



Research Paper

A Comparative Study of Self-Concept of Male and Female Senior Secondary Students with Respect to their Problem-Solving Ability

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Abstract

The study aimed to examine the relationship between self-concept leads towards the problem-solving ability among male and female senior secondary students. Self-concept is an important psychological construct that influences an individual's behaviour, confidence, decision-making, and academic functioning. Problem-solving ability is an essential life skill that enables students to identify problems, analyse situations, and arrive at appropriate solutions. In the contemporary educational environment, both self-concept and problem-solving ability play a significant role in students' academic and personal development.

The objectives of the study were to compare the self-concept and problem-solving ability of male and female students and to compare the self-concept of students with high and low levels of problem-solving ability. The descriptive survey method was employed for the study. A sample of 200 senior secondary students, comprising 100 male and 100 female students, was selected through simple random sampling from selected schools of Meerut District, Uttar Pradesh. The Self-Concept Rating Scale (S.C.R.S.-D) developed by Dr. (Mrs.) Pratibha Deo and the Problem-Solving Ability Test (PSAT-D) developed by Dr. L. N. Dubey were used for data collection. Statistical techniques such as Mean, Standard Deviation, and independent-samples t-test were used for the analysis of data.

It was found that these two variables self-concept and problem-solving ability were positively related. Students with a positive self-concept performed better in solving problem. The study finding will helps teachers create more interactive classroom, assist students in developing self-awareness, and support school Principals in providing a conducive learning environment.

Keywords: Educational Development, Gender Differences, Problem-Solving Ability, Self-Concept, Senior Secondary Students

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I. Introduction

Education is considered a lifelong process that helps in the overall development of an individual (Dewey, 1938)⁸. Its purpose is not only to provide knowledge but also to help students develop cognitive, emotional, social, and psychological skills needed in their daily lives and in society. With the increasing demands of education and everyday life, students are expected to develop confidence, creativity, decision-making skills, and problem-solving abilities. These changing demands have encouraged educational psychologists to study the psychological factors that affect students' learning, behaviour, and academic achievement more closely.

Many educational researchers have reported that self-concept and problem-solving ability are closely associated with each other. Students who have a positive self-concept usually trust their own abilities and are more prepared to deal with academic as well as everyday challenges. They often show determination, take initiative when faced with difficulties, and apply suitable strategies while solving problems. In contrast, students with a low self-concept may hesitate to accept challenging tasks, feel uncertain while making decisions, and find it difficult to deal with problems effectively. These observations indicate that self-concept may have an important role in the development of problem-solving ability among students.

Self-concept is considered an important psychological factor in personality development. It refers to the way people see themselves and the beliefs, feelings, attitudes, and opinions they have about who they are. Self-concept develops gradually through personal experiences and regular interaction with parents, teachers, friends, and the surrounding environment. According to (Rogers,1951)¹⁶, self-concept is the organised pattern of perceptions and beliefs that an individual holds about oneself. Students with a positive self-concept are usually more confident, motivated, and willing to work towards their educational goals. They are also more likely to accept new challenges and have a positive view of their own abilities. On the other hand, students with a negative self-concept often experience self-doubt, low confidence, and feelings of inferiority, which may affect their learning as well as their personal development. Therefore, self-concept plays an important role in the educational and personal development of students. (Rogers, 1951; Shavelson et al., 1976)¹⁶,

Problem-solving ability is an important psychological characteristic that helps students learn more effectively. It involves recognising a problem, understanding the situation, thinking about different solutions, and choosing the most suitable one. Students with good problem-solving skills are usually able to deal with academic work and everyday situations more effectively. These skills also help students think independently, make better decisions, adapt to different situations, and deal with new challenges more confidently. (Polya, 1957; Mayer, 1992)¹².

The senior secondary stage is an important period in the educational life of students. At this stage, students face higher academic expectations, competitive examinations, career-related decisions, and different social and emotional challenges. Their success in dealing with these situations depends largely on how they see themselves and how well they solve problems. Therefore, investigating the relationship between self-concept and problem-solving ability among senior secondary students is educational significant. (NCERT, 2005)¹³.

