

Questioned document examination is a term for a forensic science discipline pertaining to documents that are potentially disputed scientific processes and methods. Handwriting is a person's writing created with writing instruments such as pen, pencil etc. on the writing surface. It is a visual speech of the individual, which is non-spoken but is written with the help of writing instrument. The study of handwriting, especially when employed as a mean of analyzing writing characters is known as Handwriting Analysis.

The present work focuses on the comparative analysis of handwriting of students among two different medium (i.e. Hindi medium and English medium). The handwriting of every person individually acquired as the nervous system through hand. During the writing process various writing characteristics of handwriting are exhibited, from which identification of writer is ascertained. These characteristics features present in class and individual characteristics in the handwriting of two different medium's students.

In the present study, the writing sample was collected randomly by hundred individuals from two different mediums to find out the unique characteristics for differentiation of Hindi and English medium handwriting. The outcome of present study may give important information about various characteristics features in handwriting of Hindi medium and English medium students which will help the handwriting expert to establish whether the questioned writing has been from Hindi medium writer or English medium writer and this study also play a significant role in juvenile delinquency.



**Ms. Jaya Shukla**  
M.Sc. Forensic Science  
Institute of Forensic Science & Criminology  
Bundelkhand University, Jhansi (U.P.) – INDIA

**XOURNALS**  
International E - Publication



International Association of Scientists and Researchers

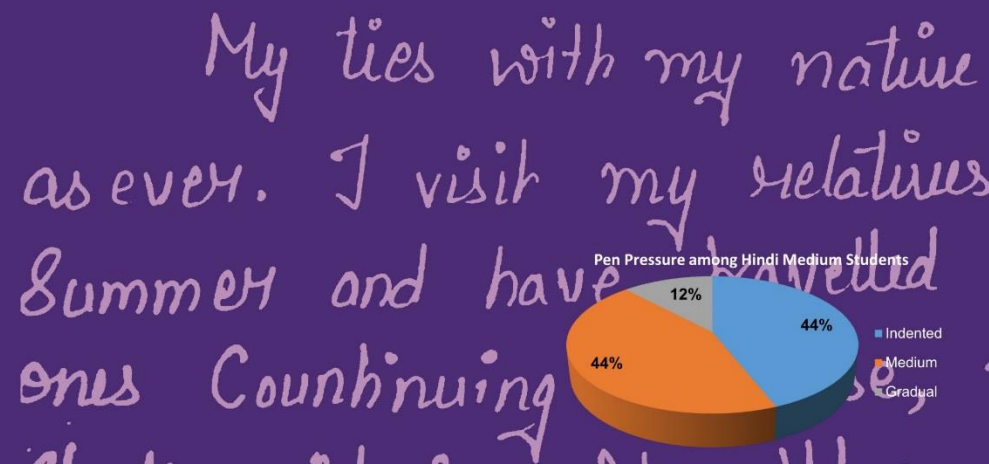
**XOURNALS**

**Forensic Science**

**Shukla Jaya**

## Comparative Study of Handwriting Among English Medium and Hindi Medium Students

**Forensic Science**



Manuscript References No. DFSc-0517-003-Shukla J.

**Jaya Shukla**

**XOURNALS**  
International E - Publication

International Association of Scientists and Researchers

# **“COMPARATIVE STUDY OF HANDWRITING AMONG ENGLISH MEDIUM AND HINDI MEDIUM STUDENTS”**

**Submitted By:**

**Jaya Shukla**

M.Sc Forensic Science

Roll No. – 131282520008

**Supervised By:**

**Dr. Ankit Shrivastava**

Coordinator

IFSC, BU, Jhansi

**2017**

International E - Publication

International Association of Scientists and Researchers (IASR)

© Copyright Reserved

May-2017

**Manuscript References No. DFSc-0517-003-Shukla J.**

All rights reserved. No part of this publication may be reproduced, stored, in a retrieval system or transmitted, in any form or by any means, electronic, mechanical, photocopying, reordering or otherwise, without the prior permission of the publisher.

International E - Publication

International Association of Scientists and Researchers (IASR)

Chapel Street, Lismore, Co Waterford, IRELAND

2443, Hudson Lines, Kingsway Camp, Delhi-110009, INDIA



**Cite This MLA**

Shukla Jaya. *Comparative Study of Handwriting among English Medium and Hindi Medium Students.*: International Association of Scientists and Researchers, [www.xournals.com](http://www.xournals.com). May. 2017. Web

**“COMPARATIVE STUDY OF HANDWRITING  
AMONG ENGLISH MEDIUM AND HINDI  
MEDIUM STUDENTS”**

**A Dissertation Report submitted to the Bundelkhand  
University, Jhansi (U.P.)**



*Bundelkhand University Jhansi*

**In the partial fulfilment for the degree of ‘Masters of  
Science’ in Forensic Science (2013-2015)**

**Supervised By:**  
**Dr. Ankit Shrivastava**  
Coordinator  
IFSC, BU, Jhansi

**Submitted By:**  
**Jaya Shukla**  
M.Sc Forensic Science  
Roll No. – 131282520008

**INSTITUTE OF FORENSIC SCIENCE &  
CRIMINOLOGY BUNDELKHAND UNIVERSITY  
JHANSI (U.P.) – INDIA**

## DECLARATION



**INSTITUTE OF FORENSIC SCIENCE & CRIMINOLOGY**  
**BUNDELKHAND UNIVERSITY, JHANSI (U.P.), INDIA**

---

I, hereby, assert that the work presented in this dissertation entitled **“Comparative Study of Handwriting among English Medium and Hindi Medium Students”** is entirely my own work and there is no collaborator. The best of my knowledge this thesis does not contain any work for which any other university has awarded a Degree/ Diploma.

**Jaya Shukla**

M.Sc. Forensic Science

(131282520008)

## PREFACE

Questioned document examination is a term for a forensic science discipline pertaining to documents that are potentially disputed scientific processes and methods. Handwriting is a person's writing created with writing instruments such as pen, pencil etc. on the writing surface. It is a visual speech of the individual, which is non-spoken but is written with the help of writing instrument. The study of handwriting, especially when employed as a mean of analyzing writing characters is known as Handwriting Analysis.

