Gender Differences In Career Preferences Toward Science And Technology Among Tribal Adolescents In Rural Ranchi

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ABSTRACT

This study investigates gender differences in career preferences toward science and technology among tribal adolescents in rural Ranchi, Jharkhand, India. Tribal youth in rural Ranchi face unique socio-cultural and economic barriers. The research aims to understand how male and female adolescents differ in their interest, aspirations, and choice of careers in science and technology fields. A descriptive survey design was used, with data collected from 240 secondary school students (120 males and 120 females). Results reveal gender-based differences, with male students showing higher preference for engineering and technology-related careers. The study discusses socio-cultural influences, educational exposure, and family expectations as contributing factors.

Key words: Career preference, Tribal Adolescents, Gender difference

INTRODUCTION

Tribal communities, or Adivasis, comprise approximately 26% of Jharkhand's population, with 78% residing in rural areas. While education is a primary agent for transformation, tribal youth particularly in districts like Ranchi remain poorly equipped for the modern labour market. Adolescence is a critical phase where career concepts are rationalized, yet tribal students often lack the necessary vocational skills and guidance to transition into science and technology fields. In the rapidly evolving global economy, careers in science and technology have become increasingly important. These fields drive innovation, economic growth, and national development. However, gender disparities in preferences and participation persist, particularly in developing regions. Jharkhand, a state in eastern India with distinct socio-economic characteristics, provides an important context for studying gender differences in career aspirations in science and technology among adolescents.

Several studies indicate persistent gender differences in STEM (Science, Technology, Engineering, and Mathematics) career preferences worldwide. Research shows that male students tend to opt more frequently for engineering and technology, while female students often choose health sciences or teaching professions (OECD, 2019). In India, cultural expectations, limited access to resources, and gender stereotypes have been identified as influencing choices among female students (Singh & Sharma, 2021). More particularly, how the girl students from the non-affluent communities face the hurdles in terms of digital gender divide is yet to be fully explored (Centre for Catalyzing Change 2021). The digital divide has been a manifestation of socio-economic disadvantages of groups or communities which lack education and income opportunities and are marred with poverty and gender disparity (Mubarak et al. 2020; Serrano-Cinca et al. 2018; Jackson et al. 2008).

Aims of the Study:

To examine the career preferences of male and female adolescents toward science and technology.

Hypothesis:

H_0: There is no difference between male and female adolescents in their career preferences toward science and technology.

METHODOLOGY:

Research Design

A descriptive survey method was used to collect data from students in secondary schools across rural areas of Ranchi, Jharkhand.

Sample

The sample consisted of 240 adolescents (120 males and 120 females) from age 16 to 18 years, selected through stratified random sampling.

Tools

Personal Data Questionnaire (PDQ)

A self-structured personal data questionnaire (PDQ) was developed by the researcher to elicit essential demographic information from the participants, including name, age, gender, and geographical location.

Career Preference Record (CPR)

The career preference record (CPR), standardized by Bhargava and Bhargava (2001), was employed to assess the vocational inclinations of participants. The primary objective of this instrument is to assist students at the stage in identifying and selecting suitable career paths based on their inherent preference. Designed specifically for the late adolescent cohort (16-18 years), the record encompasses ten distinct vocational domains. Each domain is meticulously structured to include 20 specific vocational or sub-areas, arranged systematically in a record chart to facilitate a granular evalution of the respondent's professional interest. Area wise details are as follows; 1. Mass Media & Journalism (MMJ), 2. Artistic & Designing (AD), 3. Science & Technology (ScT), 4. Agricultural (AG), 5. Commerce & Management (CM), 6. Medical, 7. Defence, 8. Tourism & Hospitality Industry (THI), 9. Law & Order, 10. Education. Data were collected using a standardized Career Preference Questionnaire designed to measure interest levels in various science and technology careers, including engineering, computer science, medicine, biotechnology, and information technology. The scoring involves assigning one mark per preference, yielding a raw score range of 0 to 20 per area; the instrument demonstrated reliability coefficients between .54 and .87 for both male and female participants.

Statistical analysis

Statistical tools such as mean, and percentage were used to analyze gender differences in career preferences.

RESULTS AND DISCUSSION:

Table:1

Group	**Levels of Career Preference in the Science and Technology**									
	High		**Above Average**		**Average**		**Below Average**		**Low**	
	n	%	n	%	n	%	n	%	n	%
Boy	12	10	22	18.33	57	47.50	26	21.67	3	2.50
Girls	8	6.67	14	11.67	50	41.67	34	28.33	14	11.67

Levels of career preference in science and technology among gender wise It is clear from Table 1.0 and Figure 1.0 that the percentage of students in different levels of career preference in science and technology in boy students, i.e. high, above average, average, below average and low levels was found to be 10%, 18.33%, 47.50%, 21.67% and 2.50% respectively and the percentage of students in different levels of career preference in science and technology in girl students, i.e. high, above average, average, below average and low levels was found to be 6.67%, 11.67%, 41.67%, 28.33% and 11.67% respectively.

