



## A Study of Speed and Accuracy of the Students of Higher Secondary School in context to Gender and Academic Achievement

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### Abstract

World has been changing drastically. The thing that was in fashion yesterday is being outdated in no time. Every research that happens today gets old with the time. In the modern era with the coverage of Information technology we find that Technology in our global village has been changing beyond our imagination. **Objective:** 1) To determine the level of speed and accuracy of students. 2) To examine the impact of gender and academic achievement on speed and accuracy of students. **Population and Sample:** Ahmedabad city has been selected as population for the present study and 807 students were selected in sample by simple random sampling technique. **Tool:** In the present study, speed and accuracy test designed by Bhaviniben Shah was used for data collection. This test was standardized in the year 2011 for her Ph.D. research. **Data Analysis:** Q1 and Q3 were found to determine the level of speed and accuracy and t-test was applied to test the hypotheses. **Findings:** 1) There was no significant effect of gender on Speed and Accuracy. 2) There was no significant effect of Academic Achievement on Speed and Accuracy.

**Key-Words:** Speed & Accuracy, Higher Secondary Schools, Gender, Academic Achievement

### • INTRODUCTION

Competitive exams have stepped in everywhere in present era. As it is said that in today's life each and every path has a new challenge, it is very important that one must have speed and accuracy along with knowledge to win those challenges. In today's time to know, how students use their knowledge and how speedy and accurate they are in their work, the researcher has taken the present study.

**Mittal Vyas (2012)** found 1) No similarity had been seen between students' speed and accuracy and educational achievement of high achiever students. 2) No similarity had been seen between students' speed and accuracy and educational achievement of average achiever students. 3) No similarity had been seen between students' speed and accuracy and educational achievement of low achiever students. **Dalvadi Rakeshbhai (2010)** found 1) Significant difference was seen between average and lower educational achievement of girls and it was in favor of average achiever girls. 2) No significant difference was seen in educational achievement of girls belong to non-reservation caste and reservation caste. 3) Significant difference was seen in educational achievement between non reservation caste and reservation caste and it was in favor of non-reservation caste boys. 4) Significant

difference was seen in speed and accuracy test scores between boys and girls and it was in favor of girls. **Bhavini Sarang (1997)** found 1) Test was valid as well as reliable. 2) The absolutes were prepared with respect to gender and standard. 3) These absolutes were prepared with respect to PR. 4) There were no significant effect of students' gender and region seen on speed and accuracy. 5) There were no significant effect of students' standard for education seen on speed and accuracy.

- **STATEMENT OF THE PROBLEM**

The present research had been done on 11<sup>th</sup> standard commerce stream students of higher secondary schools studying in Ahmedabad city, to check the speed and accuracy with respect to their Gender and Academic Achievements.

The title is...

**A Study of Speed and Accuracy of the Students of Higher Secondary School**

- **OBJECTIVES OF STUDY**

Objectives are the corner stone of research. Research always starts with an absolute goal. The objectives must be set prior in order to achieve the set goal. Pre-determined objectives help researcher in sense of direction and also in research work. As in our life we need some set goal to reach to the destination, success of each and every work depends upon the worthy objectives set to achieve goal. With the lack of absolute goals, research can't be proven in its true sense.

Objectives of the present study are as follows.

1. To determine the level of speed and accuracy of students.
2. To examine the impact of gender on speed and accuracy of students.
3. To examine the impact of academic achievement on speed and accuracy of students.

- **HYPOTHESES OF STUDY**

Hypotheses make the researcher transparent in his work. Predictions are built for the Facts and situations that were observed by the researcher and that is called Hypotheses.

Hence, the following null hypotheses had been formed for the present study.

**Ho<sub>1</sub>** There will be no significant difference between the mean scores of girls and boys in mathematical section of speed and accuracy test.

**Ho<sub>2</sub>** There will be no significant difference between the mean scores of girls and boys in verbal section of speed and accuracy test.

**Ho<sub>3</sub>** There will be no significant difference between the mean scores of girls and boys on whole speed and accuracy test.

**Ho<sub>4</sub>** There will be no significant difference between the mean scores of academically high achiever students and low achiever students in mathematical section of speed and accuracy test.

**Ho<sub>5</sub>** There will be no significant difference between the mean scores of academically high achiever students and low achiever students in verbal section of speed and accuracy test.

**Ho<sub>6</sub>** There will be no significant difference between the mean scores of academically high achiever students and low achiever students on whole speed and accuracy test.

