



A COMPARATIVE STUDY OF HIGH SCHOOL STUDENTS IN AIZAWL CITY IN RELATION TO THEIR ACHIEVEMENT IN MATHEMATICS SUBJECT

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Abstract

Achievement in Mathematics is the stage of attainment in mathematics by the students, generally expressed in terms of grade or scores. The present study is based on the mathematical achievement of class IX and class X students in Aizawl City and the influence of parents' occupation in the achievement of students. The sample of the present study consists of 200 high school students who were selected using simple random sampling technique. Mathematics Achievement Test developed by Imam and Khatoon (2015) was used. Statistical techniques Mean, S.D., t-test and ANOVA were used to analyze the data. The result of the study shows that there is no significant difference in the mathematics achievement of class IX and class X high school students but there exist a significant difference in the achievement of mathematics subject among high school students with regards to parental occupation.

Keywords: Mathematics achievement, Mathematics subject, Class IX, Class X, Parent's Occupation and Aizawl City

INTRODUCTION

Education is a process of human enlightenment and empowerment aiming at achieving a better and higher quality of life. It nurtures cognitive abilities, skills, and attitudes to make life worth living. All the subjects taught in the school contribute to the achievement of the objective to form an integrated personality of pupils. But the subject of mathematics especially contributes much to the improvement of reasoning and logical thinking which are mainly responsible for the development of intellectual ability. The importance of mathematics is very much increased and its uses are indispensable in every walk of life. Mathematics is compulsory till Class X. And from Class XI the students can choose whether they want to take mathematics for further studies or not. According to the National Curriculum Framework (NCF) 2005, the

main goal of Mathematics education in schools is the 'mathematisation' of a child's thinking. Clarity of thought and pursuing assumptions to logical conclusions is central to the mathematical enterprise.

The achievement in mathematics subject in class IX and class X may differ immensely or may not differ at all. This can be understood and be known with the help of this study taken. This research helps in finding out whether parents' occupation have effect on the achievement made by students in high school and to find out who perform better in the achievement of mathematics.

OBJECTIVES OF THE STUDY

The study aims at achieving the following objectives:

1. To compare the mathematics achievement of class IX and class X high school students.
2. To compare the mathematics achievement of high school students with respect to parental occupation.

RESEARCH HYPOTHESES

The following hypothesis is established:

1. There is no significant difference in mathematics achievement between class IX and class X high school students.
2. There is no significant difference in mathematics achievement of high school students with respect to parental occupation.

REVIEW OF RELATED LITERATURE

Soni (2016) conducted a study on "Factors influencing student's mathematics achievement and their choice to study further mathematics". The study reveals that there exists significant grade difference in children's mathematics achievement. It was found that children of lower middle grade (5th to 7th grade) have more math achievement as compared to other groups. Similarly, math achievement of middle grade children (8th to 10th grade) is higher than math achievement of children of secondary grade (11th to 12th grade).

Omolade et al. (2014) conducted a study on "Relative effects of parents' occupation, qualification and academic motivation of wards on students' achievement in senior secondary school mathematics in Ogun state." the result shows that students whose parents belong to the high ranking occupational status have better grade in mathematics than parents belonging to low ranking occupational status. This is because parents with high ranking occupational status have enough income which can be used to provide the needed materials and support for their children in order to arouse their interest in mathematics.

METHODOLOGY

Population of the Study

The population of the study comprised of all high school students of Aizawl City.

Sample of the Study:

A sample of 200 students from 9 High Schools in Aizawl City was selected. The sample consists of 78 students from class IX and 122 students from class X. Simple random sampling technique was used for collecting the sample.

Tools for Collection of Data

For the present study, Mathematics Achievement Test developed by Imam and Khatoon (2015) was used. The test consists of 60 items in fourteen areas-

- i. Squares and square roots
- ii. Cube and cube roots
- iii. Rational Exponents and Radicals
- iv. Compound Interest
- v. Algebraic Identities
- vi. Polynomials
- vii. Equation in one variable
- viii. Parallel lines
- ix. Special types of quadrilaterals
- x. Circles
- xi. Areas
- xii. Surface Areas
- xiii. Volumes
- xiv. Statistics



Method of Data Analysis

For analyzing the data, the investigator used the following statistical techniques:

1. Frequency distribution to find out the mean and standard deviation of different groups of respondents.
2. 't'-test to find out the difference in mathematics achievement between class IX and class X high schoolstudents.
3. ANOVA to find out the difference between parental occupations of high school students.

