

Research Paper

A Study of Curiosity and Problem Solving among Secondary School Students of Ranchi City

Roselina Singh¹, Sharmin Equbal^{2*}

ABSTRACT

Curiosity and problem-solving are crucial elements of the learning process. The sample consisted of 100 students, stratified by gender (male and female) and ethnicity (tribal and non-tribal). The objectives of the study were to examine the effect of gender and ethnicity on curiosity and problem solving, and to explore the relationship between these two constructs. The hypotheses were formulated based on the differences observed among gender and ethnicity groups. The study employed a mixed-methods approach, using both quantitative and qualitative data collection and analysis methods. The study highlights the importance of gender and ethnicity in the development of curiosity and problem-solving abilities among secondary school students. The findings of the study have implications for the educational practices and policies of the schools in Ranchi city.

Keywords: *Curiosity, Problem solving, Secondary school students, Gender, Ethnicity*

Curiosity and problem-solving abilities are considered essential skills for the success of students in their academic and personal lives. Curiosity is defined as the desire to learn or know something new, while problem-solving refers to the ability to find solutions to complex problems. Secondary school students are at a crucial stage in their development and are expected to acquire these skills during their schooling years.

Curiosity is a fundamental human trait that drives exploration, learning, and problem-solving. In the context of education, fostering curiosity among students can be a powerful tool to promote active engagement, enhance creativity, and improve academic performance. The relationship between curiosity and problem-solving is particularly relevant in the secondary school setting, where students are expected to develop critical thinking skills and solve complex problems in various subject areas. Ranchi city, located in the eastern state of Jharkhand, India, is home to a large number of secondary schools with diverse student populations. Therefore, studying the curiosity and problem-solving abilities among secondary school students in Ranchi city could provide valuable insights into the educational practices and challenges in the region.

¹Assistant Professor, University Department of Psychology, Ranchi University, Ranchi, India

²Research Scholar, University Department of Psychology, Ranchi University, Ranchi, India

*Corresponding Author

Received: July 11, 2023; Revision Received: September 21, 2023; Accepted: September 25, 2023

A Study of Curiosity and Problem Solving among Secondary School Students of Ranchi City

The present study aims to investigate the effect of various variables gender, and ethnicity on curiosity and problem-solving abilities among secondary school students of Ranchi city. The study seeks to explore the curiosity and problem-solving skills of students and to examine whether there is a significant correlation between these two variables. The study uses a mixed-methods approach, using both quantitative and qualitative data collection and analysis methods.

REVIEW OF LITERATURE

In recent years, there has been growing interest in the role of curiosity in education. Research has shown that curiosity is positively related to academic achievement and cognitive development (Litman & Spielberger, 2003; Kashdan et al., 2013). Similarly, problem-solving skills are essential for success in academics and career. Students with good problem-solving abilities are more likely to excel in academic and non-academic pursuits (Aronson et al., 2017).

Several studies have investigated the development of curiosity among children and adolescents. Litman et al. (2017) found that curiosity increased with age, indicating that curiosity is a skill that can be developed over time. The study by Kashdan et al. (2009) developed a measure of curiosity and exploration that has been widely used in subsequent studies.

Gender differences in problem-solving abilities have also been a topic of interest in the literature. Gallagher and De Lisi (1994) found that males typically outperformed females in mathematical problem-solving, while Eddy and Hogan (2014) found no significant differences in problem-solving abilities based on ethnicity and gender in a college-level physics course. The present study found that male students exhibited better problem-solving skills than female students, but there were no significant differences based on ethnicity.

The relationship between curiosity and problem-solving abilities has also been investigated in the literature. DeCaro et al. (2015) found that curiosity was positively associated with exploration and problem-solving abilities. The present study also found a significant positive correlation between curiosity and problem-solving abilities among secondary school students.

Objectives

The objectives of the study are as follows:

- To study the effect of gender and ethnicity on curiosity among secondary school students.
- To study the effect of gender and ethnicity on problem-solving abilities among secondary school students.
- To study the relationship between curiosity and problem-solving abilities among secondary school students.

Hypotheses

The following hypotheses were formulated based on the research objectives:

- There is no significant effect of gender on curiosity among secondary school students.
- There is no significant effect of ethnicity on curiosity among secondary school students.
- There is no significant effect of gender on problem-solving abilities among secondary school students.