The present work focuses on the comparative analysis of handwriting of students among two different medium (i.e. Hindi medium and English medium). The handwriting of every person individually acquired as the nervous system through hand. During the writing process various writing characteristics of handwriting are exhibited, from which identification of writer is ascertained. These characteristics features present in class and individual characteristics in the handwriting of two different medium's students.

In the present study, the writing sample was collected randomly by hundred individuals from two different mediums to find out the unique characteristics for differentiation of Hindi and English medium handwriting. The outcome of present study may give important information about various characteristics features in handwriting of Hindi medium and English medium students which will help the handwriting expert to establish whether the questioned writing has been from Hindi medium writer or English medium writer and this study also play a significant role in juvenile delinquency.

**Jaya Shukla**



# CERTIFICATE



**INSTITUTE OF FORENSIC SCIENCE & CRIMINOLOGY**  
**BUNDELKHAND UNIVERSITY, JHANSI (U.P.)- 284128**

## CERTIFICATE

This is to be certify that the work embodied in this dissertation entitled “**Particles size distribution of soil from District Tikamgarh Madhta Pradesh**” has been carried out by Vivek khare for the partial fulfillment of the award of the degree of Master of Science in Forensic science and Criminology, Bundelkhand University, Jhansi is the record of research work carried out by his under my guidance and supervision.

The work carried out by Mrs. Vivek khare is original and has not been submitted so far in part or full for any other degree in this or any other university.

**External Examiner**

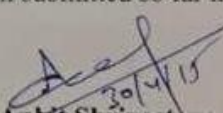
1.

2.

**Internal Examiner**

1.

2.

  
**Dr. Ankil Shrivastava**

**(Coordinator)**

**IFSC, BU, Jhansi**

## Table of contents

1. Cover page –	iii
2. Deceleration –	iv
3. Preface –	v
4. Acknowledgement –	vi
5. Certificate –	vii
6. Table of Contents –	viii
7. Introduction –	1-7
8. Review and literature –	8-10
9. Material and method-	11-13
10.Result and discussion –	14-25
11.Reference –	26-27





## INTRODUCTION

Today's world is a world of globalization. English Language has become very important in our daily life. In India, **British** introduced the language 'English' with the establishment of the East India Company in **1600**. Then, the use of English was further popularized by the **Christian Missionaries** and they started to make English Medium Schools which have great impact on Indians.

In **1857**, the three English Medium universities of **Bombay, Calcutta & Madras** were introduced. Due to these universities, the new education policy gave the special importance to the use of the regional languages (i.e. vernacular languages) and also gave the instruction that English should be taught where there was a need for it.

When India became independent, it was decided that the language "**Hindi**" would be our National language and in **1965**, English became the official language. This decision was taken because Hindi was not accepted as national language as expected. Therefore, for business or marketing purpose, English became the associate language along with Hindi (**Pathan and Shaikh, 2012**).

### HANDWRITING

Handwriting of person is his own writing; it may be alphabets, words, signature, initials, digits or figures written in any script. The writings may also consist signature, rubrics, lines, etc. It is usually written with the help of hand but some people who are unable to write with their hands, use mouth or foot to hold the writing instrument and create writings (**Sharma, 2012**).

According to the article in *American Law General*, "**Handwriting may be defined as the written speech of the individuals with characteristic peculiar to himself, and tending to differentiate him from all other individuals.**"

In short we can say that "**Handwriting is visible speech which is not spoken, but is written with the help of pen or pencil etc.**"

Writing is one of the most advance achievements of the human hand. The hand is an extremely complex and delicate mechanism, contains some 27 bones controlled by more than 40 muscles. Most of the muscles lies in the lower arm and connected to the fingers by an intricate set of tendons. Their ability in manipulating a writing instrument is precisely coordinated by a timing system under a neural control of movements of the arm, the hand, and the fingers. The precise ordering and timing of the movement determines the structure of the pattern that recorded by the pencil or pen (**Singh, 2011**).

**UNIQUENESS OF HANDWRITING**

Each person's handwriting is unique. Even identical twins write differently. Handwriting can be used to verify a document's writer, and the deterioration of a person's handwriting is also a symptom or result of certain diseases.

Characteristics of handwriting include —

1. Specific shape of letters, e.g. their roundness or sharpness.
2. Regular or irregular spacing between letters.
3. The slope of the letters.
4. The rhythmic repetition of the elements or arrhythmia.
5. The pressure to the paper.
6. The average size of letters.

**FACTORS AFFECTING THE HANDWRITING**

Following factors are affecting handwriting of any individual —

1. Age
2. Physical Condition
3. Mental Makeup
4. Education
5. Writing Material
6. Writing Support
7. Movement of Writing

**PRINCIPLES OF HANDWRITING IDENTIFICATION**

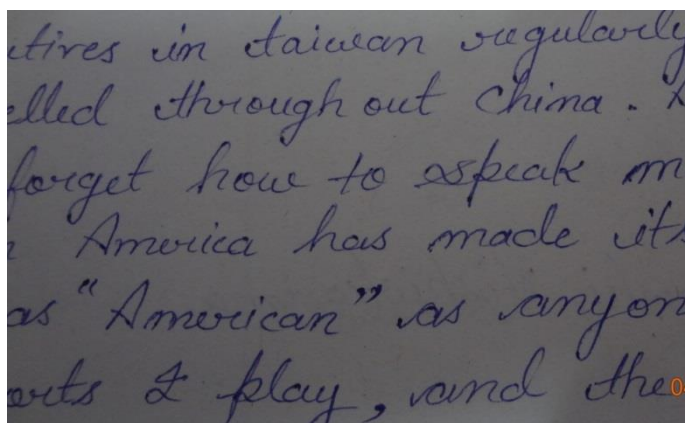
1. Handwriting is not identified from the general pictorial appearance of letters rather it is identified by the combination of all elements and qualities related with the form of letters derived from writing movement.
2. The writing characteristics, which are almost personal, have more identifying value, though other personal and class characteristic also contribute to final conclusion.
3. The handwriting movement is displayed by various elements such as speed, rhythm, writing pressure, pen position, shading, skill and line quality etc.
4. The best writing standards are those, which were written under similar conditions as prevailing at the time of writing the matter under investigation.
5. A questioned writing was written by a particular person if the variations in the questioned writings fall within the range of variations in specimen writings.