- **DELIMITATIONS OF THE STUDY:**

Present study was delimited to the following points.

- Present study was delimited to Ahmedabad city Gujarati medium schools only.
- Present study was delimited to 11<sup>th</sup> standard science stream only.

● **DEFINITIONS OF THE KEYWORDS**

Terminology is very important for a researcher for his research to be understood properly. Some of the keywords are presented as below, mentioned in present study.

**i. Speed:**

According to G.R Mansuri (2003-2004)  
“Speed is a time taken to complete any work”

**ii. Accuracy:**

According to A.J. Patel (2005)  
“Such a book requires great accuracy in type setting.”

**iii. Academic achievement:**

Student’s 10<sup>th</sup> Standard Board Exam Percentage was considered as academic achievement. Academic achievement level was decided as below.

- 60 % or more than that = high academic achievement
- 59.99% or less than that =low academic achievement

● **VARIABLES OF THE STUDY**

Various type of variables are included in the present study are as follows.

● **Independent variable**

No.	Variable	Level
1.	Gender	Girls Boys
2.	Academic Achieven	High Academic achievement Low Academic achievement

● **Dependent Variable:**

In this study, students’ speed and accuracy were the dependent variables.

● **Controlled variable**

- ✓ Ahmedabad city
- ✓ Standard 11 Commerce Stream
- ✓ Gujarati Medium

● **POPULATION**

Ahmedabad city has been selected as population for the present study. Hence, the students studying in total of 219 Gujarati medium secondary schools of east and west areas of Ahmedabad city in the educational year 2014-15 has become the population for the present study.

● **SAMPLE SELECTION**

In this study, a list of schools in Ahmedabad city was created and from that five schools from East area and five schools from West area were selected randomly using chit selection method. From the selected schools, if there was only one class of standard-11 General stream then all the students from that class were selected as the sample and if there were more than one classes of standard-11 General stream then the class was selected

randomly using chit selection method. So, the schools were selected randomly while the students were selected using clustering method. Total 807 students were selected as sample which is shown in the table below.

**Table A**  
**Variable of the study**

Sr. No.	Variable	Level of variable	Number of Student	Total Number Students
1.	Gender	Girl	407	807
		Boy	400	
2.	Academic Achievement	High	419	807
		Low	388	

- **RESEARCH METHOD**

Among the various methods of research, which method can be used in what situation is based on the nature of the problem? To know the status of students' speed and accuracy researcher had to collect information from a large group of sample, and so he thought of selecting the survey method.

- **TOOL FOR DATA COLLECTION**

In the present study, speed and accuracy test constructed and standardized by Bhaviniben Shah was used for data collection. This test was standardized in the year 2011 for her Ph.D. research.

This test includes two subtests in which test-1 is related to Mathematical details it has comparison of numerals and signs while test-2 is related to verbal details in which names are to be compared. Each test contains 180 pairs and maximum time for completing each test is 8 minutes. The responses are to be given by tick mark on the given line if details given on both the sides of the pair are same in both the tests. Total scores can be minimum 00 and maximum 360 in both the tests.

The tools that were used for the data collection had not been translated into English language as the gist or significance of the Gujarati language lays within it moreover the dominance of the language wished to remain by the researcher.

Reliability of the present test is as follows.

Sr. No.	Method to decide reliability	Reliability level
1	Test – Retest method	0.90
2	Split-Half Test Method	0.78
3	Rulon Method	0.79
4	Flen gun method	0.76
5	K. R. 20 method	0.97
6	Konbrench method	0.93

Validity of the present test is as follow.

Sr. No.	Method to Decide Validity	Validity Measure	Remark
1	Face validity	---	Good
2	Congruent validity	0.60	Valid
3	Concurrent validity	0.50	Satisfactory
4	Construct validity	0.36	Valid

- **DATA COLLECTION TECHNIQUE**

First of all, the principal of the secondary school which was selected as the sample will be contacted for his pre-approval for data collection by the researcher. After getting the approval, the researcher visited the school personally on pre-decided and approved time and date and then gathered the students who are selected as the sample in a different classroom and were given the necessary instructions and rapport was being established with them. They were assured that their responses will be limited for research purpose only and their trust was acquired on the same. Then they were told to give responses on the test after reading the important notice for filling the test. They were given 8 minutes for test-1 and same for the test-2 as well. Whether all the details on the test have been filled properly by the students or not according to the given notice was being verified. Then the filled tests were collected back from the students after the work being completed on proper time. At the end, the principal and teachers were thanked for giving permission for data collection and co-operation of students.