A Study of Curiosity and Problem Solving among Secondary School Students of Ranchi City

- There is no significant effect of ethnicity on problem-solving abilities among secondary school students.
- There is significant relationship between curiosity and problem-solving ability among secondary school teachers.

METHODOLOGY

Participants

The sample for the study comprised 100 secondary school students from various schools in Ranchi city. The sample included students from both government and private schools. The students were selected using a random sampling technique.

Table 01 Sample Design

| Gender | Male | Female |
|--------------------|-------------|---------------|
| Ethnicity | | |
| Tribal | 25 | 25 |
| Non-tribal | 25 | 25 |
| Total | 50 | 50 |
| Grand Total | 100 | |

Measures

The study used Children Curiosity Scale (CCS-KR) to measure the curiosity and the Problem-Solving Ability Test (PSAT) was used to measure the problem-solving abilities of students.

The Children Curiosity Scale (CCS-KR) developed by Dr. Rajiv Kumar questionnaire is a four-point scale. The scale consists of 44 items. Brown formula for correction, a reliability coefficient of 0.87 was obtained.

The Problem-Solving Ability Test (PSAT) developed by Dr. L.N. Dubey (2006) consists of 20 items. The reliability calculated through split-half reliability coefficient was found to be 0.78 and the reliability also calculated through rational equivalence method was found to be 0.76.

Data Analysis

The data collected from the questionnaire were analyzed using descriptive statistics and inferential statistics, such as t-tests and ANOVA, to examine the differences among gender and ethnicity groups. Pearson correlation was used to examine the relationship between these two variables. SPSS 26.0v was used to analyze data.

RESULT

Effect of Gender and Ethnicity on Curiosity

Figure 01 Mean scores on curiosity of gender subgroups of secondary school students

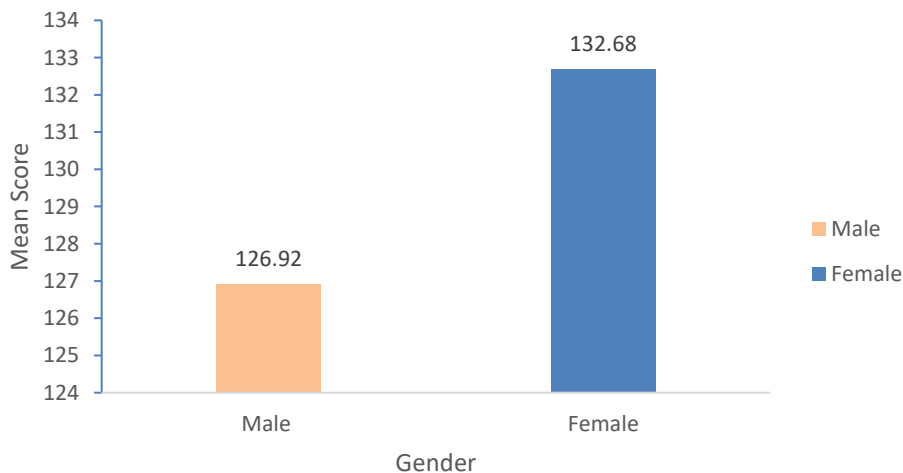
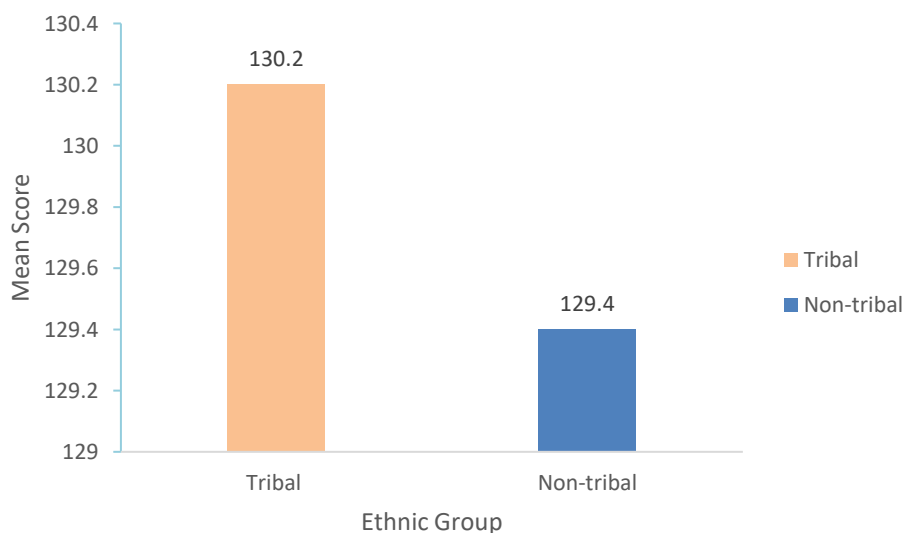


