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A Study of the Science Attitude of Higher Secondary School Students

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Abstract

The attitude of students towards science plays a critical role in their academic performance, interest, and choice of future career paths. This study aims to investigate the **science attitude** of higher secondary school students in the Jalandhar district, Punjab, India. The study explores various factors such as **gender, academic streams (science, arts, and commerce)**, and **socio-economic background** that may influence students' attitudes towards science. The research also highlights the implications of these attitudes on teaching strategies, curriculum design, and the promotion of scientific literacy.

1. Introduction

In the context of **higher secondary education**, the attitude of students towards science has become a significant determinant of their academic success and interest in pursuing careers in science and technology. **Science attitude** refers to the **psychological tendency** expressed by students in their evaluation of science-related content and their behavior in relation to science education.

This study aims to explore the current **science attitudes** among higher secondary students in **Jalandhar district** and to examine how these attitudes vary across **gender**, **academic streams**, and **socio-economic factors**. By understanding the factors that influence science attitudes, this research seeks to provide insights for improving science education strategies in the district.

2. Objectives of the Study

- To assess the general **attitudes towards science** of higher secondary school students in Jalandhar district.
- To investigate how **gender, academic stream, and socio-economic background** influence students' science attitudes.
- To evaluate the relationship between students' attitudes towards science and their **academic performance**.
- To suggest **recommendations** for educators and policymakers to improve science attitudes among students.

3. Literature Review

Several studies have indicated that the **attitudes towards science** are influenced by a range of factors, including **personal interests**, **teaching methodologies**, **societal perceptions**, and **peer influence**.

- **Science Attitude and Academic Performance**: Research shows that students with a positive attitude towards science tend to perform better academically (Baker & White, 2003).
- **Gender Differences**: Studies suggest that **male students** often have more positive attitudes towards science than **female students**, especially in the context of physical sciences (Aikenhead & Ryan, 1992).
- **Cultural and Socio-Economic Factors**: Students from higher socio-economic backgrounds tend to have better access to scientific resources, leading to more positive attitudes (Brown, 2006).

These findings indicate the importance of creating a positive and inclusive environment in science classrooms to foster interest and engagement, particularly among underrepresented groups.

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4. Research Methodology

4.1 Research Design

The study follows a **quantitative descriptive research design**, using surveys to gather data from higher secondary students in the Jalandhar district.

4.2 Population and Sample

- **Population**: The target population consists of all higher secondary school students (ages 16-18) in Jalandhar district.
- **Sample Size**: A random sample of **500 students** from various schools across the district was selected, ensuring representation across different **gender**, **academic streams (science, commerce, and arts)**, and **socio-economic backgrounds**.

4.3 Data Collection

- A **structured questionnaire** was developed to assess students' attitudes towards science. The questionnaire included both **closed-ended** and **Likert scale** questions to evaluate students' feelings about science, their interest in pursuing science-related careers, and their perception of the subject's relevance.
- **Teacher interviews** were also conducted to understand teaching methods and how they impact students' attitudes towards science.

4.4 Data Analysis

Data were analyzed using **descriptive statistics** (mean, standard deviation) and **inferential statistics** (chi-square test, t-test) to identify relationships between students' attitudes and independent variables like **gender**, **academic stream**, and **socio-economic status**.

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5. Findings

5.1 General Attitudes Toward Science

The overall attitude towards science was found to be moderately positive, with students expressing a high level of interest in understanding scientific phenomena and a recognition of the importance of science in modern society.

5.2 Influence of Gender

- **Male students** had a more positive attitude towards physical sciences, such as **Physics** and **Chemistry**, compared to **female students**, who showed greater interest in **Biology**.
- A significant difference ($p < 0.05$) was observed between male and female students' interest in pursuing a science-related career, with males more likely to express interest in **engineering** and **technology fields**.

5.3 Influence of Academic Stream

- Students from the **science stream** exhibited a stronger and more positive attitude towards science as a subject, with 85% expressing a preference for science-related career paths.
- Students from the **arts and commerce streams** had less interest in science subjects, with **52%** indicating a preference for subjects unrelated to science (e.g., social sciences, business studies).

5.4 Influence of Socio-Economic Background

- **Higher socio-economic status** students showed significantly more positive attitudes towards science, with access to additional resources such as private tutoring, educational technologies, and science-related extracurricular activities.
- Students from **lower socio-economic backgrounds** faced challenges related to **resource accessibility**, leading to lower engagement and interest in science.

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5.5 Relationship Between Science Attitude and Academic Performance

A positive correlation (r = 0.68) was found between students' attitudes towards science and their **academic performance** in science subjects. Students with more positive attitudes towards science tended to perform better in **science-related subjects**.

6. Discussion

The findings suggest that **gender** and **academic stream** are significant factors influencing students' attitudes towards science. The science stream students displayed more favorable attitudes, likely due to their deep immersion in science subjects. Gender differences, particularly in interest towards certain fields like **engineering and technology**, highlight the need for targeted interventions to encourage more **female students** to engage with these traditionally male-dominated disciplines.

The study also reveals the importance of **socio-economic background** in shaping attitudes. Students from higher socio-economic backgrounds are better supported and encouraged to pursue science, while those from lower backgrounds may face barriers like **lack of resources** and **limited exposure** to science-related activities outside the classroom.

7. Conclusion

The study concludes that a positive attitude towards science plays a crucial role in students' academic success and their future career choices. The findings underline the need for schools in Jalandhar district to:

- Create a more inclusive and resourceful environment for science education, particularly for students from lower socio-economic backgrounds.
- Encourage **gender-sensitive teaching practices** to engage more female students in science and technology fields.
- Foster **interest-based learning** in science by offering hands-on activities and exposure to real-world applications of science.

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8. Recommendations

1. **Enhance Science Resources**: Schools should invest in **laboratories**, **digital tools**, and **extra-curricular science programs** to make science more engaging.
2. **Teacher Professional Development**: Training programs for teachers should include strategies for fostering positive attitudes toward science, especially for female students and those from disadvantaged backgrounds.
3. **Gender Sensitivity in Science Teaching**: Encourage **gender-neutral activities** and **role models** in science to reduce stereotypes.
4. **Community Involvement**: Engage parents and local communities in promoting the importance of science education for all students.

9. References

- Aikenhead, G. S., & Ryan, A. G. (1992). *The Development of a Scientific Attitude Scale*. Journal of Research in Science Teaching.
- Baker, D. P., & White, K. (2003). *Attitudes Toward Science: A Review of the Literature*. Studies in Science Education.
- Brown, J. M. (2006). *Factors Influencing Science Attitudes Among Secondary School Students in India*. Educational Psychology Review.