6. A questioned writing was not written by a particular person if there exist material dissimilarities between writing characteristics and the range of variations in the questioned writings does not fall within the range of variations in the specimen writings.

### **CLASSIFICATION OF HANDWRITING**

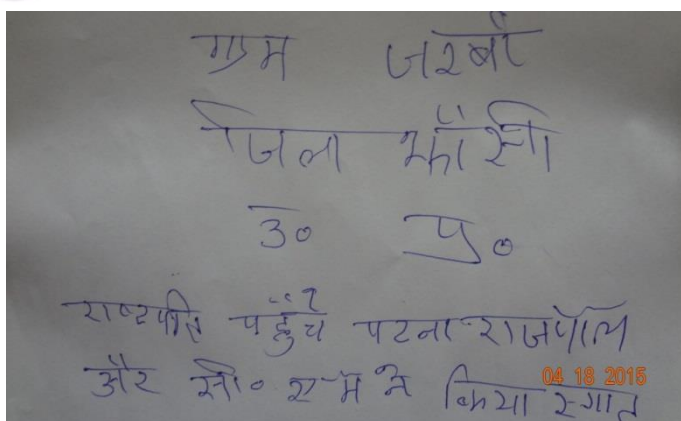
According to *Sharma, 2012*, handwriting has been variously classified, which are as follows-

1. **Artistic Handwriting** – It has rhythmic flow, unblemished lines and curves, proper shading and graded pressure. The writing lines flow smoothly, rapidly and effortlessly. The writer often uses rubrics and embellishment. The start and end strokes are flying strokes.



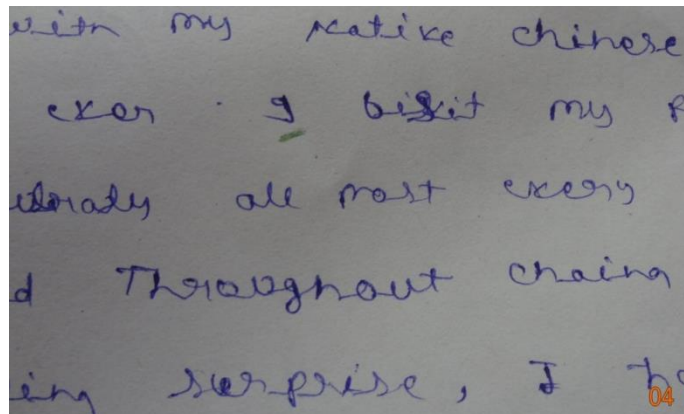
**Fig-1: showing Artistic Handwriting**

2. **Clumsy Handwriting** – A person's handwriting is usually clumsy. Learners also write clumsily. Clumsy writings lack of skill, rhythm and system, and the writing units have indefinite proportion.



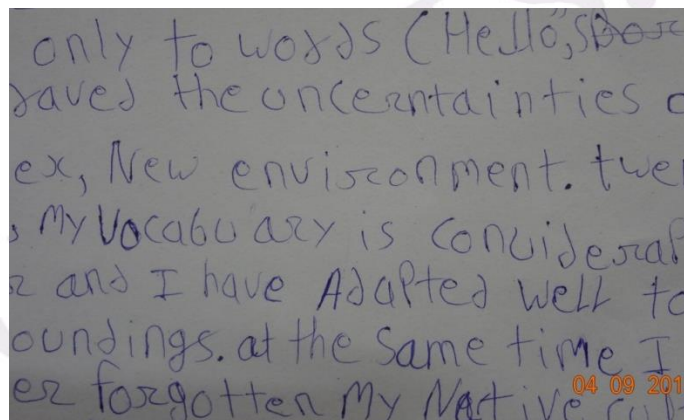
**Fig-2 showing Clumsy Handwriting**

3. **Tremulous Handwriting** – Tremulous handwritings have a lot of tremors. Usually the old, the weak and the person suffering from Parkinson's disease (or some other diseases) write in tremulous handwriting.



**Fig-3: showing Tremulous**

4. **Hesitant Handwriting** – Hesitant writing is written by persons, notably forgers, who are imitating the handwriting of other person. A person with pain in joints, weakness, disease or memory failure also writes with hesitation.

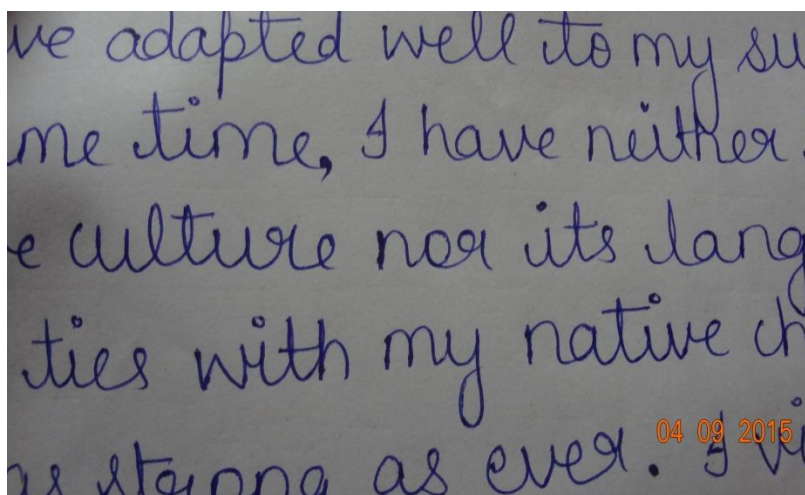


**Fig-4: showing Hesitant Handwriting**

#### 5. **Strong and forceful handwriting** -

Handwriting is said to be forceful if it has proper emphasis, high legibility and comparatively larger size with smooth lines, curved and ovals. Extroverts have strong and forceful handwriting.





**Fig-5: showing strong and Forceful Handwriting**

### **MATERIAL**

The present study has been conducted on the randomly collected handwriting sample of **100** individuals of two different medium (i.e. **50 samples from English Medium Students and 50 samples from Hindi Medium Students**).

The Handwriting samples collected from the **Higher Secondary** and **Senior Higher Secondary students** of various schools of **Jhansi** city. Who were studying in different mediums (Hindi medium & English medium). The subjects were familiar with writings in English language. The handwriting samples taken from subjects on white executive bond paper and the students are dictated with written matter of English language. And they were not allowed to see their previous writing samples taken for the present study.