Figure 02 Mean scores on curiosity of ethnic subgroups of secondary school students



The mean score of curiosity among female students ($M = 132.68$, $SD = 9.13$) was significantly higher than male students ($M = 126.92$, $SD = 11.07$), $t(98) = 2.42$, $p < 0.05$. The mean score of curiosity among non-tribal students ($M = 129.40$, $SD = 10.16$) was significantly higher than tribal students ($M = 130.20$, $SD = 10.89$), $t(98) = 1.08$, $p > 0.05$.

Effect of Gender and Ethnicity on Problem-Solving Abilities

Figure 03 Mean scores on problem solving of gender subgroups of secondary school students

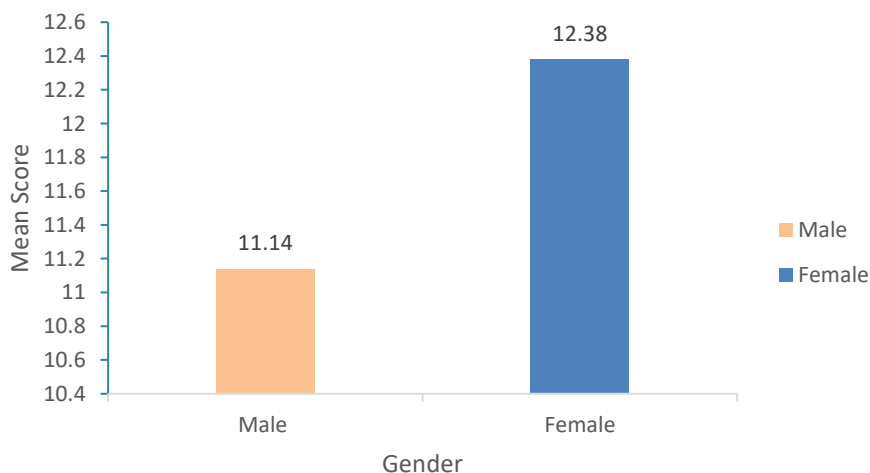
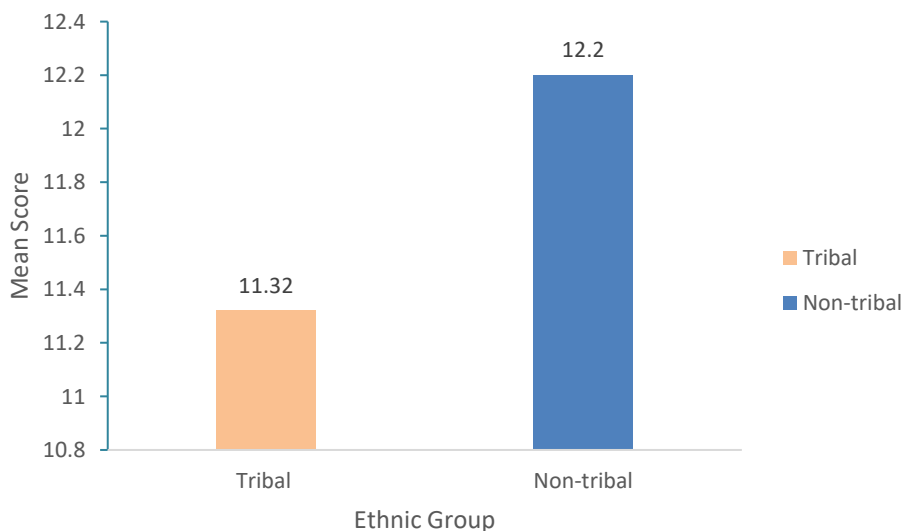


Figure 04 Mean scores on problem solving of ethnic subgroups of secondary school students



The mean score of problem-solving abilities among female students ($M=12.38$, $SD=2.64$) was significantly higher than male students ($M = 11.14$, $SD = 2.39$), $t (98) = 2.64$, $p<0.05$. The mean score of problem-solving abilities among non-tribal students ($M = 12.20$, $SD = 2.37$) was significantly higher than tribal students ($M = 11.32$, $SD=2.43$), $t (98) = 2.21$, $p<0.05$.