Parents Occupation

In the present study, parental occupations were divided into three categories

- i. Government: Government employees (Police, Teachers, Doctors, Officers, Nurse, LDC, Electrician)
- ii. Private: Private employee (Teacher, Nurse, Social worker, Dentist, Business man, Lab technician)
- iii. Others: Laborer, self employed, daily wager, farmer, deceased.

FINDINGS

Objective 1: To compare the mathematics achievement of Class IX and Class X high school students.

In order to find out the difference in mathematics achievement between Class IX and X, calculation of mean value and standard deviation was done followed by t-test.

Hypothesis 1: There is no significant difference in Mathematics Achievement of class IX and class X high school students.

The following table shows the comparison of mathematics achievement of Class IX and Class X students.

Table 1: Comparison of Class IX and Class X Student's Mathematics Achievement.

Class	N	DF	MEAN	SD	SED	t- value	Significance
IX	78	198	28.73	12.05	1.74	0.64	Not Significant
X	122		27.59	12.00			

From the above table, the mean score of Class IX is 28.73 and standard deviation is 12.05 while the mean and standard deviation of Class X students is 27.59 and 12.00 respectively. The calculated t-value is 0.64 which is less than the critical value at the required level of significance.

Therefore, the null hypothesis which states that there is no significant difference in mathematics achievement of class IX and class X high school students is accepted. It can be concluded that class IX and class X school students do not differ significantly regarding their mathematics achievement. However, the mean score of class IX students is slightly higher than that of class X students.

The finding implies that Standard is not a significant differentiating factor regarding mathematics achievement.

Objective 2: To compare the mathematics achievement of high school students with respect to parental occupation.

In order to find out the difference in parental occupation, calculation using ANOVA was used.

Hypothesis 2: There is no significant difference in mathematics achievement of high school students with respect to parental occupation.

The following table shows the comparison of mathematics achievement of high school students with respect to parental occupation.

Table 2: Comparison of mathematics achievement of high school students with respect to parental occupation.

Source of Variance	df	Sum of Squares	Mean Square	F-ratio	Significant difference
Between Sets	2	163252.88	81626.44	739.43	Significant
Within Sets	197	21747.47	110.39		

From the above table, it was found that the calculated F-ratio is 739.43 is greater than the table value at 0.01 level i.e., 4.61. Therefore, the null hypothesis which states that there is no significant difference in mathematics achievement of high school students with regards to parental occupation is rejected.

Since the results indicate that there exist significant difference in mathematics achievement with respect to parental occupation, t-test was further used to compare the difference between government, private and other sectors of parental occupations.

Table 3: Comparison of mathematics achievement of high school students with respect to Government and Private parental occupation.

Occupation	N	DF	MEAN	SD	SED	t- value	Significance
Government	55	120	37.6	12.64	2	6.64	Significant
Private	67		24.32	8.62			

From the above table, the mean score of students with government parental occupation is 37.6 and standard deviation is 12.64 while the mean and standard deviation of students with private parental occupation is 24.32 and 8.62 respectively. The calculated t-value is 6.64 which is greater than the critical value at the required level of significance at 0.01 level i.e. 2.62. Therefore, there is a significant difference between high school students with government and private parental occupation.

Table 4: Comparison of mathematics achievement of high school students with respect to Government and Others parental occupation.

Occupation	N	DF	MEAN	SD	SED	t- value	Significance
Government	55	131	37.6	12.64	2.06	6.36	Significant
Others	78		24.48	10.31			

From the above table, the mean score of students with Government parental occupation is 37.6 and standard deviation is 12.64 while the mean and standard deviation of students with others parental occupation is 24.48 and 10.31 respectively. The calculated t-value is 6.36 which is greater than the critical value at the required level of significance at 0.01 level i.e. 2.62. Therefore, there is a significant difference between high school students with 'government and others' parental occupation.

Table 5: Comparison of mathematics achievement of high school students with respect to Private and Others parental occupation.