- **DATA ANALYSIS**

Data analysis and interpretation is a time consuming process that needs patience and perseverance. Research method and tool are selected in correspondence with the research objectives and hypotheses. It is necessary to properly categorize the information collected with the help of research tool to test hypotheses. The research can make specific decisions, interpretations, findings and conclusions from the interpretations only if the information is categorized in proper sections.

The main objective of using the statistical method which is used to concisely format the relevant information, to remove the inconsequential information and to fully differentiate the relevant information from the gained information. Various statistical techniques were used for analyze data which was gained from data collection. Marking of the students' answers of the tests was done according to precisely decided marking scheme. In which, 1 mark for correct answer and 0 mark for incorrect answer were given. Students total scores were entered in the computer excel program and then  $Q_1$  and  $Q_3$  were calculated. Using this, level of speed and accuracy were decided with respect to the independent variables. Statistical descriptive calculations like average and standard deviation were done with the help of computer. Illative statistical method like critical ratio was used to check significance between the differences.

• **LEVEL OF SPEED AND ACCURACY OF THE STUDENTS**

The level of speed and accuracy was divided into three sections to find Q<sub>1</sub> and Q<sub>3</sub> of the students of standard 11 General stream. Then values were decided for the levels of speed and accuracy as below.

**Table B**  
**Values according to different levels of speed and accuracy**

Score	Level of speed and accuracy
Q <sub>3</sub> or more than that	High level
Between Q <sub>1</sub> and Q <sub>3</sub>	Medium level
Q <sub>1</sub> or less than that	Low level

**Level wise Students' Number and Percentage of Speed and Accuracy**

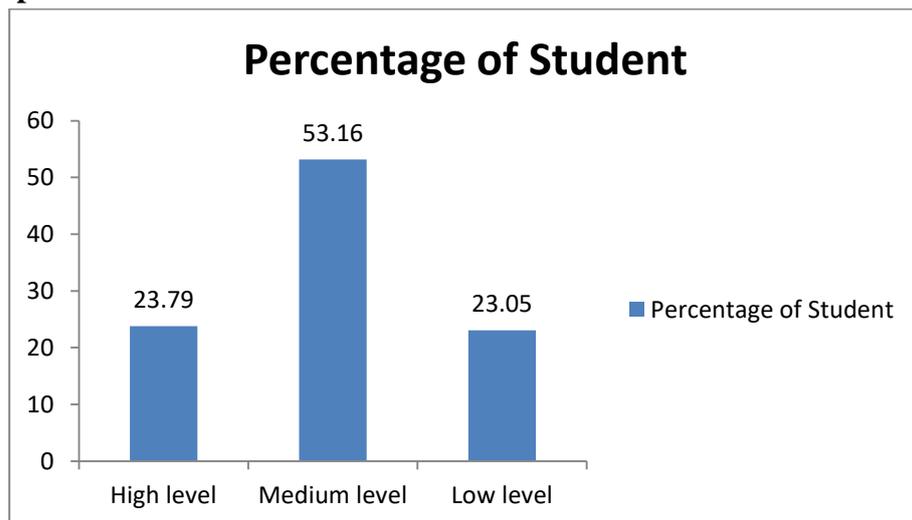
As shown in table B, values were used and the total scores were classified into various levels. The details of number and percentage of all the students that falls in different levels in context with the whole group is shown in below table:

**Table C**  
**Level wise students' Number and Percentage for Speed and Accuracy**

Level of Speed and Accuracy	Number of Students	Percentage
High level	192	23.79
Medium level	429	53.16
Low level	186	23.05
<b>Total</b>	<b>807</b>	<b>100%</b>

From table C it can be inferred that in the level of speed and accuracy, maximum number of students lies in the medium level while number of students in high level and low level are almost equivalent.

