International Journal of Research in Social Sciences
Vol. 9 Issue 7, July 2019,
ISSN: 2249-2496 Impact Factor: 7.081
Journal Homepage: http://www.ijmra.us, Email: editorijmie@gmail.com
Double-Blind Peer Reviewed Refereed Open Access International Journal - Included in the International Serial Directories Indexed & Listed at: Ulrich's Periodicals Directory ©, U.S.A., Open J-Gage as well as in Cabell's Directories of Publishing Opportunities, U.S.A

A STUDY OF MATHEMATICAL REASONING ABILITY OF IX GRADE STUDENTS

Anjali Dave *

Abstract

Education is the instrument for expeditious growth and the only means for desirable social change. An important aspect that education imparts is the ability to reason. Reasoning provides the autonomy to work productively and build up the skills inherent in us. This study incorporated the mathematical reasoning ability of Grade IX students of Ahmedabad. The researcher had found mathematical reasoning ability using survey method. The differences in reasoning ability were found out gender wise, zone wise and based on the type of school. The study can contribute to the reformation of educational theory or practice as it is a pervading phenomena to draw logical conclusion and solutions.

Keywords:
Mathematical;
Reasoning;

* **Department of Education, Gujarat University, Ahmedabad, Gujarat**

1. Introduction

Today's society, characterized by high demands, competition and constant change related to new scientific and technological developments, requires individuals who in addition to knowledge, have the ability to solve the challenging problems they face in their lives. Many of those challenges are based on the ability to reason. Reasoning provides the autonomy to work productively and build up the skills inherent in us.

The National Curriculum Frame work (NCF) 2005 recommends that children's life at school must be linked to their life outside the school. This principle marks a departure from the orthodox bookish learning which continues to shape our system and causes a gap between the school, home and society. It is necessary to encourage the children to reflect on their own learning and pursue imaginative activities and questions. Children are naturally curious and learn by questioning and exploration. It is through reasoning that they connect ideas and gain conceptual understanding. Mathematics emphasises the process of reasoning as one of its key practices. Thus by mathematical reasoning we learn to evaluate situations, select problem-solving strategies, draw logical conclusions, develop solutions and apply them. Mathematical reasoning is essential to bridge the gap between basic skills and higher-order thinking. It forms a part of competitive examinations and scholastic achievements. Students must be able to judge for themselves, the accuracy of their answers; they must be able to apply mathematical reasoning skills in other subject areas and in their daily lives.

Objectives

The objectives of the study are as follows-

1. To study the effect of gender on the mathematical reasoning ability of Students of Grade IX of Ahmedabad.
2. To study the effect of Zone on the mathematical reasoning ability of Students of Grade IX of Ahmedabad.
3. To study the effect of Type of school on the mathematical reasoning ability of Students of Grade IX of Ahmedabad.

Hypothesis

The researcher has framed the following hypothesis for the present study

Ho_1 There will be no significant difference between the mean scores of mathematical reasoning ability of the boys and girls of students of Grade IX of Ahmedabad.

Ho_2 There will be no significant difference between the mean scores of Mathematical reasoning Ability of Students of grade IX belonging to east and west zone.

Ho_3 There will be no significant difference between the mean scores of mathematical reasoning ability of students of grade IX belonging to Grant in Aid and Non Grant in Aid schools of Ahmedabad.

Research method

The researcher had used the survey method. In the present study researcher had taken students of grade IX of Ahmedabad city as population. The sample of 320 students of Ahmedabad city were selected by multistage sampling. The researcher used the Mathematical Reasoning Ability test, Prepared by Dr. Satishprakash S. Shukla, Ahmedabad for data collection.

3. Results and Analysis

Analysis of data is to study the organised material to discover inherent facts. Following are the analysis and interpretations.

TABLE – I

Analysis of Mathematical reasoning ability of boys and girls of students of grade IX of Ahmedabad

Variable (Gender)	NN	Mean	Standard Deviation	t-value	Significance
Boys	160	5.875	16.46	0.46	Not significant
Girls	160	76.75	17.05		

$t_{cal} = 0.46 < t_{tab} = t_{0.05} = 1.96$

Thet-value which is calculated i.e. t_{cal} = 0.46 is less than $t_{0.05}$ = 1.96 which implies that t_{cal} is not significant at $t_{0.05}$ level of significance. Hence the hypothesis that there will be no significance difference between the mean scores of mathematical reasoning ability of the boys and girls of grade IX students of Ahmedabad is not rejected at 0.05 level.