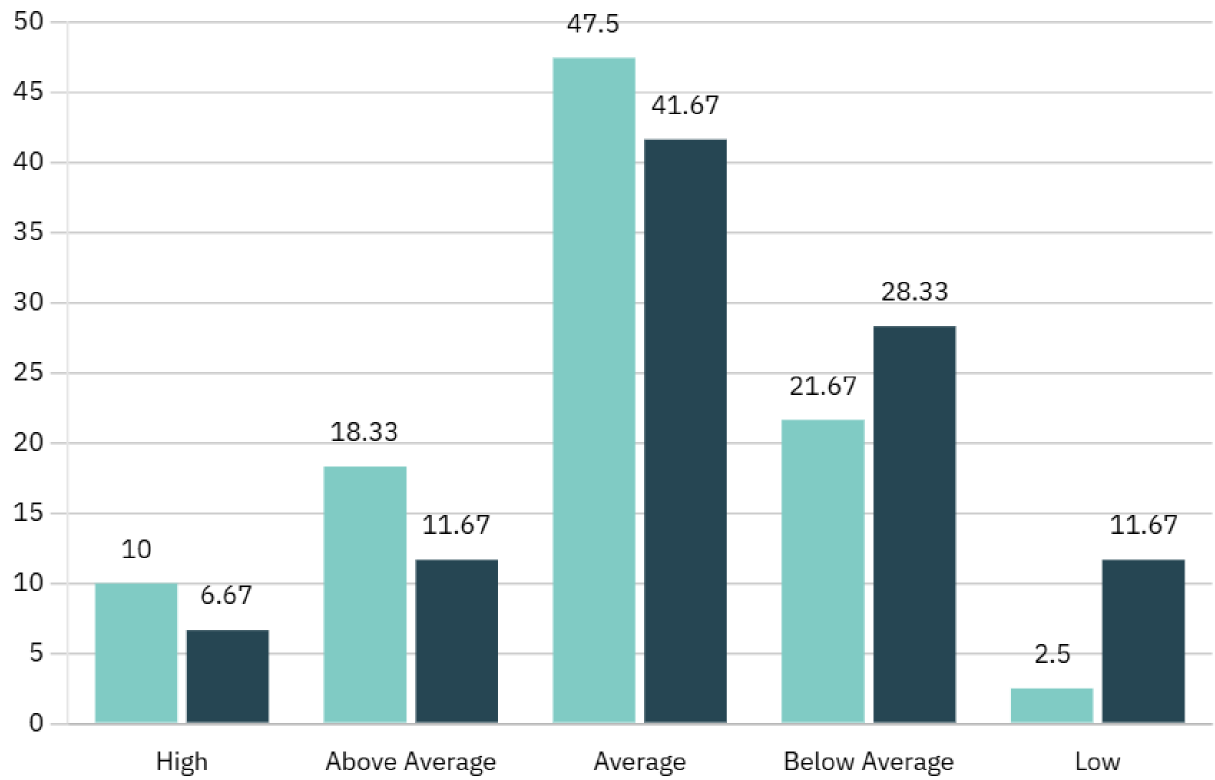
Data Summary

Table: 2

Preference Level	Boys (%)	Girls (%)	Difference
High	10.00%	6.67%	+3.33% (Boys)
Above Average	18.33%	11.67%	+6.66% (Boys)
Average	47.50%	41.67%	+5.83% (Boys)
Below Average	21.67%	28.33%	+6.66% (Girls)
Low	2.50%	11.67%	+9.17% (Girls)

- The Average Peak: The most common preference level for both genders is Average, accounting for nearly half of the responses.
- Higher Interest: Boys show a stronger lean towards the top end of the scale, outperforming Girls in the High and Above Average categories combined (28.33% for Boys vs. 18.34% for Girls).
- Lower Interest: Girls show a higher concentration in the Below Average and Low categories combined (40.0% for Girls vs. 24.17% for Boys).

Figure: 1



Career Preferences: Male students

Male adolescents showed higher interest in engineering and technology, computer science, and Information technology. These preferences indicate a stronger inclination toward technical and engineering-related professions.

Career Preferences: Female students

Female adolescents showed higher preference for biological sciences, medicine and health sciences, and biotechnology. This suggests an inclination toward life sciences and health-related fields.

CONCLUSIONS

A significant barrier to science and technology careers is the gender digital divide**.** Family and community structures often perpetuate this gap for rural tribal girls, reinforced by the minimal use of technology in rural schools. The study concludes that gender differences exist in career preferences toward science and technology among adolescents in Ranchi, Jharkhand. Males tend to prefer engineering and technical careers, whereas females show greater inclination toward biological sciences and health fields. These differences highlight the need for gender-sensitive career guidance, educational support, and policy interventions to ensure equal opportunities for all students.

Limitation

The research did not explore the deeper psychological or socio-economic causes behind preferences.

Recommendations

There is a critical need to bridge the gap between education and employment for tribal youth in Ranchi:

- Vocational Integration- Schools should integrate traditional knowledge systems with formal science and technology frameworks to reduce cultural dissonance.
- Parental Counselling- Since parental support is a key predictor of success, awareness programs for tribal parents regarding science and technology opportunities are essential.

REFRENCES

1. Centre for Catalysing Change (2021) Bridging the digital divide for girls in India. Available at: https://www.c3india.org/uploads/news/Bridging the Digital Divide-Policy Brief (website)1.pdf
2. Jackson LA, Zhao Y, Kolenic IIIA, Fitzgerald HE, Harold R, Von Eye A. Race (2008), gender, and information technology use: The new digital divide. *CyberPsychol Behav.* 11(4):437–442. doi: 10.1089/cpb.2007.0157.
3. Mubarak F, Suomi R, Kantola S-P (2020). Confirming the links between socio-economic variables and digitalization worldwide: the unsettled debate on digital divide. *J Inf Commun Ethics Soc*.18(3):415–430. doi: 10.1108/JICES-02-2019-0021.
4. OECD. (2019). Education at a Glance 2019: OECD Indicators. OECD Publishing.
5. Serrano-Cinca C, Muñoz-Soro JF, Brusca I. A multivariate study of internet use and the digital divide. Soc Sci Q. 2018;99(4):1409–1425. doi: 10.1111/ssqu.12504.
6. Singh, R., & Sharma, P. (2021). Gender and STEM education in India: A review of trends and issues. *Journal of Educational Research*.