

**Role of Demographic Variables in Mathematical Interest of Secondary
School Students of District Kurukshetra**

Chanchal

Research Scholar, Department of Education, Kurukshetra University, Kurukshetra

Dr. Amisha Singh

Professor, Institute of Teacher Training and Research, Kurukshetra University, Kurukshetra

Abstract

Mathematical interest is the basis for mathematical achievement and a career in mathematics. In this study, a survey was conducted on a sample of 102 secondary school students of the Kurukshetra District of Haryana state. It was found that students had different levels of mathematical interest. It was also found that there was no significant difference in mathematical interest on a gender basis; however, it was found that there was a significant difference in mathematical interest on a locality basis. It was suggested to conduct further research in this area for the generalisation of our findings.

Keywords: Mathematical Interest, Adolescents, Gender, Locality.

Introduction

Student interest, technology integration, collaborative learning, and student motivation (Boadu & Boateng, 2024) and students' engagement, motivation and positive self-belief in mathematics affect mathematical performance (Ryan et al., 2022). The teacher-related factors, student factors, instructional strategy, math concern, and infrastructure problem were positively associated with the level of interest; meanwhile, the class size and government involvement had a negative association with the level of interest in mathematics (Abid & Noori, 2023; Amaral et al., 2023; & Anigbo & Ekene n. d.). Students' interest in mathematics is influenced significantly by the teachers' teaching competency, availability of mathematics facility, teacher motivation as well as instructor quality and availability (Arthur, 2019). Students' reluctance toward mathematics is due to their lack of understanding and self-perception of low content knowledge that results in a negative perception and the negative perception was not new, but since the elementary stage (Aguilar, 2021). Mathematics interest among students is often found at a low level due to the boring nature of mathematics, a challenging curriculum, and impractical teaching and learning methods. Therefore, the Concrete-Pictorial-Abstract approach can be applied to improve students' interest in mathematics (Azmidar et al., 2017).

Students' interest and achievements in mathematics are highly related (Salifu & Bakari, 2022; Tembe et al., 2020; & Wong & Wong, 2019). Gender and problem-solving ability do not affect mathematical interest (Bala, 2023); meanwhile, students' perception of mathematics significantly affects their interest in Mathematics (Arthur et al., 2017). Problem-based learning model (Asmira et al., 2021) and flipped classroom approach (Egara & Mosimege, 2024) increase students' interest and achievement in mathematics.

Rationale of the Study

Board of School Education Haryana (2018) declared that 364800 students appeared in the Mathematics subject at the secondary stage, 247252 passed, 3369 had reappeared and 114179 failed. The overall pass percentage in mathematics was 67.78 %. It was much lower than other subjects. Central Board of School Education (2024) declared that girls have done better than boys by 2.04%, which suggests that gender has a significant effect on the achievement of the students.

It is generally seen that mathematical interest among students varies based on demographic variables and many studies have found its significance in the achievement of the students. It was found that there was a research gap as year-wise, region of study and methodology of the previous research in this field, so this study fills this research gap and is an important study in mathematics education for further research.

Objectives

1. To study the mathematical interest of secondary school students of District Kurukshetra.
2. To study the mathematical interest of secondary school students of District Kurukshetra on gender basis.
3. To study the mathematical interest of secondary school students of District Kurukshetra on locality basis.

Hypotheses

H₀₁: There is no significant difference in mathematical interest of secondary school students of District Kurukshetra on gender basis.

H₀₂: There is no significant difference in mathematical interest of secondary school students of District Kurukshetra on locality basis.

Population and Sample

The population in the present study consisted of all the secondary schools of Kurukshetra District of Haryana state. A sample of 102 secondary school students of 7th class was selected from four different schools of Kurukshetra District through random sampling technique.

Research Methodology

It was a Descriptive study. A survey was conducted on 102 secondary school students of 7th class was selected from four different schools of Kurukshetra District. The 'Mathematical Interest Scale developed and standardized by Tandon and Pal (2012) was used in this study.

Data Analysis and Interpretation

Data was analysed in light of the following three sections

Section I: Level of Mathematical Interest of Secondary School Students

Section II: Normality of Data

Section III: Differential Analysis

Section I: Level of Mathematical Interest of Secondary School Students

Table No. 1: Level of Mathematical Interest of Secondary School Students

Sr. No.	Range	N	Percentage	Interpretation

1	65-69	54	52.94	Extremely Low
2	70-79	24	23.52	Low
3	80-88	10	9.80	Below Average
4	89-100	12	11.76	Average
5	101-109	01	0.98	Above Average
6	110-118	01	0.98	High
7	119 & above	00	0.0	Extremely High

It is found from Table no. 1 that 52.94 percent secondary school students had an extremely low level, 23.52 percent secondary school students had a low level, 9.80 percent secondary school students had a below average level, 11.76 percent percent secondary school students had an average level, 0.98 percent percent secondary school students had an above average level, 0.98 percent percent secondary school students had a high level and none secondary school student had an extremely high level of mathematical interest.

Section II: Normality of Data

Table No. 2: Normality of Data

	Kolmogorov-Smirnov ^a		
	Statistic	Df	Sig.
Mathematical interest	.098	102	.017

It is found from Table No. 2 that the Kolmogorov-Smirnov value is .098, which is higher than the level of significance .05; so it is found to be significant. Hence, data is normally distributed.

Section III: Differential Analysis

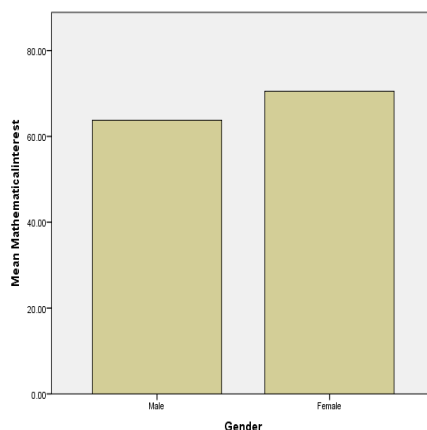
H₀₁: There is no significant difference in mathematical interest of secondary school students of District Kurukshetra on gender basis.

