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Factors Influencing Choice of Science Stream at Higher Secondary Stage

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Abstract

The choice of academic stream at the higher secondary stage plays a decisive role in shaping students' future educational and career trajectories. Among the available streams, science is often perceived as prestigious, challenging, and career-oriented, leading to increased student enrollment despite academic and psychological pressures. The present study investigates the factors influencing students' choice of the science stream at the higher secondary stage, with special reference to institutions affiliated with the Council of Higher Secondary Education (CHSE), Odisha. A descriptive survey method was employed, and data were collected from 160 science students (80 boys and 80 girls) selected from government higher secondary institutions in Sambalpur district. A self-developed questionnaire was used to examine academic, parental, peer, socio-economic, institutional, and career-related factors influencing stream selection. The findings reveal that parental expectations, perceived career opportunities, prior academic achievement, teacher influence, and societal prestige significantly influence students' choice of the science stream. Gender-based comparison indicated no statistically significant difference in the overall influence of factors between male and female students. The study highlights the need for systematic career guidance and informed decision-making mechanisms at the secondary school level.

Keywords: Science stream, higher secondary education, career choice, academic decision-making, Odisha

1. Introduction

Education serves as a critical instrument for individual development and national progress. At the higher secondary stage, education assumes special significance as students are required to select an academic stream that largely determines their future educational and occupational pathways. In India, this stage represents a transition from general education to specialization, where students choose among science, commerce, and humanities streams. Among these options, the science stream occupies a dominant position due to its perceived association with professional careers, social mobility, and economic security.

The science stream at the higher secondary level includes disciplines such as physics, chemistry, mathematics, biology, and computer science. These subjects demand high cognitive engagement, analytical skills, and sustained academic effort. Despite the rigor involved, a large number of students opt for science, often influenced by multiple internal and external factors rather than informed self-assessment.

This phenomenon raises important questions regarding the determinants of stream choice and the appropriateness of students' decisions.

In the context of Odisha, particularly under the Council of Higher Secondary Education (CHSE), a noticeable gap exists between enrollment rates in the science stream and students' academic performance outcomes. Pass percentages and division-wise results indicate that many students struggle academically after opting for science, leading to stress, dissatisfaction, and in some cases dropout or stream change. Understanding the factors influencing this choice is therefore essential for improving educational planning and student well-being.

Review of Related Literature

Previous research indicates that students' academic choices are influenced by a complex interaction of personal, social, institutional, and economic factors. Theoretical perspectives such as Rational Choice Theory and Social Cognitive Career Theory (SCCT) provide useful frameworks for understanding these decisions.

Rational Choice Theory suggests that students make educational decisions by weighing perceived costs and benefits, such as job prospects, income potential, and social prestige. Studies have shown that science subjects are often preferred due to their perceived utility in securing stable and high-status careers (Jimenez & Salas, 2000; Ihanga & Kaundia, 2001).

Social Cognitive Career Theory emphasizes the role of self-efficacy, outcome expectations, and environmental supports in career decision-making. Research by Rogers, Creed, and Glendon (2008) highlights that students' confidence in their academic abilities, combined with parental and social support, significantly influences educational planning.

Empirical studies consistently identify parental influence as a major determinant of stream selection. Parents' educational background, occupation, and socio-economic status shape students' aspirations and choices (Bourdieu, 1990; Clutter, 2010). Teachers also play a crucial role through encouragement, teaching style, and perceived subject difficulty (Wasanga, 1997; Salisbury & Ruddel, 2000).

Gender differences in science participation have been widely examined. While earlier studies suggested lower female participation due to perceived difficulty and gender stereotypes, recent findings indicate narrowing gender gaps, particularly in urban settings (Eshiwani, 2001; Naugah, 2011).

Overall, the literature indicates that stream choice is not a single-factor decision but a multidimensional process influenced by academic performance, career aspirations, parental expectations, peer influence, and institutional environment.

Objectives of the Study

1. To identify the factors influencing students' choice of the science stream at the higher secondary stage.
2. To examine whether gender differences exist in the influence of these factors.

Hypothesis

There is no significant difference between male and female students in the factors influencing the choice of the science stream at the higher secondary stage.

Methodology

Research Design

The study adopted a descriptive survey design to examine the existing conditions influencing students' choice of the science stream.

Population and Sample

The population comprised all higher secondary science students affiliated with CHSE, Odisha. The sample consisted of 80 science students (40 male and 40 female) selected from four government higher secondary institutions located in urban areas of Sambalpur district.

Tool for Data Collection

A self-developed questionnaire was used to collect data. The tool included items related to academic factors, parental influence, peer influence, teacher influence, socio-economic factors, institutional facilities, and career aspirations. Responses were measured using a three-point rating scale.

Procedure and Data Analysis

The questionnaire was administered personally by the researcher. Collected data were analyzed using descriptive statistics and the t-test to compare gender-based differences.

Results and Discussion

The analysis revealed that multiple factors jointly influence students' choice of the science stream. Parental expectations emerged as one of the most influential factors, reflecting societal beliefs regarding science as a gateway to prestigious careers. Career-related considerations, including job security and future income, strongly motivated students to choose science.

Academic factors such as previous performance in science and mathematics also played a significant role. Teacher encouragement and availability of laboratory facilities further reinforced students' decisions. Peer influence was found to be moderate but notable, particularly in urban settings.

Gender-wise comparison showed no significant difference in the overall influence of factors between male and female students, suggesting increasing parity in educational aspirations and decision-making opportunities.

These findings align with earlier studies emphasizing the combined role of personal motivation and social context in educational choices.

Educational Implications

The findings underscore the urgent need for structured career guidance programs at the secondary level. Schools should provide systematic counseling to help students assess their interests, abilities, and realistic career pathways before choosing a stream. Teachers and parents must be sensitized to support informed and student-centered decision-making rather than imposing socially driven expectations.

Conclusion

The study concludes that students' choice of the science stream at the higher secondary stage is influenced by a constellation of academic, parental, social, and career-related factors. While science continues to be viewed as a pathway to success, uninformed or externally driven choices may lead to academic stress and dissatisfaction. Ensuring informed decision-making through guidance and awareness is essential for aligning students' aspirations with their abilities and interests.

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