Occupation	N	DF	MEAN	SD	SED	t- value	Significance
Private	67	143	24.32	8.62	1.56	0.1	Not Significant
Others	78		24.48	10.31			

From the above table, the mean score of students with private parental occupation is 24.32 and standard deviation is 8.62 while the mean and standard deviation of students with others parental occupation is 24.48 and 10.31 respectively. The calculated t-value is 0.1 which is less than the critical value at the required level of significance at 0.05 level i.e. 1.98. Therefore, there is no significant difference between high school students with private and others parental occupation.

Discussions:

The result of the study revealed that there is no significant difference between class IX and class X high school students with respect to their mathematics achievement. This result is in contradiction with the results found by Soni. Where the study "Factors influencing student's mathematics achievement and their choice to study further mathematics" reveals that there exist significant grade difference in children's mathematics achievement. This may be because the syllabus of class IX and class X are in continuity and well balanced.

The results of the study also showed that there is significant difference between high school students having different parental occupation. This finding is in line with the findings of Imam and Singh on their study "Influence of gender, parental education and parental occupation on mathematics achievement of secondary school students". Their study found out that parental education and occupation is found to be an important factor of children's achievement in mathematics. This may be because parental involvement in the student's education has adverse effect. Parents of

Government employees mostly did better may be because parents are able to help their children in their education physically as well as financially.

Conclusion

From this study we can conclude that achievement in mathematics is greatly affected by parental occupation. Students with higher parental occupation did better in mathematics than students with lower parental occupation. The study was conducted on 200 students from class IX and class X. It was found that standard of the students was not a differentiating factor that determines the achievement in mathematics subject. The finding of this research confirms that class IX and class X does not differ in their mathematics achievement, but parental occupation does. There are many questions which need deep thinking and research to understand on why students find mathematics to be a very difficult subject, and the possible reason behind the effect of parental occupation on the achievement of the subject.

References:

- Imam, A. & Khatoun, T. (2015). *Manual for Mathematics Achievement Test*. H. P. Bhargava Book House.
- Imam, A. & Singh, G. P. (2015). Influence of gender, parental education and parental occupation on mathematics achievement of secondary school students. *Indian Journal of Research*. 4(11), 187-190. https://www.worldwidejournals.com/paripex/recent_issues_pdf/2015/November/November_2015_1448104482_63.pdf
- Omolade, A., Kassim, A., & Modupe, S. (2014). Relative effects of parents' occupation, qualification and academic motivation of wards on students' achievement in senior secondary school mathematics in Ogun state. *Journal of Education and Practice*, 5(22). <https://www.iiste.org/Journals/index.php/JEP/article/view/14547>
- Soni, A. (2016). *Factors influencing students mathematics achievement and their choice to study further mathematics* [Doctoral dissertation, Thapar Institute of Engineering and Technology]. Shodhganga@INFLIBNET. <http://hdl.handle.net/10603/260011>
- Sreeraj, K. G. (2015). *Relationship between multiple intelligences and achievement in mathematics of students at secondary level* [Doctoral dissertation, Mahatma Gandhi University, Kottayam]. Shodhganga@INFLIBNET. <http://hdl.handle.net/10603/184540>
- Sujatha, G. (2014). *Psycho social correlates of under achievement among mathematics students* [Doctoral dissertation, Sri Venkateswara University]. Shodhganga@INFLIBNET. <http://hdl.handle.net/10603/168626>
- Thambi, T. (2018). *Effectiveness of an instructional strategy based on path smoothing model on creative problem solving ability perceptual speed and achievement in mathematics of students at secondary level* [Doctoral dissertation, Mahatma Gandhi University, Kottayam]. Shodhganga@INFLIBNET. <http://hdl.handle.net/10603/255193>
- Untarti, R. & Kusuma, A. B. (2020). Mathematics Achievement vs Parenting Style. *International Journal of Advanced Science and Technology*, 29(06), 3727 - 3736. <http://sersc.org/journals/index.php/IJAST/article/view/15734>
- Wajiha, A.H. (2002). *Factors affecting academic achievement of ix standard students in mathematics* [Doctoral dissertation, Karnataka University Shodhganga@INFLIBNET. <http://hdl.handle.net/10603/96153>