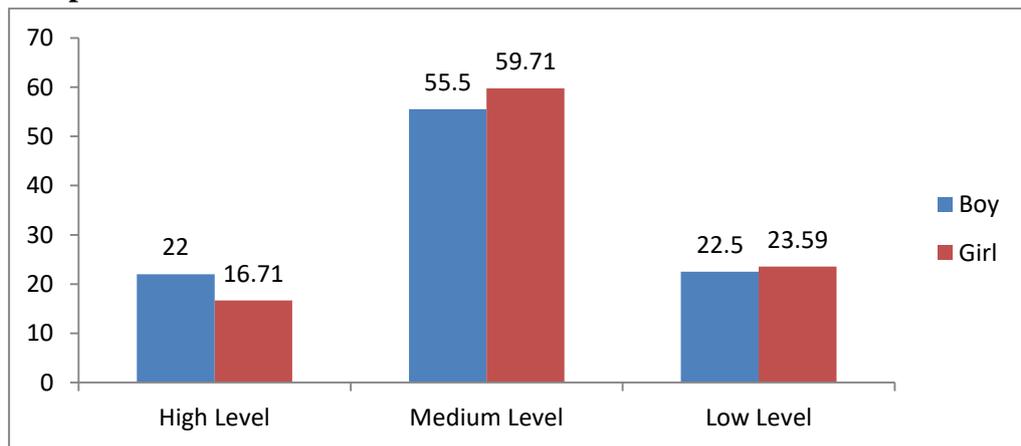
**Pictorial representation of Table C**



**Table D**  
**Level wise Number and Percentage of Students for Speed and Accuracy in context with Gender**

Level of Speed and Accuracy	Gender				Total
	Boy		Girl		
	Number	Percentage	Number	Percentage	
High level	88	22.00	68	16.71	156
Medium level	222	55.50	243	59.71	465
Low level	90	22.50	96	23.59	186
<b>Total</b>	<b>400</b>	<b>100%</b>	<b>407</b>	<b>100%</b>	<b>807</b>

**Pictorial representation of table D**

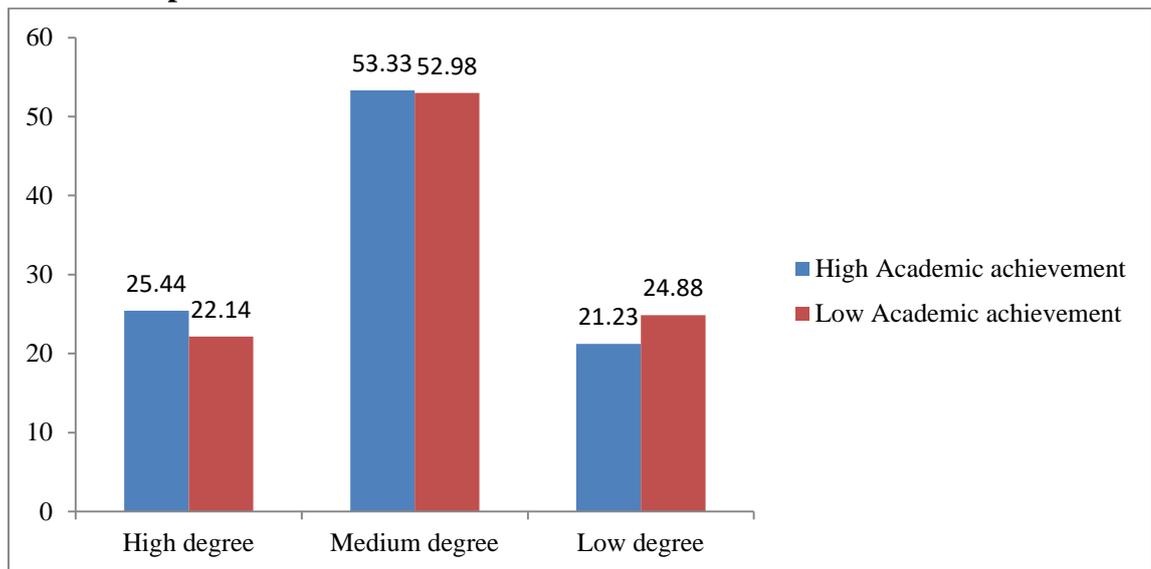


**Table E**  
**Level wise Number and Percentage of Students for Speed and Accuracy in context with Academic Achievement**

Level of Speed and Accuracy	Academic achievement				Total
	High		Low		
	Number	Percentage	Number	Percentage	
High level	103	25.44	89	22.14	192
Medium level	216	53.33	213	52.98	429
Low level	86	21.23	100	24.88	186
<b>Total</b>	<b>405</b>	<b>100</b>	<b>402</b>	<b>100</b>	<b>807</b>

From table E it can be inferred that in the level of speed and accuracy with respect to academic achievement, number of students having high academic achievement is higher than number of students having low academic achievement in high level. In medium level, number of students having high academic achievement and low academic achievement are almost equivalent while number of students having low academic achievement is higher than number of students having high academic achievement in low level.

