Concept is not Rejected."

Hence, it is concluded that there was no significant effect of Self-Concept on Academic Achievement of Higher Secondary School Students.

**(b)** Effect of Problem Solving Ability on Academic Achievement of Higher Secondary School Students.

From the table 4.1 it can be seen that the 'f' value for Problem Solving Ability is 31.47 and their significance value is 0.00 which is significant at 0.05 level with degree of freedom 1/100. Therefore the Null Hypothesis."There is no significant difference between the mean score of Academic Achievement of higher secondary school students with high and low Problem Solving Ability is rejected."For further analysis of mean score of Problem Solving Ability both groups are necessary. Which is given in the table 4.2.

**Table 4.2:** Mean score of Problem Solving Ability of Students:

| Problem Solving Ability | Mean |
|---|---|
| High | 422.62 |
| Low | 347.88 |

Further from the table 4.2 it is clear that the mean score of high Problem Solving Ability is 422.62 which is greater than mean score of low Problem Solving Ability which is 347.88. Hence it is concluded that the Academic Achievement of students with high Problem Solving Ability is greater than low Problem Solving Ability.

**(c)**Effect of interaction between Problem Solving Ability and Self-Concept.

From the table 4.2 it can be seen that the 'f' value for interaction between Problem Solving Ability and Self-Concept is 1.69 and their significant value is 0.19 which is not significant at 0.05 level of significance with degree of freedom 1/100.Therefore the Null Hypothesis that "There is no significant effect of Problem Solving Ability Self –Concept and their interaction on Academic Achievement of Higher Secondary School Students." is not Rejected.

Hence it is concluded that Academic Achievement of Higher Secondary School Students was found to be independent at the interaction between Problem Solving Ability and Self-Concept.

## V.. CONCLUSION

Students with high Problem Solving Ability were found to be superior to students with low Problem Solving Ability students in Academic Achievement.

The Academic Achievement of students with high and low Self-Concept to be on the same extent.

The Academic Achievement of Higher Secondary School Students was not effected with the interaction of Self – Concept and Problem Solving Ability.

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