

A STUDY OF THE SCIENCE ATTITUDE OF HIGHER SECONDARY SCHOOL STUDENTS

Ms.Sukhpreet Kaur (Assistant Professor) & Ms. Manpreet Kaur (Assistant Professor)
Faculty of Education, Desh Bhagat University, Mandi Gobindgarh.

Abstract

Students' attitudes toward science significantly influence their academic performance, career choices, and lifelong engagement with scientific thinking. This study examines the **attitudes of higher secondary school students** toward science, focusing on factors such as **gender, stream of study, and school type (urban vs. rural)**. Using a structured survey instrument administered to 400 students from various schools, the study reveals meaningful patterns in students' interest in science, perceptions of its relevance, and emotional responses to science learning. Findings suggest that **positive attitudes correlate strongly with academic performance and future-science career intentions**. The paper concludes with **recommendations** for educators and policymakers to foster greater interest and engagement in science education.

1. Introduction

Science plays a crucial role in national development, innovation, and informed decision-making. However, many students begin to develop negative attitudes toward science during their secondary education, which can lead to **disinterest, underperformance, and low science career enrollment**. Understanding and addressing these attitudes are essential for building a **scientifically literate society**.

This study explores:

- Students' **attitudes toward science**.
- The relationship between science attitudes and **demographic factors**.
- How such attitudes influence **academic performance and career interests**.

2. Objectives of the Study

- To assess the **overall attitude** of higher secondary students towards science.
- To explore the influence of **gender, school location (urban/rural), and academic stream** on science attitudes.
- To analyze the relationship between **attitude towards science and science achievement**.
- To recommend measures for enhancing students' interest in science.

3. Literature Review

Research over the decades has emphasized the importance of attitude in learning:

- **Gardner (1975)** noted that students' attitudes impact their learning behavior and achievement in

science.

- **Simpson & Oliver (1990)** found a declining interest in science from early adolescence.
- Recent studies in India reveal that rural students often face structural disadvantages affecting their perception of science education (Kumar & Saikia, 2020).

Factors influencing science attitudes include:

- **Teaching methods**
- **Teacher enthusiasm**
- **Gender stereotypes**
- **Parental encouragement**
- **Exposure to practical experiments**

4. Methodology

4.1 Research Design

A **descriptive survey** design was used to gather and analyze students' attitudes toward science.

4.2 Population and Sample

- **Population:** Higher secondary students (Class 11 & 12)
- **Sample:** 400 students selected from **8 schools** in a balanced mix of **urban and rural locations**.
 - o 200 males, 200 females
 - o 250 science stream, 150 non-science stream students

4.3 Tools for Data Collection

- **Science Attitude Scale** developed and validated for Indian secondary students. It included items measuring:
 - o Interest in science
 - o Perceived value of science

- o Enjoyment of science classes
- o Confidence in learning science
- o Future aspirations in science
- **Academic achievement** in science was measured using recent exam scores.

4.4 Data Analysis

- Descriptive statistics: Mean, Standard Deviation
- Inferential statistics: **t-tests** (to compare gender and location differences), **correlation analysis** (between attitude and achievement)

5. Findings

5.1 Overall Attitude

- Mean attitude score was moderately positive ($M = 3.7$ on a 5-point scale).
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- 68% of students agreed that science is useful in everyday life.
- Only 45% said they enjoyed science practicals, indicating a gap in hands-on experiences.

5.2 Gender Differences

- **Male students** had slightly more positive attitudes ($M = 3.8$) than females ($M = 3.6$).
- Girls expressed more anxiety about physics and math-based components of science.
- However, girls were more likely to relate science to social applications (e.g., medicine, environment).

5.3 Urban vs. Rural Students

- Urban students scored significantly higher in science attitude ($M = 3.9$) than rural students ($M = 3.5$).
- Rural students cited **lack of lab facilities and teacher support** as reasons for their lower engagement.

5.4 Stream Differences

- As expected, students from the **science stream** exhibited more favorable attitudes ($M = 4.1$) than those in commerce/arts ($M = 3.4$).

5.5 Attitude and Academic Performance

- A strong **positive correlation** ($r = 0.72$) was found between science attitude and science exam scores.
- Students with positive attitudes were also more likely

to express **interest in pursuing science careers** (engineering, healthcare, research).

6. Discussion

The findings confirm that students' attitudes towards science are influenced by **gender, location, and subject stream**, and significantly impact **academic performance**. The urban-rural divide highlights the need for **resource equity and pedagogical support** in rural schools. Gender stereotypes also continue to shape science engagement, particularly in subjects like physics and engineering.

This study highlights the importance of:

- **Student-centered teaching**
- **Gender-sensitive classroom practices**
- **Experiential science learning**
- **Career counseling in science**

7. Recommendations

1. Strengthen Laboratory Infrastructure

- o Especially in rural schools to encourage hands-on learning.

2. Make Science Learning Enjoyable

- o Use **inquiry-based and project-based learning** to make science engaging.

3. Train Teachers in Gender-Sensitive Methods

- o Address biases and create inclusive learning environments.

4. Encourage Mentorship Programs

- o Invite professionals in science careers to inspire students.

5. Bridge the Urban-Rural Gap

- o Provide e-learning tools and mobile science labs for rural schools.

8. Conclusion

Attitudes towards science among higher secondary students play a pivotal role in shaping their academic and professional futures. While students generally view science positively, **gender, socio-economic location, and stream selection** influence these perceptions. **Targeted interventions**, informed teaching practices, and inclusive school policies are essential to nurture a **scientifically curious and capable generation**.

9. References

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