Table No. 3: Significance of Differences in Mean Scores of Mathematical Interest of Secondary School Students on Gender Basis

Sr. No.	Gender	N	Mean	SD	t	Interpretation
1	Male	54	63.75	16.66	1.788	Insignificant
2	Female	48	70.50	21.34		

Df = 100 & Level of Significance = .05

It is found from table no. 3 that the male counterpart had a mean score of 63.75 and SD 16.66 and the female counterpart had a mean score of 70.50 and SD 21.34. It is found that female had a high mean score than male counterpart. It is represented in graph No. 1 below. It is also found that the calculated t value is 1.788, which is less than the table value of t = 1.98 at df = 100 at a level of significance .05 and hence found insignificant. So, H₀₁: There is no significant difference in mathematical interest of secondary school students of District Kurukshetra on gender basis, is accepted.



Graph No. 1: Comparison of Mean Scores of Mathematical Interest Secondary School Students on Gender Basis

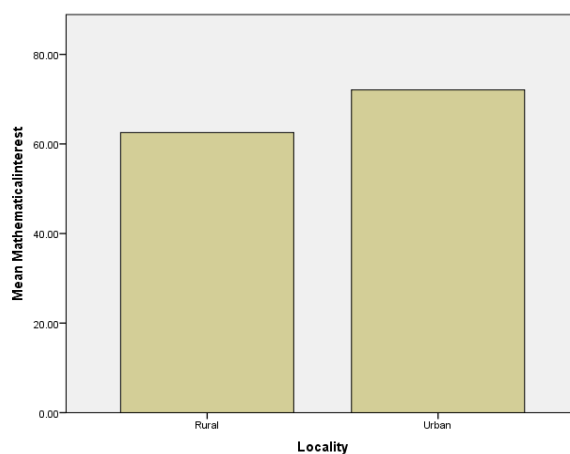
H_{02} : There is no significant difference in mathematical interest of secondary school students of District Kurukshetra on locality basis.

Table No. 4: Significance of Differences in Mean Scores of Mathematical Interest of Secondary School Students on Locality Basis

Sr. No.	Gender	N	Mean	SD	T	Interpretation
1	Rural	55	62.54	20.61	2.562	Significant
2	Urban	47	72.06	16.18		

Df = 100 & Level of Significance = .05

It is found from table no. 4 that the rural counterpart had a mean score of 62.54 and SD 20.61 and the urban counterpart had a mean score of 72.06 and SD 16.18. It is found that urban had a high mean score than rural counterpart. It is represented in graph No. 2 below. It is also found that the calculated t value is 2.562, which is more than the table value of $t = 1.98$ at $df = 100$ at a level of significance .05 and hence found significant. So, H_{02} . There is no significant difference in mathematical interest of secondary school students of District Kurukshetra on locality basis is rejected.



Graph No. 2: Comparison of Mean Scores of Mathematical Interest Secondary School Students on Locality Basis

Discussion of Results

Our findings revealed that students had different levels of mathematical interest. It was also found that there was no significant difference in mathematical interest on a gender basis; however, it was found that there was a significant difference in mathematical interest on a locality basis; these findings support the study conducted by Varghese (2022) who reported significant differences basis of locality, gender, management type, parental qualification and most of the sample had an average level of mathematical interest. Shibu (2016) reported that the majority of students had an average level of interest in Mathematics based on gender, locality, type of management and type of school. Sharma (2014) reported no significant differences in mathematical interest on a gender and locality basis.

Our findings are contradictory to the study conducted by Satishkumar (2023) who reported significant differences in mathematical interest of higher secondary school students based on gender, type of management, medium of instruction and fathers' education, meanwhile there was reported no significant differences in mathematical interest based on locality of the school, mode of stay, and fathers' occupation. There was a positive relationship between mathematics performance and interest in mathematics. Rajaka and Gayen (2022) found that the maximum percentage of students show high interest in Mathematics and there is no significant difference in mathematics interest on gender basis and locality. Sen and Koyunlu-Unlu (2020) reported that there were significant differences in interest in mathematics based on grade and gender. Students, their family, and their teachers affected mathematical interest significantly. Pandey (2018) reported significant differences in mathematical interest based on gender, locality, stream and parental qualifications. Frenzel et al. (2010) reported significant differences in mathematical interest on gender basis and family values and classroom characteristics also affected mathematical interest. It can be concluded that demographic variables are very important in mathematical interest and there are contradictory findings in different studies, so in future research, more studies can be conducted for the verification of our findings.

Educational Implications

1. Mathematics teachers can use our findings based on gender and locality to improve the Mathematical interest of their students.
2. Parents can use our findings based on gender and locality to improve the Mathematical interest of their children.
3. Students can use our findings based on gender and locality to improve their Mathematical interest.
4. Policy makers can use our findings based on gender and locality to improve the Mathematics curricula to improve Mathematical interest of students.

Suggestions for Further Research

1. A large sample can be selected for verification of our findings.
2. Cluster sampling techniques can be adopted in further studies.
3. Other demographic variables such as teachers' qualification and experience, socio-economic criteria and parents' educational qualification etc., can be considered in further studies.
4. Other statistical techniques can be adopted in further studies.

5. 'Mathematical Interest Scale developed and standardized by Tandon and Pal (2012) was used in this study, so in future research some other suitable scale may be used.
6. Some experimental studies can be conducted on Mathematical interest in further research.

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