Although a number of studies have been conducted on self-concept and problem-solving ability separately, comparatively fewer studies have examined these variables together among senior secondary students. Hence, the present study was undertaken to examine the self-concept of male and female senior secondary students with respect to their problem-solving ability. The study provides valuable insights into the role of self-concept in developing effective problem-solving ability among senior secondary students.

Statement of the research Problem

A Study of Self-Concept of Male and Female Senior Secondary Students with Respect to Their Problem-Solving Ability

Definition of Concepts

Self-Concept

Self-concept hence perception of students about themselves, has to what believes, attitudes, and self-awareness. the students possess. It reflects they well organize set of ideas an assessment of their own ability, attitude and personality. Self-concept is the organized set of ideas and evaluations that a person holds regarding his or her abilities, behaviour, appearance, and overall personality. self-concept is the organized pattern of perceptions and values that an individual considers characteristic of oneself. [Rogers (1951)¹⁶]

Problem-Solving Ability

Problem-solving ability refers to the capacity of an individual to identify a problem, analyze its various aspects, generate possible alternatives, and select the most appropriate solution. It is an important cognitive and behavioural skill that enables individuals to deal effectively with academic, personal, and social challenges.

Senior Secondary Students

Senior secondary students mean those students who are studying in Classes XIth and XIIth in standard senior secondary schools. These students generally belong to the age group of approximately 16 to 18 years and are passing through an important stage of educational, social, and psychological development.

Objectives:

1. To compare the self-concept of male and female senior secondary students.
2. To compare the problem-solving ability of male and female senior secondary students.
3. To compare the self-concept of male senior secondary students with high and low levels of problem-solving ability.
4. To compare the self-concept of female senior secondary students with high and low levels of problem-solving ability.

Hypotheses:

The following null hypotheses were formulated for testing:

H01: There is no significant difference between the self-concept of male and female senior secondary students.

H02: There is no significant difference between the problem-solving ability of male and female senior secondary students.

H03: There is no significant difference between the self-concept of male senior secondary students with high and low levels of problem-solving ability.

H04: There is no significant difference between the self-concept of female senior secondary students with high and low levels of problem-solving ability.

Significance of the Study

The present study is significant from both educational and psychological perspectives. Self-concept and problem-solving ability are important factors that contribute to the overall development of students. The findings of the study may be useful in the following ways:

1. The study may help in understanding the differences in self-concept and problem-solving ability between male and female senior secondary students.
2. The findings may assist teachers in identifying differences in the self-concept of students with high and low levels of problem-solving ability, enabling them to provide appropriate educational guidance.
3. The study may provide useful information to parents and school counsellors for understanding students' self-concept and problem-solving ability and for planning suitable guidance programmes.
4. The findings may help educational institutions design academic and counselling programmes aimed at strengthening students' self-concept and improving their problem-solving ability.
5. The study may contribute to the existing body of knowledge in the field of Educational Psychology and may provide useful information for future researchers interested in comparative studies related to self-concept and problem-solving ability.
6. The findings may be useful to educational planners and policy-makers in developing strategies for enhancing the psychological and educational development of senior secondary students.

Delimitations:

1. The study was encircled to senior secondary students studying in selected schools of Meerut District, Uttar Pradesh.
2. The study was delimited to male and female students studying at the senior secondary level.
3. The study was confined to two variables, namely Self-Concept and Problem-Solving Ability.
4. The study was delimited to students studying in CBSE-recognized senior secondary schools.
5. The study was based on the responses obtained through standardized psychological tools.
6. The findings of the study were limited to the sample selected for the investigation and may not be generalized beyond similar populations.

II. Review of Related Literature

Studies on Self-Concept and Problem-Solving Ability

Palloo, Usman and Hakim (2021)¹⁵ investigated the influence of self-concept and emotional intelligence on students' problem-solving ability in physics. The findings revealed that students with a positive self-concept demonstrated significantly better problem-solving performance and higher confidence in academic tasks.

Julius (2022)¹⁰ conducted a study to examine the relationship between self-concept and problem-solving skills among secondary school students in relation to their attitudes towards solving algebraic problems. The study was conducted on **377 secondary school students**. The findings revealed a **significant positive relationship between problem-solving skills and students' attitudes towards solving algebraic problems**. However, **no significant relationship was found between students' self-concept and problem-solving skills**. The study emphasized the importance of developing problem-solving skills to improve students' attitudes towards mathematics.

