



A Study of Numerical Ability of Secondary School Students in Relation to their Gender

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1. Introduction

Measurement pervades all aspects of our lives-right from birth of a person, measurement in terms of date, time; length, weight etc are measured. Educators, psychologists and other behaviours scientists make extensive use of measurement because they focus on abilities, achievements, aptitudes, interests, attitudes values and personality traits. These measurements are useful for the purpose of planning, evaluation, instructions, placements etc., which match their abilities and interests. Wide variations are seen in different individuals with respect to various traits like intelligence, creativity, mathematical ability, language ability, flexibility etc...

Brown (2000) Psychological measurements have several applications like descriptive uses and decision making uses. The descriptive uses of psychological measurements may take place during a counseling process, where the individual is provided description of his abilities, interests or personality traits. The individual can therefore use this data for planning, selecting, improving a study program. In contrast to descriptive uses of a test, test is also used as an aid in making specific practical decisions. Selection, placement, proficiency, diagnosis, evaluation etc. can be listed as decision making uses of a test.

Looking to these essentialities of numerical ability, researcher felt the necessity of constructing and standardizing a tool for students studying in English medium, which can measure numerical ability.

2. Statement of the research problem

The statement of the underlying research is as stated below

A Study of Numerical Ability of Secondary School Students in Relation to their Gender

3. Research Objective

Following research objective were framed for present research work.

- 1.To study the numerical ability of Boys and Girls.
- 2.To study the numerical ability of students of standard 9th and 10th

4. Variables of the study

Researcher selected following variables for his study.

4.1 Dependent Variable: Numerical Ability of the Students

4.2 Independent Variable: 1.Gender (i) Boys (ii) Girls 2. Standard (i) Std.-9 (ii) Std.-10

5. Hypothesis

Following hypothesis was framed for present study.

Ho₁ There will be no significant difference between the average score of Numerical ability Test of Boys and Girls.

Ho₂ There will be no significant difference between the average score of Numerical ability Test of Boys and Girls of Standard-9.

Ho₃ There will be no significant difference between the average score of Numerical ability Test of Boys and Girls of Standard-10.

6. Definition of key term

6.1 Numerical Ability

6.1.1 Theoretical Definition

“A test concerned primarily with abilities involved in the use of numbers”

“A test of special ability in dealing with numbers and their Inter relationships.”

Basic numeracy skills consist of comprehending fundamental arithmetic's like addition, subtraction, multiplication, and division. For example, if one can understand simple mathematical equations such as, $2 + 2 = 4$, then one would be considered possessing at least basic numeric knowledge.

6.1.2 Operational Definition

Scores of Numerical Ability test developed by Researcher is considered as Students Numerical ability.

7. Importance of this research work

With the help of this research work we know the numerical ability of the students. This research work is very helpful to the teachers and they can provide appropriate guidance to the students.

8. Limitation of research work

Present study was limited to the Gujarati medium schools of GSEB board of Year 2019-2020 only. The study was limited to Ahmedabad city.

9. Population of the Study

In the present study researcher has taken students of standard 9th and 10th of GSEB schools of Ahmedabad city as a Population.

10. Sampling

In present research the researcher has selected 200 secondary school students by stratified random sampling method.

11. Method of Study

In the present study the researcher has applied the survey method. It is the most popular and most widely used researcher method in education researcher can gather information in terms of individual scores by a standardized test.

12. Tools of the Study

1.Researcher used Numerical ability test Developed by Researcher as a research tool for present study.

13. Data Collection of the Study

In the present study the researcher used the Numerical ability test as a tool. Researcher first took the permission of selected schools and personally went to the schools. Researcher first gave information about his research work and necessary instruction about test filling. First researcher gave him to the Numerical Ability test. Researcher also takes the help of School teachers. After completion of the test filling researcher make sure that all the test have been collected or not. He collected all the data and gratitude his thanks to the students, teachers and principal for their cooperation in data collection.

14. Analysis and Interpretation of the Data

14.1 Statistical Techniques Used

In order to analyze and interpret the data obtained by the administering the students Numerical ability. The following statically techniques are used with the help of computer.

1.Mean

2.Standard deviation and – t - test

The test of the significance of the difference between two mean is known as t-test. In the present study, researcher used t-value because there is comparison between two variables.

15. Data Analysis

Testing Null Hypothesis

Ho₁ There will be no significant difference between the average score of Numerical ability Test of Boys and Girls.

For testing this hypothesis researcher tabulated the data and make frequency distribution of Boys and Girls. After that he computed Mean, S.D., SEd. and t test for testing null hypothesis.