The handwriting samples are written with the **Blue Ball pen** in same condition. And they were not allowed to change their pen and surface (paper) for writing sample.

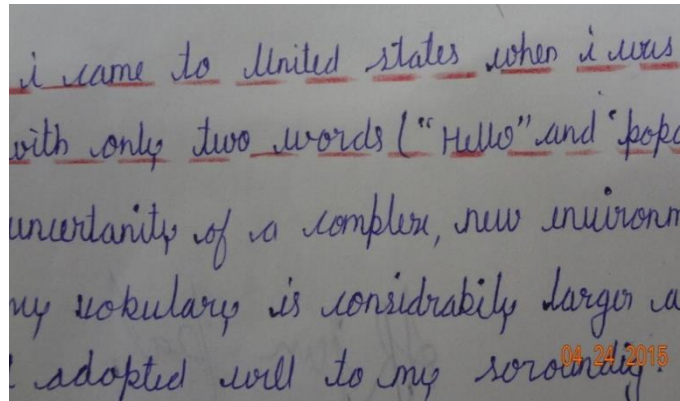
### **METHODOLOGY**

Collected samples were than analyzed with than help of handwriting principles and handwriting characters. Which includes- **Alignment, Spacing, Pen pressure, Speed, Rhythm, Slant, Writing movement, Writing Style, Tremor, Retouching, Buckle, Spur and Eye**.

#### **1. Alignment -:**

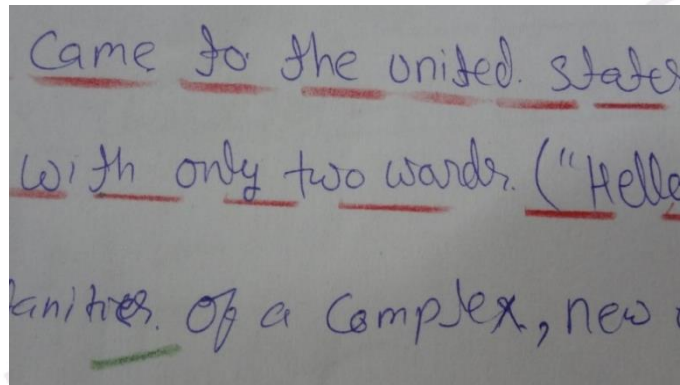
According to **Lal and Chandra, 2010**, it denotes the relationship of letters and words to the actual or imaginary baseline. The alignment may be *Ascending, Descending, Straight* and *Irregular*.

- **Ascending-** The line of writing which has a tendency of rising upward that is known as *Ascending Alignment*.



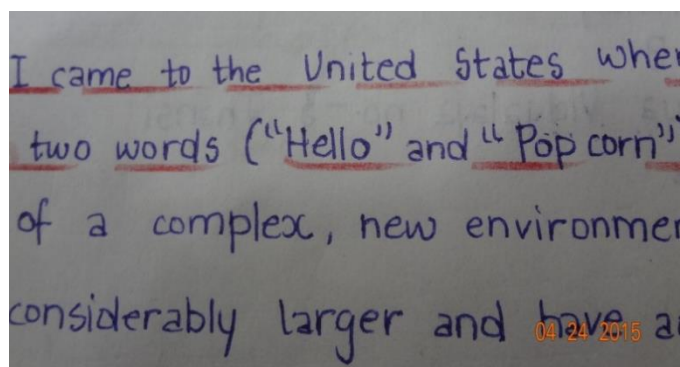
**Fig-6: showing Ascending Alignment**

- **Descending-** when a baseline flow downward that is *Descending Alignment*.



**Fig-7: showing Descending Alignment**

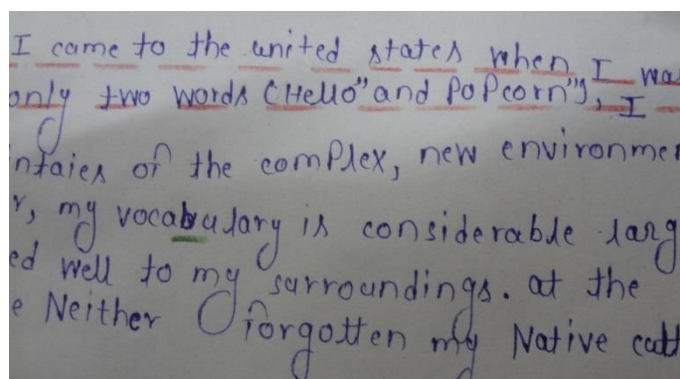
- **Straight-** it goes through the baseline of follow the baseline and regularly proceeds straight.



**Fig-8: showing Straight Alignment**



- **Irregular**- When baseline may curve or it may be Zig-Zag that is *Irregular Alignment*.



**Fig-9: showing irregular Alignment**

## 2. **Spacing** :-

The Spacing habit of a writer in his signature and writing can be studied in three manners i.e. spacing between letters, spacing between words and third is spacing between lines.

Habit of leaving space between letter, words and lines cannot be the same in writing of different individuals and sometimes this habit may prove useful in detection of forgery. Such spacing may be narrow, medium, wide and irregular.

## 3. **Pen Pressure** :-

According to **Shrivastav, 2011**, Pen Pressure is the weight of hand and the force of muscles that propels the pen on surface of the paper. It is a pressure that pen applied on a paper during the writing. It is classified in following main classes –

- Light or Gradual pen pressure
- Medium pen pressure
- heavy and Indented pen pressure

## 4. **Speed** :-

According to **Lal and Chandra, 2010**, the writing speed cannot be determined/ measured with the help of an instrument rather it is judged from the nature of strokes by keen observations and guideline principles. The speed is directly related to the writing movement i.e. higher the degree of writing movement the greater is the writing speed unless writing speed is deliberately changed in disguised writings on it gets affected at the time of forging handwriting and signatures.