**Pictorial Representation of Table E**



**Table No. F  
Hypothesis Testing**

Hypothesis	Section	Variable	Number	Average	SD	SE <sub>D</sub>	C.R.	Remarks
<b>H<sub>01</sub></b>	<b>Mathematical Section</b>	Boys	400	175.24	3.92	0.27	0.56	Not significant
		Girls	407	175.39	3.84			
<b>H<sub>02</sub></b>	<b>Verbal Section</b>	Boys	400	176.54	292.	0.24	2.10	0.05
		Girls	407	176.03	3.92			
<b>H<sub>03</sub></b>	<b>Whole Test</b>	Boys	400	351.78	4.56	0.36	0.98	Not significant
		Girls	407	351.42	5.73			
<b>H<sub>04</sub></b>	<b>Mathematical Section</b>	High	419	175.25	4.01	0.27	1.20	Not significant
		Low	388	175.39	3.72			
<b>H<sub>05</sub></b>	<b>Verbal Section</b>	High	419	176.34	3.37	0.25	0.48	Not significant
		Low	388	176.22	3.57			
<b>H<sub>06</sub></b>	<b>Whole Test</b>	High	419	351.59	5.16	0.37	1.22	Not significant
		Low	388	351.60	5.21			

❖ **FINDINGS OF SPEED AND ACCURACY BASED ON GENDER:**

1. In Mathematical section, number of boys was higher than number of girls in high and low level of speed and accuracy while in medium level, number of girls was higher than number of boys in context with gender of the students.

2. In verbal section, number of boys was lesser than number of girls in high and medium level of speed and accuracy while in low level, number of girls was lesser than number of boys in context with gender of the students.

3. In the whole test of speed and accuracy, number of girls was higher than number of boys in high level of speed and accuracy while in medium level, number of girls was higher than number of boys and in low level, number of boys and girls was almost same in context with gender of the students.

#### **❖ FINDINGS OF SPEED AND ACCURACY BASED ON ACADEMIC ACHIEVEMENT:**

1. In Mathematical section, number of students having high and low academic achievement was almost same in high and medium level of speed and accuracy while in low level, number of students having high academic achievement was higher than number of students having low academic achievement in context with academic achievement of the students.

2. In verbal section, number of students having high and low academic achievement was almost same in high and low level of speed and accuracy while in medium level, number of students having high academic achievement was higher than number of students having low academic achievement in context with academic achievement of the students.

3. In the whole test of speed and accuracy, number of students having high and low academic achievement was higher than number of students having low academic achievement in high and low level of speed and accuracy while in medium level, number of students having low academic achievement was higher than number of students having high academic achievement in context with academic achievement of the students.

#### **❖ FINDINGS BASED ON HYPOTHESES:**

1. Groups of boys and girls were found same in Mathematical section and the whole speed and accuracy test while in verbal section of speed and accuracy group of boys was found superior than girls.

2. Groups of students having high and low academic achievement were found same in Mathematical section, verbal section and whole speed and accuracy test.

#### **● EDUCATIONAL IMPLICATIONS:**

Educational output is mandatory in educational research. Educational Consequentiality found from conclusions of the present study are as following.

➤ The present study will be helpful to understand speed and accuracy of the students and for their remedial teaching work.

➤ Programmes to increase speed and accuracy of students should be organised at school level.

➤ Guidance can be provided to school students for future competitive exams through this study.

➤ Every student should be inspired to participate in the group study activities like debate-assembly and seminar to increase their speed and accuracy.

➤ Extra classes should be arranged for girls in schools.

- Teachers should speak in the speed which every student should understand each word properly within the class. Teachers should be trained properly so that their speed and accuracy would become ideal.
  - Enough guidance should be provided to the students whose speed and accuracy is weak after knowing the factors why their speed and accuracy is weak and to troubleshoot them. Parents should do various activities related to speed and accuracy to increase the speed and accuracy of children.
- **CONCLUSION :**

Present study was conducted on limited area for limited time but the researcher has tried to study in completely scientific manner by taking in mind all the possible details of the educational research.

Students should have knowledge of other things in addition to books knowledge to proceed in future. Today competitive exams have entered in every field. In which the answers have to be given in specific time limit and hence students are necessary to have speed and accuracy. The researcher has tried so that the derived conclusions of this study should be useful for higher secondary students, teachers, and principals and for each person and researchers doing their research in the education field. However, some limitations and errors will be there then consider them pardonable and future researchers should remove them.

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