Table-1: Statistics of Boys and Girls

Variable	N	Mean	S.D	SEd	t	Significant level
Boys	100	26.62	4.75	0.21	2.69	0.05
Girls	100	27.19	4.77			

In above Table-1. we can see that mean value of boys and girls are 26.62 and 27.19 respectively. The S.D. value is 4.75 and 4.77. SEd is 0.21 with the help of all these values computed t is 2.69 which is higher than its tabulated value 2.58 at 0.01 level So, null hypothesis is not accepted. Therefore we can say that there is significance difference between the average score of Boys and Girls numerical ability Score. It means girl student have high numerical ability than boys students.

Ho₂ There will be no significant difference between the average score of Numerical ability Test of Boys and Girls of Standard-9.

For testing this hypothesis researcher tabulated the data and make frequency distribution of Boys and Girls. After that he computed Mean, S.D., SEd. and t test for testing null hypothesis.

Table-2: Statistics of Boys and Girls of Standard-9

Variable	N	Mean	S.D	SEd	t	Remarks
Boys	54	26.52	4.80	0.34	1.43	NS
Girls	46	27.00	4.53			

In above Table-2 we can see that mean value of boys and girls are 26.52 and 27.00 respectively. The S.D. value is 4.80 and 4.53. SEd is 0.34 with the help of all these values computed t is 1.43 which is lower than its tabulated value 1.96 at 0.05 level So, null hypothesis is accepted. Therefore we can say that there is no significance difference between the average score of Boys and Girls numerical ability Score of Standard-9.

Ho₃ There will be no significant difference between the average score of Numerical ability Test of Boys and Girls of Standard-10

For testing this hypothesis researcher tabulated the data and make frequency distribution of Boys and Girls. After that he computed Mean, S.D., SEd. and t test for testing null hypothesis.

Table-3: Statistics of Boys and Girls of Standard-10

Variable	N	Mean	S.D	SEd	t	Significant level
Boys	52	27.14	5.14	0.52	0.70	NS
Girls	48	26.77	4.52			

In above Table-3. we can see that mean value of boys and girls are 27.14 and 26.77 respectively. The S.D. value is 5.14 and 4.52. SEd is 0.52 with the help of all these values computed t is 0.70 which is lower than its tabulated value 1.96 at 0.05 level So, null hypothesis is accepted. Therefore we can say that there is no significance difference between the average score of Boys and Girls numerical ability Score of Standard-10.

Ho₃ There will be no significant difference between the average score of numerical ability of having different kind of Interest

The schools were selected from the 16 districts out of 33 districts of Gujarat State. Researcher first gave numerical ability test and after that interest inventory and vocational preference test was given. Total 2478 students were selected in final sample.

16. Research Findings

Research findings of Present Research works are follows..

1. There is significance difference between the average score of Boys and Girls numerical ability Score. It means girl student have high numerical ability than boys students.
2. There is no significance difference between the average score of Boys and Girls numerical ability Score of Standard-9.
3. There is no significance difference between the average score of Boys and Girls numerical ability Score of Standard-10.

17. Educational Implications

The constructed ability test by the investigator can be used for various purposes:

18. Evaluation

- Classroom use of test score provides evaluation of academic success in terms of mental ability. Teachers are able to compare the level of mental ability of students with their level of academic success. This leads towards the first step of student's career counseling in school system.
- It also provides a base for evaluating and determining quality of educational program. If summary of achievement score and numerical ability score is prepared, it provides a firm foundation for the intelligent analysis of various aspects of mathematics teaching. This result directs us for planning and improvement in mathematics teaching in terms of textbook making, teaching methodologies, school evaluation system

19. Diagnosis Work

- Administration of numerical ability test makes easy in the identification of groups like over achievers and under achievers, which helps us in diagnosis work.
- The diagnosis of student's deficiencies in mathematics achievement is one of the most difficult tasks for teachers. Administering numerical ability test to a group uncovers the weaknesses in the learning of basic skills or basic concepts.
- As per the need arises, remedial program can be planned and executed. As this test has homogenous segments of items under each component, diagnostic area can be caught more accurately.

20. Suggestion for future researches

Researcher here gave suggestion for future researches.

1. Not only numerical test but TEST BATTERY should be developed,
2. Construction of Logical Reasoning Test
3. Construction of Creativity Test for Secondary Section
4. Comparison having different types of Vocational Preference among College students
5. Construction of Numerical Ability Test for College Students.

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