Speed classified in following classes –

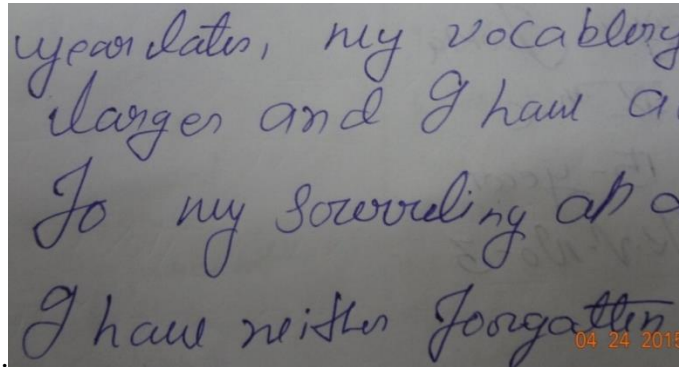
- Slow
- Medium
- Fast

## 5. **Slant** :-

According to **Chauhan, 2007**, Slant is an angle or inclination of the axis other relative to their baseline (real or imaginary).

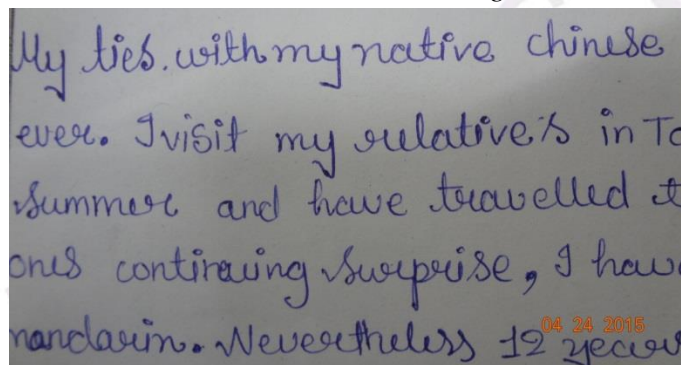
Slant is normally determined from the slope of straight down strokes. It is classified in following main classes –

- **Obtuse**- when slant is more than  $90^\circ$  that is *Obtuse* or *Leftward Slant* of handwriting.



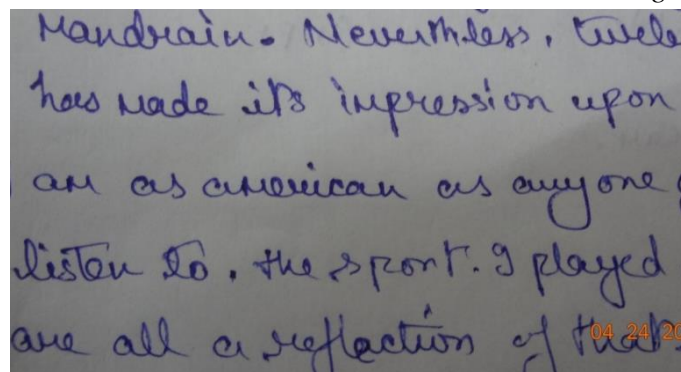
**Fig-10: showing Obtuse Slant**

- **Straight** - When slant is  $90^\circ$  that are known as *Straight Slant*.



**Fig: showing Straight Slant**

- **Acute** – When slant is less than  $90^\circ$  that is known as *Acute* or *Rightward Slant*.



**Fig-11: showing Acute Slant**

## 6. **Writing Movement** :-

According to **Sharma, 2012**, the manner in which the fingers, hand, forearm and whole arm move to produce writing is called writing movement or movement of writing.

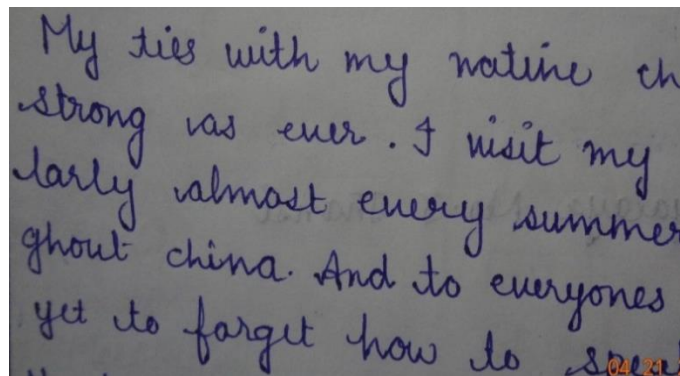
The movement employed in the formation of letters, fingers and word are classified in the following classes on the basis of fulcrum used are –

- Finger Movement
- Wrist Movement
- Forearm Movement
- Whole arm Movement

## 7. Writing Style –:

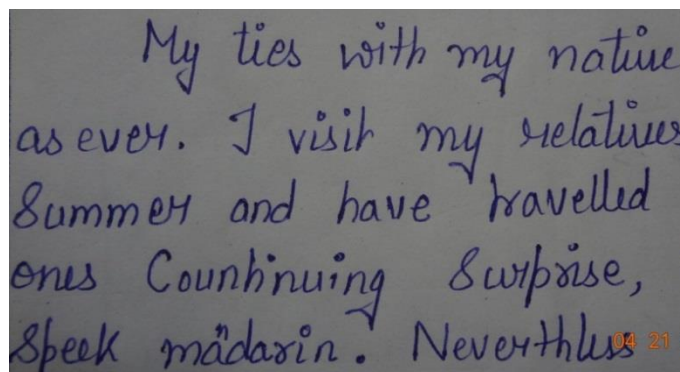
According to **Shrivastav, 2011**, the writing style depends upon the movement employed by the writers. There are three basic ways to handwriting style which are gives as under-

- **Cursive** – in cursive writing each letter joint with the help of connecting strokes.



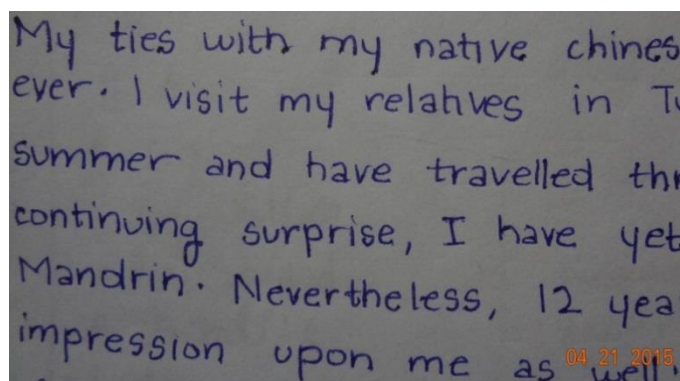
**Fig-12: showing cursive writing style**

- **Print-writing** – print writing is a combination of both printing writing style and cursive writing style.