Table – II

Analysis of Mathematical reasoning ability of students of grade IX of east and West Zone of Ahmedabad.

Variable (Zone)	N	Mean	Standard Deviation	t- value	Significance
East Zone	162	75.93	16.67	0.41	Not significant
West Zone	158	76.70	16.86		

t_{cal} = 0.41 < t_{tab} = $t_{0.05}$ = 1.96

The t-value which is calculated i.e. t_{cal} = 0.41 is less than $t_{0.05}$ = 1.96 which implies that t_{cal} is not significant at $t_{0.05}$ level of significance. Hence the hypothesis that there will be no significance difference between the mean scores of mathematical reasoning ability of grade IX students belonging to east and West Zone of Ahmedabad is not rejected at $t_{0.05}$ level.

Table – III

Analysis of mathematical reasoning ability of students of grade IX belonging to Grant in aid and Non-Grant in aid schools of Ahmedabad.

Variables (Type of school)	N	Mean	Standard Deviation	t-value	Significance
Grant in aid	158	75.18	15.81	1.19	Not significant
Non Grant in aid	162	77.41	17.57		

$t_{cal} = 1.19 < t_{tab} = t_{0.05} = 1.96$

The t-value which is calculated i.e. $t_{cal} = 1.19$ is less than $t_{0.05} = 1.96$ which implies that t_{cal} is not significant at $t_{0.05}$ level of significance. Hence the hypothesis that there will be no significance difference between the mean scores of mathematical reasoning ability of the grade IX student of Grant in aid and non Grant in aid school of Ahmedabad is not rejected at 0.05 level.

4. Conclusion

There is no significant difference in mathematical reasoning ability of boys and girls of grade IX students of Ahmedabad. There is no significant difference in Mathematical reasoning ability of Grade IX students belonging to east and west zone of Ahmedabad. There is no significance difference in mathematical reasoning ability of grade IX students of grant in aid and non- grant in aid school of Ahmedabad. Hence the reasoning ability is not affected by the above variables. Hence, the mathematical reasoning ability can be developed without any hindrance by the above variables, hence, by practice and clear understanding of concepts could improve the ability. Thus, understanding of the concepts of mathematics should be focused upon to improve the reasoning ability. This is facilitated by the teachers, parets and peers who play an important role and give a crucial learning experience to the child.

References

- Akpan, A., (1991) Indian Edition Review Vol 26(2): P30-45. A Path Analysis Model Of Mathematics Problem Solving For Secondary School Students.
- Best Jones W., (1996) Education Research, New Delhi: Agra Book Depot.

- Benbow Camilla, Lubinski David, Hossain Eftekhari-Sanjani and Shea Daniel (2000) Psychological Science, Vol. 11, No. 6, P: 474-480. Sex Differences in Mathematical Reasoning Ability at Age 13.
- Bergqvist, E. (2006) Mathematics and Mathematics Education: Two Sides of the Same Coin. PhD thesis, Umea University, Sweden.
- Chel, M. M. (1990) Ph.D. There's Science University Of Calcutta, West Bengal. Diagnosis and Remediation Of Underachievement In Compulsory Mathematics Of Madhyamic Examination In West Bengal.
- DeJarnette F.A and Gonzalez Gloriana (2013) The Mathematics Educator, Vol. 23, No. 1, P: 3-23. Building Students' Reasoning Skills by promoting Student-led Discussions in an Algebra II Class.
- Fr. P. P. Joseph (2005) Barkatullah University, Bhopal, M.P. A Study of Difficulties In Mathematics Learning Faced By Different Categories Of School Students In Bhopal.
- Mangal, S. K. (2007*)* Essentials of Educational Psychology, New Delhi: Prentice – Hall of India Private Limited.
- Sumpter Lovisa (2009) Ph.D Thesis, Umea University. On Aspects of Mathematical Reasoning Affect and Gender.
- Toplak, M. E., West, R. F., & Stanovich, K. E. (2014). Assessing miserly processing: An expansion of the Cognitive Reflection Test. *Thinking & Reasoning, 20*, 147-168.