Ardianty, Mustofa and Nuryadin (2022)⁵ examined the relationship between self-concept and problem-solving ability among secondary school students in environmental science. The study found a moderate positive correlation between students' self-concept and their problem-solving ability, indicating that students with a more positive self-concept tended to demonstrate better problem-solving performance.

Agustina, Kismiantini and Radite (2024)² investigated the effect of mathematics self-concept and mathematical problem-solving ability on students' learning achievement. The findings revealed that mathematics self-concept had a positive influence on students' academic achievement and that better problem-solving ability was associated with improved learning outcomes. The study emphasized the importance of developing positive self-concept to enhance students' mathematical performance.

Ani and Nurdahlia (2025)⁴ studied the influence of conceptual understanding, self-creativity and self-confidence on students' problem-solving ability. The findings indicated that conceptual understanding and self-creativity significantly influenced problem-solving ability, while self-confidence acted as an intervening variable in strengthening or weakening these relationships.

Research Gap

The review of related literature reveals that several studies have examined the relationship between self-concept and problem-solving ability among students. Most of the studies reported a positive association between self-concept and academic as well as cognitive performance. However, very limited research has specifically focused on comparing the self-concept of male and female senior secondary students with respect to their problem-solving ability.

Although previous studies have examined self-concept and problem-solving ability separately, comparatively few studies have investigated these variables together among senior secondary students. Furthermore, limited research has focused on comparing male and female students and students with high and low levels of problem-solving ability in the Indian context, particularly in Meerut District. This research gap provided the basis for undertaking the present study. Furthermore, studies conducted in the Indian context, particularly at the senior secondary level, are comparatively scarce. Therefore, the present study attempts to fill this gap by investigating the self-concept of male and female senior secondary students in relation to their problem-solving ability.

Significance of the Study

The present study is significant as it contributes to the understanding of the relationship between self-concept and problem-solving ability among senior secondary school students. Self-concept plays an important role in shaping students' confidence, motivation, academic behaviour and overall personality development. Similarly, problem-solving ability is considered an essential life skill that enables students to deal effectively with academic as well as real-life challenges.

The findings of the study may be useful for students, teachers, parents, counsellors and educational administrators. For students, the study may help in understanding the importance of developing a positive self-concept for improving problem-solving ability and academic performance. Teachers may utilize the findings to create supportive classroom environments that promote self-confidence and independent thinking among learners.

The study may also assist school counsellors in designing guidance and counselling programmes aimed at enhancing students' self-concept and problem-solving skills. Parents may benefit from understanding their role in fostering positive self-beliefs and constructive learning attitudes in their children.

Furthermore, the findings may provide useful information to educational planners and policy makers for developing strategies that support the psychological and cognitive development of students. The study may also serve as a reference for future researchers interested in self-concept, gender differences and problem-solving ability at the secondary school level.

III. Methodology

The present study was conducted to examine the self-concept of male and female senior secondary students with respect to their problem-solving ability. The study employed the **descriptive survey method**, as it was considered appropriate for collecting information regarding the existing status of the variables under investigation.

Population of the Study

Population of the study consist of higher secondary students studying in Meerut District, Uttar Pradesh.

Sample of the Study

A sample of **200 senior secondary students**, comprising **100 male and 100 female students**, was selected from selected senior secondary schools of Meerut District through the random sampling technique. For the purpose of comparison, the male and female students were further classified into high and low problem-solving ability groups on the basis of their scores obtained on the Problem-Solving Ability Test (PSAT-D). Fifty students with higher scores and fifty students with lower scores from each gender group were included for comparison.

Variables of the Study

Independent Variable

- Self-Concept

Dependent Variable

- Problem-Solving Ability

Moderator Variable

- Gender (Male and Female)

Tools Used

The following tools were used for the collection of data:

1. **Self-Concept Rating Scale (S.C.R.S.-D)** developed by **Dr. (Mrs.) Pratibha Deo, Pune.**
2. **Problem Solving Ability Test (PSAT-D)** developed by **Dr. L. N. Dubey, Jabalpur.**

Collection of Data

The investigator personally visited the selected schools and administered the tools to the students. Necessary instructions were provided before administering the tests. The responses obtained from the students were scored according to the manuals of the respective tools.