**Fig-13: showing print-writing style**

- **Printing** – In printing each letter is separate, and there are no connecting strokes.

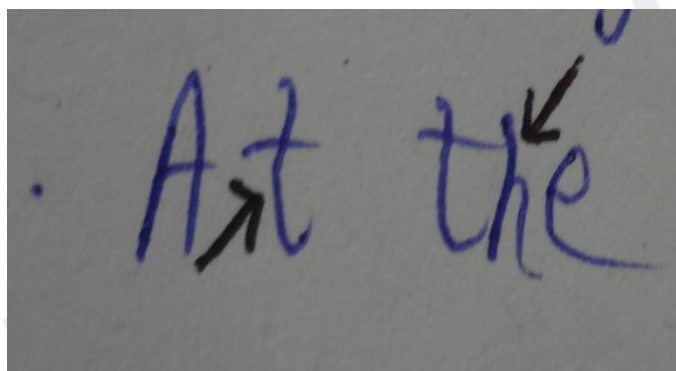


**Fig-14: showing printing writing style**

#### **8. Tremor :-**

According to **Chauhan, 2007**, the unusual departures of the line from its intended course may be termed as tremors, which may be natural or artificial.

Tremor may appear in the handwriting due to several causes such as old age, sickness and infirmity, weakness of sight, illiteracy, forgery and attempt to disguise etc.

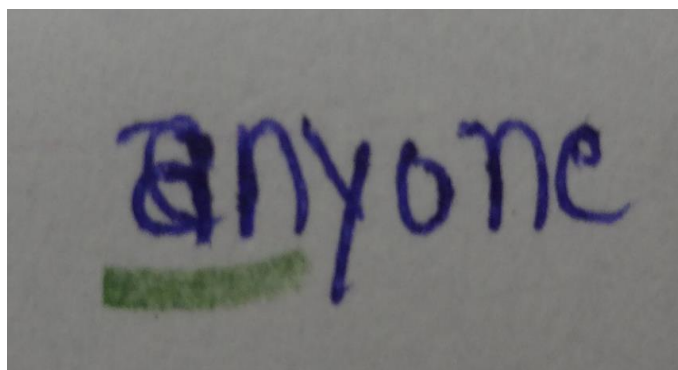


**Fig-15: showing Tremor**

#### **9. Retouching :-**

According to **Chauhan, 2007**, sometimes genuine writing or signatures are retouched to correct the palpable defect or to make certain parts of letter legible. The writings of elderly persons may show frequent retouching due to their inability to move the pen properly and in certain rare cases a skilled writer due to his peculiar habit shows retouching.

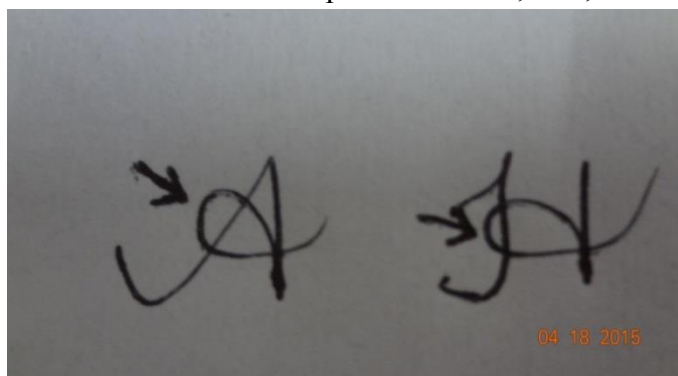




**Fig-16: showing Retouching**

#### **10. Buckle :-**

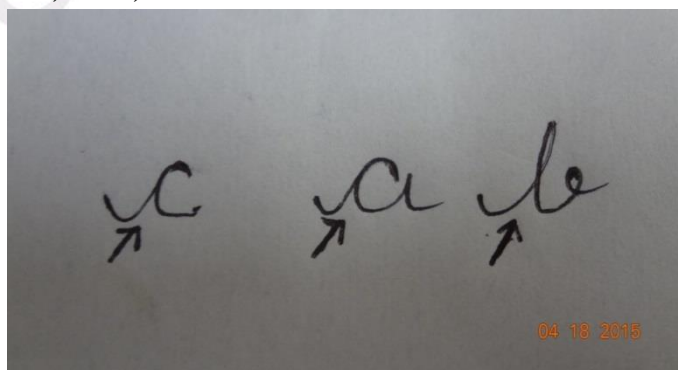
According to Lal, 2010, Buckle is s individual character. A loop made as flourish is added to the, as in the small letter “K” or in capital letter “A”, “K”, “F” etc.



**Fig-17: showing Buckle character in letters**

#### **11. Spur :-**

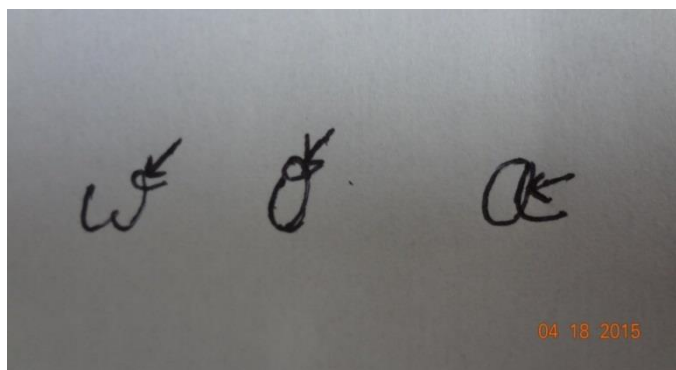
According to Lal, 2010, A short initial or terminal stroke is known as spur.



**Fig-18: showing Spur character in letters**

#### **12. Eye :-**

According to Lal, 2010, A small loop or curve found inside the oval of the letter. This may occur inside the ovals of the letters “a”, “d”, “o”, “w” etc.



**Fig-19: showing Eye character in letters**

## **Result and Discussion**

The present study has been conducted on the handwriting samples of **100** individuals to study the characteristics features of handwriting to determine the differences of the handwriting of the English and Hindi Medium Students. The results are shown in table from **1** to **45** and table from **1** to **45**.