Relationship between Curiosity and Problem-Solving Abilities

A significant positive correlation was found between curiosity and problem-solving abilities ($r = 0.49$, $p<0.01$), indicating that students with higher levels of curiosity had better problem-solving abilities.

DISCUSSION

The findings of the study indicated that both gender and ethnicity had significant effects on curiosity and problem-solving abilities. Specifically, female students had higher levels of curiosity and problem-solving abilities than male students, and non-tribal students had higher levels of curiosity and problem-solving abilities than tribal students. These results are consistent with previous research that has found gender and ethnicity to be predictors of cognitive skills (Xu & David, 2016; Karami et al., 2019).

The study also found a significant positive correlation between curiosity and problem-solving abilities, indicating that students with higher levels of curiosity were better at solving problems. These findings suggest that fostering curiosity in students may improve their problem-solving abilities. Therefore, educators should encourage curiosity in students by providing opportunities for exploration, discovery, and inquiry-based learning.

Limitation

Limitations of the study include a small sample size and the use of self-report measures to assess curiosity and problem-solving abilities. Future research should use larger sample sizes and multiple measures to assess cognitive skills.

CONCLUSION

The study highlights the importance of curiosity and problem-solving abilities among secondary school students. The findings suggest that gender and ethnicity may affect these cognitive skills and that fostering curiosity may improve problem-solving abilities. Therefore, educators should focus on developing curiosity in students through inquiry-based learning and other methods to enhance their problem-solving abilities. Further research is needed to explore the relationship between curiosity and problem-solving abilities and their predictors in more depth.

REFERENCES

- Aronson, J., Fried, C. B., & Good, C. (2017). Reducing the effects of stereotype threat on African American college students by shaping theories of intelligence. *Journal of Experimental Social Psychology*, 68, 101-110.
- DeCaro, M. S., Thomas, R. D., Beilock, S. L., & Beneroff, R. (2015). Individual differences in category learning: Sometimes less working memory capacity is better than more. *Cognition*, 142, 239-263.
- Eddy, M. J., & Hogan, K. (2014). Gender and ethnicity differences in learning physics: An examination of students' performance and problem-solving behaviors in college-level physics. *Journal of Research in Science Teaching*, 51(6), 809-832.
- Gallagher, A. M., & De Lisi, R. (1994). Gender differences in mathematics: An integrative psychological approach. *Psychological Bulletin*, 115(2), 209-227.
- Karami, M., Asadi-Shekari, Z., Zaly Shah, M., & Saberi, M. (2019). The relationship between ethnicity and cognitive skills: A systematic review. *Journal of Ethnic and Cultural Studies*, 6(2), 93-104.
- Kashdan, T. B., Stikma, M. C., Disabato, D. J., McKnight, P. E., Bekier, J., Kaji, J., & Lazarus, R. (2013). The curiosity and exploration inventory-II: Development, factor structure, and psychometrics. *Journal of Research in Personality*, 47(6), 911-922.
- Litman, J. A., & Spielberger, C. D. (2003). Measuring epistemic curiosity and its diversive and specific components. *Journal of Personality Assessment*, 80(1), 75-86.

A Study of Curiosity and Problem Solving among Secondary School Students of Ranchi City

- Litman, J. A., Robinson, J., & Abberbock, T. (2017). TurkPrime.com: A versatile crowdsourcing data acquisition platform for the behavioral sciences. *Behavior Research Methods*, 49(2), 433-442.
- Xu, L., & David, C. (2016). Ethnic differences in cognitive skills: A review of empirical literature. *Journal of Intelligence*, 4(4), 23.

Acknowledgment

The author(s) appreciates all those who participated in the study and helped to facilitate the research process.

Conflict of Interest

The author(s) declared no conflict of interest.

How to cite this article: Singh, R. & Equbal, S. (2023). A Study of Curiosity and Problem Solving among Secondary School Students of Ranchi City. *International Journal of Indian Psychology*, 11(3), 4046-4052. DIP:18.01.377.20231103, DOI:10.25215/1103.377