

The Relationship Between Mathematical Aptitude And Academic Achievement In High School Students

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Abstract

A student's career may be an important aspect of their life. Once a student chooses a stream in the tenth grade, that stream defines their destiny. Adolescence is the period when one's temperament is shaped by high ambitions. It's a particularly difficult time in their life when they must make decisions about their future. The word "power" has become commonplace in our everyday vocabulary. It's a perspective on skills, abilities, social relationships, and prospective results from the perspective of an Associate in mathematical aptitude. The concept of power is the focus of various arguments due to its psychological and academic importance. The meaning of power, how it's measured, and its interaction with high school students are all topics of interest in educational research. People offer the impression of looking forward to collective power as they live and add to teams or society. The term "collective power" refers to an individual's estimation of the relative worth of a group of people.

Keywords: Mathematical Aptitude, Academic Achievement, High School students,

Introduction

A student's career may be an important feature of their life. Once a student chooses a stream in the tenth score, that stream defines their intention. Adolescence is the period when one's temperament is shaped by high ambitions. It's a particularly difficult time in their life when they must make judgments about their future. The word "power" has become commonplace in our everyday expressions. It's a viewpoint on skills, abilities, social relationships, and potential consequences from the standpoint of an Inferior in Attention. The concept of power is the focus of various arguments due to its psychological and academic importance. The meaning of power, how it's stately, and its communication with high school students are all topics of interest in enlightening research. People propose the impression of looking forward to collective power as they live and enhance to groups or society. The term "collective power" refers to an individual's estimate of the relative worth of a group of people.

Significance of the study

The goal of the research was to see if there was a link between mathematical aptitude and academic achievement among Salem high school students. The researchers expected that if students' mathematical aptitude were settled and created reliably the quality of the classes would improve. If researchers distinguished more information about a student's different of study, they would be improved able to classify suitable techniques for assisting them through the teaching and learning process. It has to do with a student's theoretical performance, which is the result of the teacher's instruction in the classroom. In education, attainment refers to one's understanding, gratefulness, or talents in the subject of mathematics. Although it is widely documented that one of the university's key goals should be to teach students how to study. As a result, a systematic assessment of high school students' arithmetic performance in terms of mathematical aptitude is held necessary.

The objective of the study

1. To find out whether students possess mathematical aptitude at the high school level.
2. To find out the difference in the mathematical aptitude of students with respect to gender.
3. To find out the difference in the mathematical aptitude of students with respect to locality.

- To find out the difference in the mathematical aptitude of students with respect to the types of schools that students studied.

Hypothesis

- There is no relationship between achievement in mathematics and mathematical aptitude scores of high school students.
- There is no significant difference between male and female high school students in respect of their mathematical aptitude.
- There is no significant difference between the rural and urban high school students regarding their mathematical aptitude.
- There is no significant difference in the mathematical aptitude among types of high school students.

Tools Used for the Study

Mathematical aptitude inventory constructed and standardized by V. Manikandan & Dr. V. Ambedkar (2020) was translated into Tamil and administered by the investigators. For the pilot study, a simple random sampling technique has been used to test the reliability. From the review-related literature, there were forty items associated with a mathematical aptitude. However, Allen L. Edward's (1957) dependableness examination was used to determine dependableness, and five items were deleted and the remaining thirty-five items remained unbroken. The minimal t – value required to determine the item's dependability is 1.75.

Item Analysis and Selection of the Items

The next step in the standardization of a scale is to determine the value of each item, which serves as the foundation for item selection. The 100 student's scores were organized in ascending order from the highest to the lowest. For item selection, the top 25% of the subjects with the highest scores and the bottom 25% of the subjects with the lowest scores were separated into criterion groups. For all 40 items, the value was calculated, and values equal to or greater than 1.75 were approved. Those with a value of less than 1.75 were disqualified. The value was determined to be equal to or greater than 1.75 for 35 of the 40 items. As a result, 35 elements from the mathematical aptitude scale were kept for the final test. The value of 40 items is displayed.

Table-1 Item analysis and selection of the items -- Mathematical Aptitude

Item Number	't'- Value	Remarks
1	3.580	Selected
2	3.123	Selected
3	2.566	Selected
4	3.288	Selected
5	2.283	Selected
6	2.348	Selected
7	3.288	Selected
8	3.123	Selected
9	0.887	Not Selected
10	3.518	Selected
11	2.671	Selected
12	2.348	Selected
13	2.309	Selected
14	3.123	Selected
15	0.464	Not Selected
16	2.348	Selected
17	2.309	Selected
18	2.309	Selected
19	1.423	Not Selected
20	2.596	Selected

21	3.288	Selected
22	2.348	Selected
23	2.309	Selected
24	3.053	Selected
25	1.057	Not Selected
26	2.036	Selected
27	1.844	Selected
28	2.832	Selected
29	1.822	Selected
30	2.383	Selected
31	0.194	Not Selected
32	3.568	Selected
33	2.596	Selected
34	2.832	Selected
35	3.533	Selected
36	2.566	Selected
37	2.506	Selected
38	2.189	Selected
39	2.787	Selected
40	3.568	Selected

Sample for the study

The sampling technique was used to select a sample of high school students from Salem District high schools. There are 50 male and 50 female, for a total of one hundred, picked from a similar background of a location and parental education, such as illiterate vs. literate elders and rural vs. urban students.

Analysis and interpretation of data

In terms of facilitation via a relationship, there is - a spot relationship between a mathematical aptitude and a pedagogical activity. The on-top of a debate has completed the current investigator to explore the subject at a hand, as evidenced by the attention of oldsters and others. ‘Students’ an ability to study arithmetic in a relation to their educational accomplishment,” for an example.