The result comprises of following two categories —

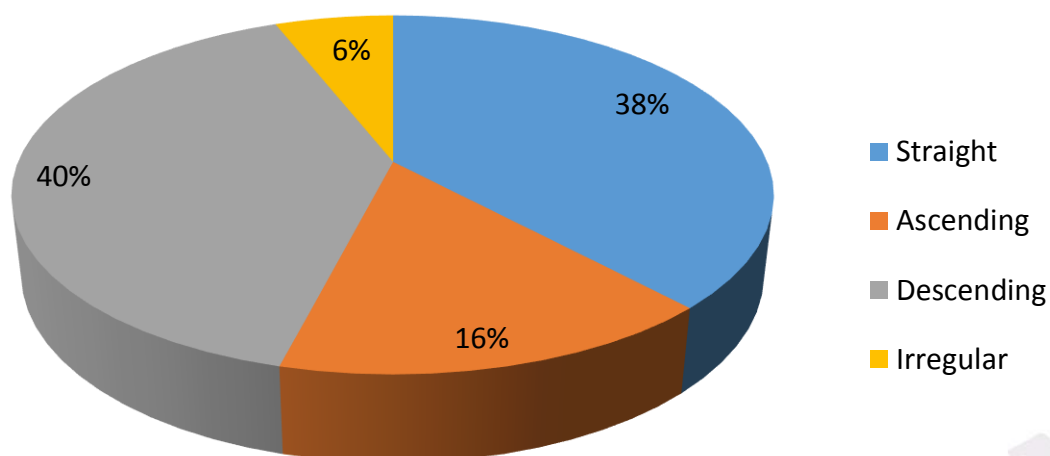
- A. Analysis of Handwriting among Hindi Medium and English Medium Students.
- B. Comparison of Handwriting among Hindi Medium and English Medium Students.

### **A. ANALYSIS OF HINDI MEDIUM STUDENT** **(from table no. 1 to 15)**

<b><u>TABLE NO. – 1</u></b>			
<b><u>DIFFERENT ALIGNMENT AMONG HINDI MEDIUM STUDENTS</u></b>			
<b>S. No.</b>	<b>Alignment</b>	<b>No. of Students</b>	<b>Frequency of Students (%)</b>
a.	Straight	19	38
b.	Ascending	8	16
c.	Descending	20	40
d.	Irregular	3	6



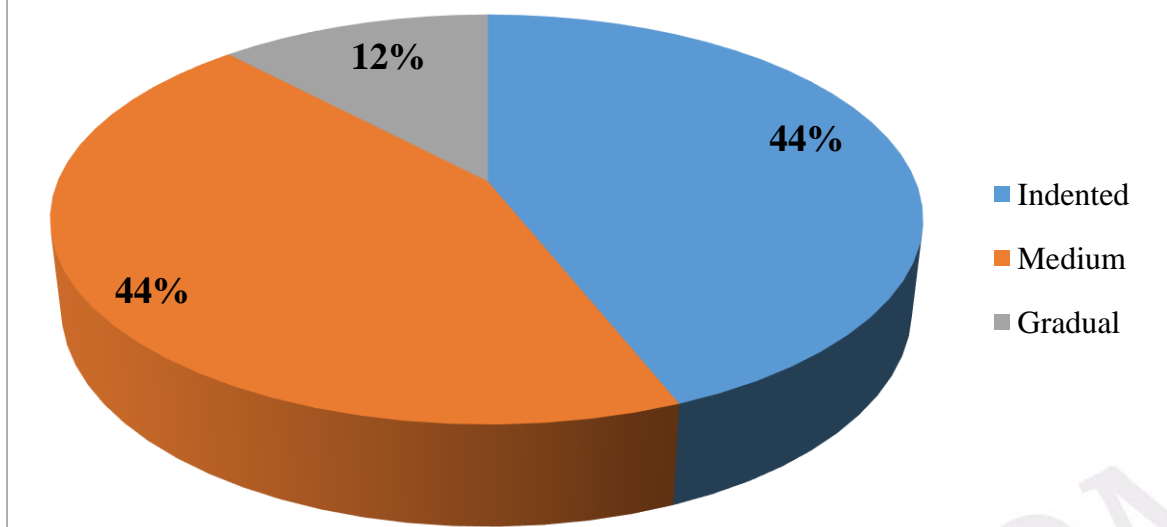
**Graph-1: Different Alignment among Hindi Medium Students**



The above table indicates the *Alignment* character of the handwriting of the Hindi medium students. The students having the *straight Alignment* are **19** in number their calculated frequency is **38%**. In the same manner, those having *Ascending*, *Descending*, and *Irregular* Alignment are **8**, **20**, and **3** in numbers and their calculated frequencies are **16%**, **40%**, and **6%**. From the above database, we observe that the students of Hindi medium having the *Descending* Alignment character have the highest frequency.

<b>TABLE NO. -2</b>			
<b><u>PEN PRESSURE AMONG HINDI MEDIUM STUDENTS</u></b>			
<b>S. No.</b>	<b>Pen Pressure</b>	<b>No. of Students</b>	<b>Frequency of Students (%)</b>
a.	Indented	22	44
b.	Medium	22	44
c.	Gradual	6	12

Graph-2: Pen Pressure among Hindi Medium Students

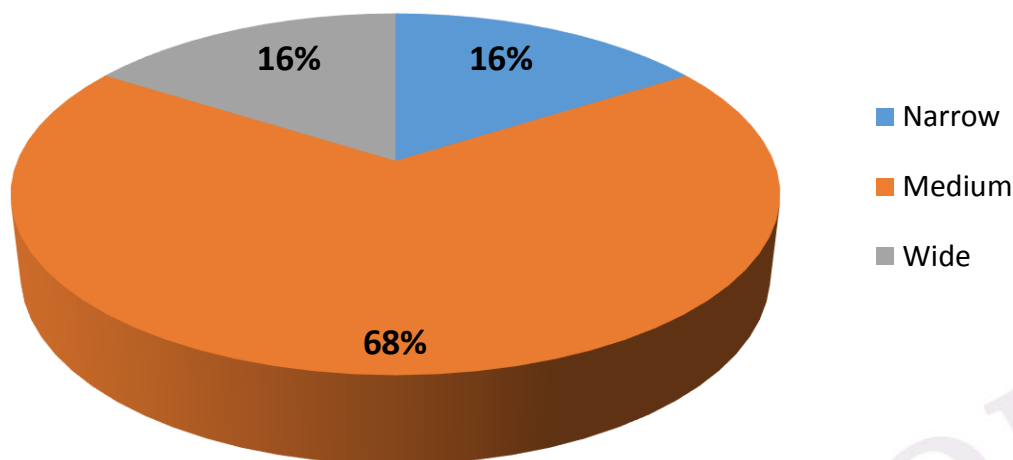


The above table indicates the *Pen pressure* character of the handwriting of the Hindi medium students. The students having the *Indented Pen pressure* are 22 in number their calculated frequency is 44%. In the same manner, those having *Medium* and *Gradual* Pen pressure are 22 and 6 in numbers and their calculated frequencies are 44% and 12%.