Statistical Techniques Used

Inferential statistical techniques: such as Mean, S.D. & t-test were used for the analysis of data.

Data Analysis and Interpretation:

Table 1
Comparison of Self-Concept of Male and Female Senior Secondary Students

Group	N	Mean	S.D.	t-value	Level of significance
Male Students	100	71.42	8.36	4.15	Significant at 0.05 level
Female Students	100	76.18	7.94		

Interpretation: As the table reveals, the t-value (4.15) has come out to be significant at the 0.05 level of confidence. Therefore, the null hypothesis stands rejected. By looking at the mean scores, it may be concluded that female senior secondary students possess significantly higher self-concept (Mean = 76.18) than male senior secondary students (Mean = 71.42).

Findings:

female senior secondary students possess greater self-concept in comparison to male students.

Graph 1

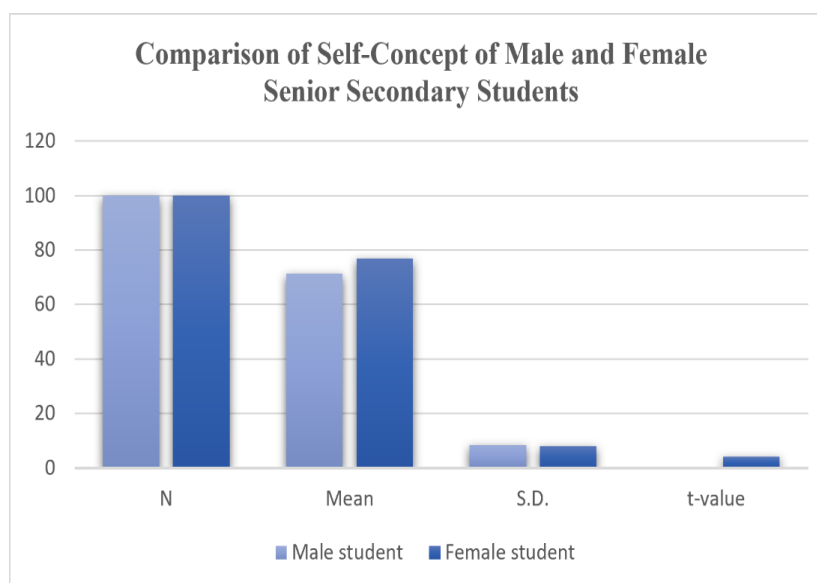


Table 2
Comparison of Problem-Solving Ability of Male and Female Senior Secondary Students

Group	N	Mean	S.D.	t-value	Level of significance
Male students	100	68.35	7.52	4.11	Significant at 0.05 level
Female students	100	72.64	7.18		

Interpretation: The calculated t-value (4.11) is greater than the table value (1.96) at the 0.05 level of significance. Therefore, the null hypothesis is rejected. Female students determine significantly better problem-solving ability than male students.

Findings: A significant difference was found between the problem-solving ability of male and female senior secondary students. Female students obtained a higher mean score (72.64) than male students (68.35). It was

concluded that female senior secondary students possessed significantly higher problem-solving ability than male senior secondary students.