Hypothesis Testing

Hypothesis 1: There is no relationship between achievement in mathematics and mathematical aptitude scores of high school students.

Table – 2 The Means of the mathematical aptitude and academic achievement in mathematics of high school students

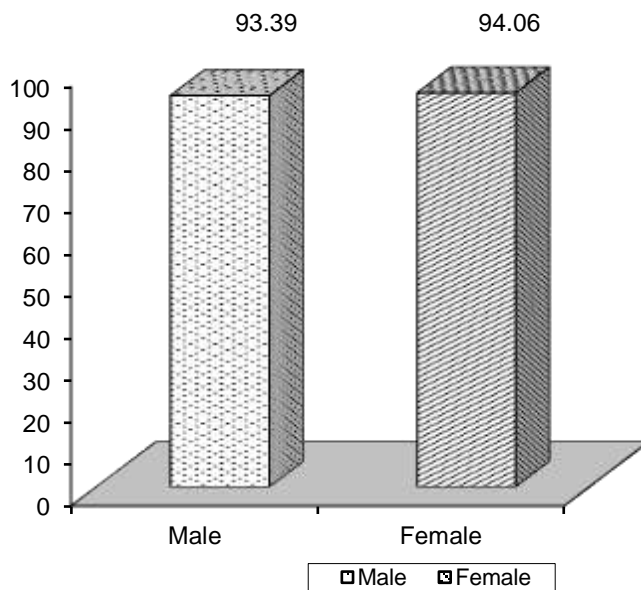
Variable	Number	Mean	S.D
Academic Achievement	100	60.69	10.11
Mathematical Aptitude	100	61.77	11.54

Hypothesis 2: There is no significant difference between male and female high school students in respect of their mathematical aptitude.

Table -3 The significance of the difference between the means of Mathematical aptitude of the gender of high school students

Subsamples	N	Mean	SD	't' value	Level of Significance (0.05)
Male	68	93.39	14.01	0.38	NS
Female	32	94.06	8.78		

The calculation's specifics can be found here. The value is 0.38, which is not statistically significant. As a result, the null hypothesis is accepted, and it is decided that no substantial difference exists between the two. As a result, there is no substantial difference in a mathematical aptitude between male and female high school pupils.



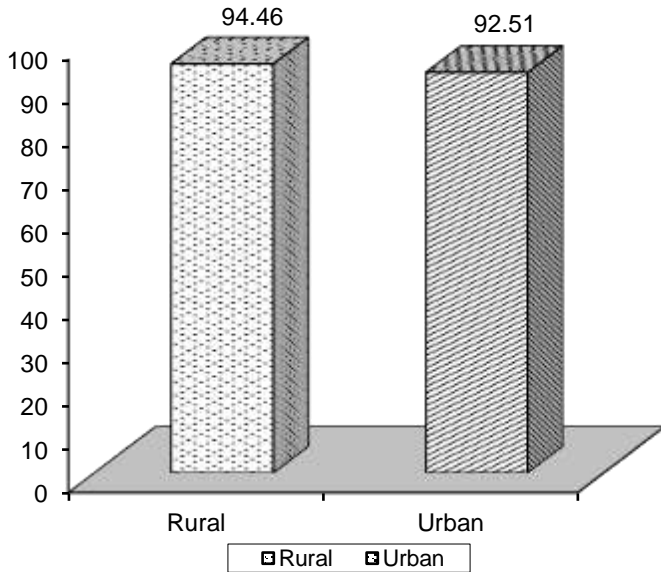
Hypothesis 3: There is no significant difference between the rural and urban high school students regarding their mathematical aptitude.

Table – 4 The significance of the difference between the means of mathematical aptitude of urban and rural high school students

Subsamples	N	Mean	Std. deviation	't' value	Level of Significance (0.05)
Rural	42	94.46	9.34	1.08	NS
Urban	58	92.51	13.97		

The computations' specifics can be found here. The 't' value is 1.08, which is not statistically significant. As a result, the null hypothesis is accepted, and it is decided that no substantial difference exists between the two. As a result, the high school students' neighborhood. There was no discernible difference in their mathematical aptitudes.

Figure showing the means scores of mathematical aptitude of urban and rural high school students



Sub samples	N	Mean	SD	't' value	Level of Significance (0.05)
Male	65	93.39	14.01	0.38	NS
Female	35	94.06	8.78		

The result of the calculation is that the value is 0.38, which is not significant. As a result, the null hypothesis is accepted, and it is decided that no substantial difference exists between the two. As a result, there is no substantial difference in mathematical aptitude between male and female high school pupils.

Table – 5 The significance of the difference between the means of mathematical aptitude of urban and locality of school high school students

Subsamples	N	Mean	Std. deviation	't' value	Level of Significance (0.05)
Government	60	60.84	10.93	0.59	NS
Private	40	61.58	10.79		

The calculations' specifics are as follows: The 't' value is 0.59, and it isn't important. As a result, the null hypothesis is accepted, and it is concluded that there is no significant difference between the two in this case. As a result, the type of faculty that high school pupils have There was no significant difference.

Conclusion

The study concluded that the entire sample revealed that the students have the good mathematical aptitude and above-average arithmetic teaching attainment. The students' mathematical aptitude and training accomplishment in arithmetic are unaffected by their gender, parental education, or geographic location. Today's pupils are far more aware of their own abilities, interests, and aptitudes. However, significant efforts by academics and society to create students responsive to acceptable achievement at high school students are static required.

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