Graph 2

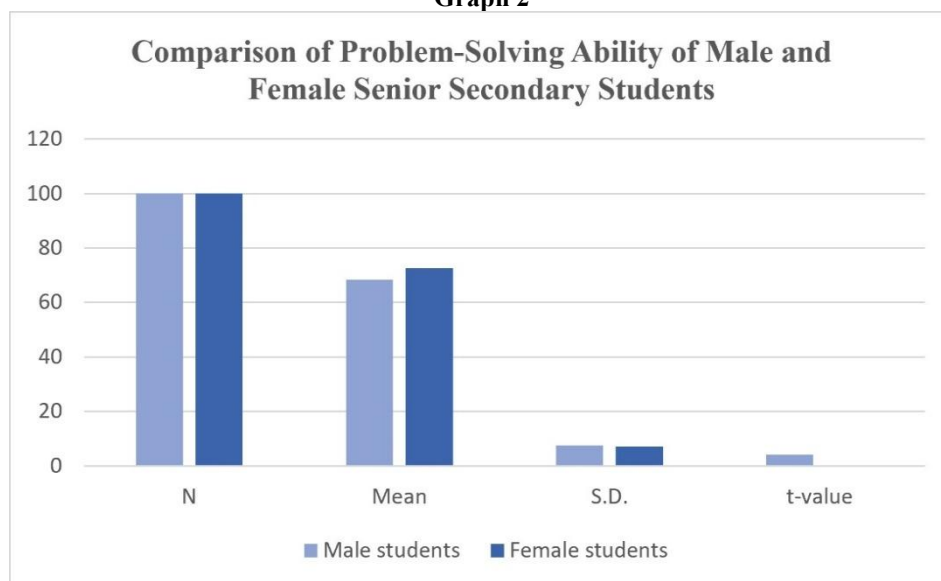


Table 3

Comparison of Self-Concept of Male Senior Secondary Students with High and Low Problem-Solving Ability

Group	N	Mean	S.D.	t-value	Level of Significance
High Problem-Solving Ability	50	78.42	6.84	9.34	Significant at 0.05 level
Low Problem-Solving Ability	50	65.28	7.31		

Interpretation:As the table reveals, the obtained t-value (9.34) is significant at the 0.05 level of confidence. Therefore, the null hypothesis stands rejected. It may be concluded that male senior secondary students with high problem-solving ability possess significantly higher self-concept (Mean = 78.42) than male senior secondary students with low problem-solving ability (Mean = 65.28).

Findings: A significant difference was found in the self-concept of male senior secondary students with high and low problem-solving ability. Male students with high problem-solving ability obtained a higher mean score (78.42) than those with low problem-solving ability (65.28). The obtained t-value (9.34) was found to be significant at the 0.05 level of confidence. Therefore, male senior secondary students with high problem-solving ability possessed significantly higher self-

Graph 3

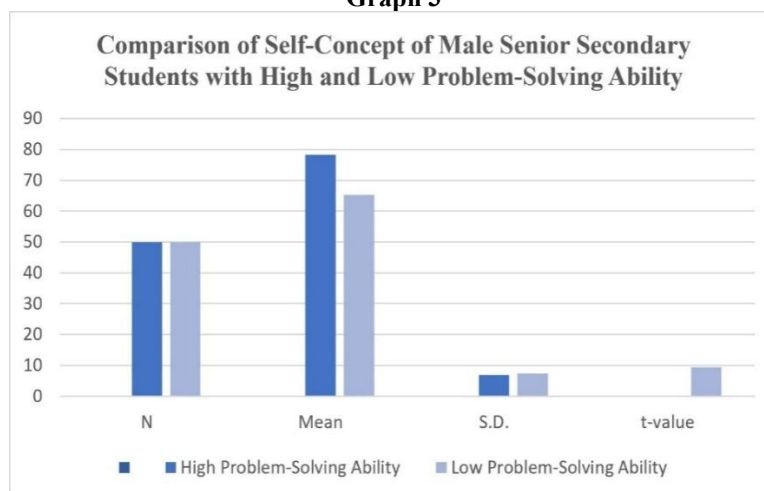


Table 4
Comparison of Self-Concept of Female Senior Secondary Students with High and Low Problem-Solving Ability

Group	N	Mean	S.D.	t-value	Level of Significance
High Problem-Solving Ability	50	81.16	6.42	8.92	Significant at 0.05 level
Low Problem-Solving Ability	50	69.35	6.88		

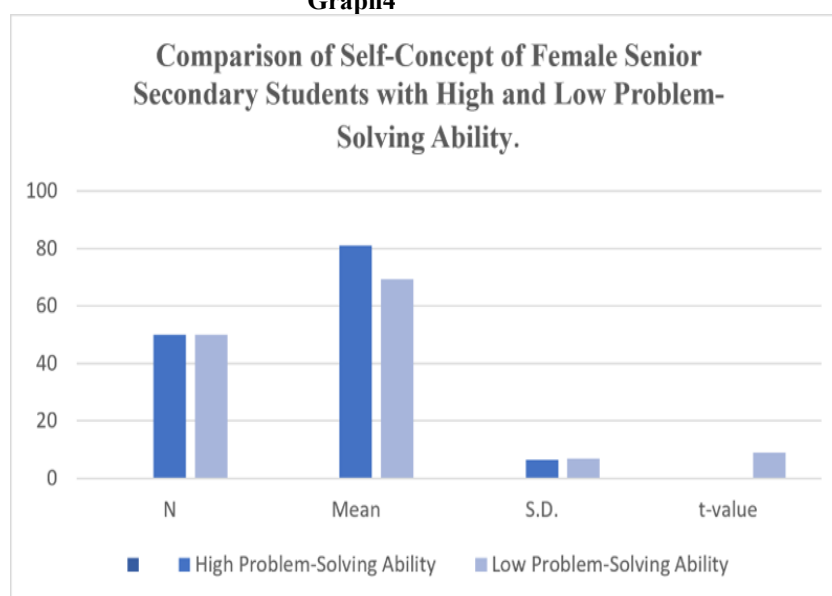
Interpretation:

As the table reveals, the obtained t-value (8.92) is significant at the 0.05 level of confidence. Therefore, the null hypothesis stands rejected. It may be concluded that female senior secondary students with high problem-solving ability possess significantly higher self-concept (Mean = 81.16) than female senior secondary students with low problem-solving ability (Mean = 69.35).

Findings:

A significant difference was found in the self-concept of female senior secondary students with high and low problem-solving ability. Female senior secondary students with high problem-solving ability obtained a higher mean score (81.16) than those with low problem-solving ability (69.35). The obtained t-value (8.92) was found to be significant at the 0.05 level of confidence. Therefore, female senior secondary students with high problem-solving ability possessed significantly higher self-concept than those with low problem-solving ability.

Graph4



IV. Discussion of Results

The findings of the present study revealed significant differences in self-concept and problem-solving ability among senior secondary students. Female students were found to possess significantly higher self-concept than male students. This finding is in agreement with the studies conducted by **Agrawal and Teotia (2015)¹** and **Shams (2019)¹⁷**, who reported that positive self-perception contributes to better educational adjustment and personal development among students.

The study further revealed that female students demonstrated significantly better problem-solving ability than male students. This finding indicates that female students were more effective in identifying problems, analyzing situations, and selecting appropriate solutions. The result is supported by previous studies which emphasized the importance of psychological and emotional competencies in the development of problem-solving skills.

A significant difference was also found between male students with high and low levels of problem-solving ability in relation to their self-concept. Male students showing strong problem-solving ability discovered significantly higher self-concept than those with weak problem-solving ability. Similar findings were reported by **Palloan, Usman and Hakim (2021)¹⁵**, who found that students with positive self-concept demonstrated greater confidence and effectiveness in solving academic problems.

Likewise, female students with high problem-solving ability were found to possess significantly higher self-concept than female students with low problem-solving ability. This finding suggests that a positive perception of oneself contributes significantly to the development of effective problem-solving behaviour. Students who believe in their abilities are more likely to face challenges confidently and persist in finding solutions.

Overall, the findings of the study indicate that self-concept plays an important role in influencing the problem-solving ability of senior secondary students. The results further suggest that students with positive self-concept are better handle academic and personal challenges effectively.

V. Conclusion

The present study, “*A Study of Self-Concept of Male and Female Senior Secondary Students with Respect to Their Problem-Solving Ability*,” was conducted to examine the self-concept and problem-solving ability of senior secondary students. The study also compared these two variables between male and female students.

The results of the study showed that female students scored higher than male students in both self-concept and problem-solving ability. It was also found that students with better problem-solving ability had a higher level of self-concept, whereas students with weaker problem-solving ability had lower self-concept scores. This shows that self-concept and problem-solving ability are closely related. Students who have confidence in themselves are usually able to think more clearly and solve problems in a better way.

A positive self-concept is helpful for students in many ways. Students who believe in their abilities are usually able to face study-related and daily life problems with more confidence. They do not give up easily when they face challenges, and this helps them do better in their studies as well as in their personal life.

Teachers, parents, counsellors, and schools can help students build a positive self-concept. Students need encouragement, support, and recognition for their efforts. When they receive such support, they become more confident and are better able to solve problems. This also helps them do well in their studies and personal life.

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