From the above database, we observe that the students of Hindi medium having the *Indented* and *Medium* Pen pressure character have the highest frequency.

TABLE NO. -3			
INTER-LETTER SPACING AMONG HINDI MEDIUM STUDENTS			
S. No.	Spacing	No. of Students	Frequency of Students (%)
Inter-letter spacing			
a.	Narrow	8	16
b.	Medium	34	68
c.	Wide	8	16

**Graph-3: Inter-letter Spacing among Hindi Medium Students**

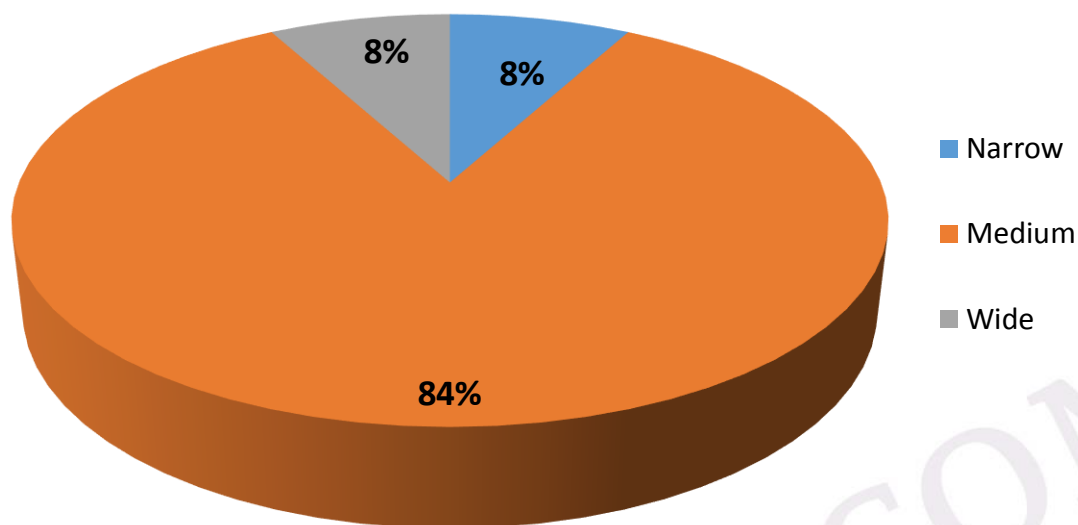


The above table indicates the *Inter-Letter Spacing* of the handwriting of the Hindi medium students. The students having the *Narrow Spacing* are 8 in number their calculated frequency is 16%. In the same manner, those having *Medium* and *Wide Spacing* are 34 and 8 in numbers and their calculated frequencies are 68% and 16%.

From the above database, we observe that the students of Hindi medium schools having the *Medium inter-letter spacing* have the highest frequency.

TABLE NO. -4			
INTER-WORD SPACING AMONG HINDI MEDIUM STUDENTS			
S. No.	Spacing	No. of Students	Frequency of Students (%)
Inter-word spacing			
a.	Narrow	4	8
b.	Medium	42	84
c.	Wide	4	8

**Graph-4: Inter-word Spacing among Hindi Medium students**



The above table indicates the *Inter-Word Spacing* of the handwriting of the Hindi medium students. The students having the *Narrow Spacing* are 4 in number their calculated frequency is 8%. In the same manner, those having *Medium* and *Wide Spacing* are 42 and 4 in numbers and their calculated frequencies are 84% and 8%.

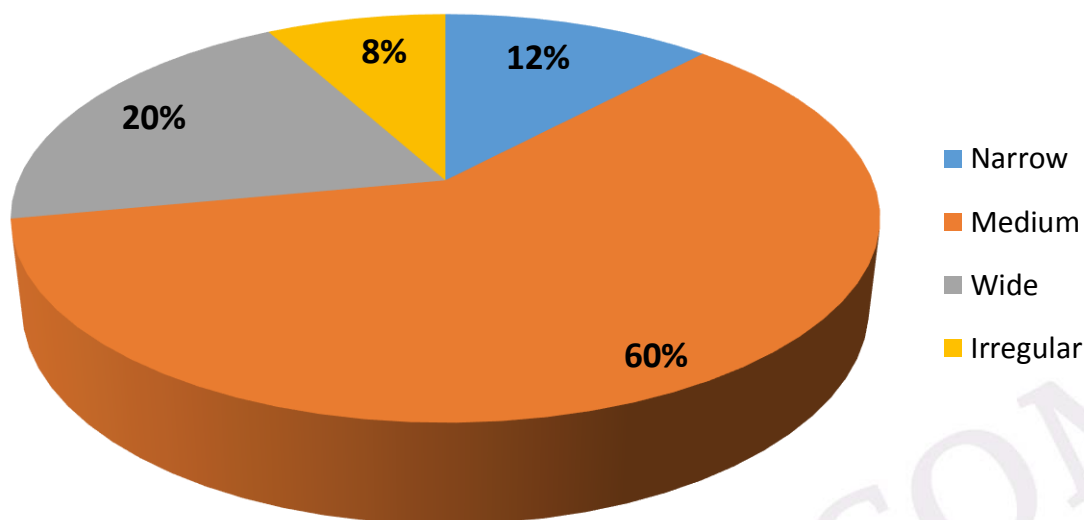
From the above database, we observe that the students of Hindi medium schools having the *Medium inter-Word spacing* have the highest frequency.

**TABLE NO. -5**

**INTER-LINE SPACING AMONG HINDI MEDIUM STUDENTS**

S. No.	Spacing	No. of Students	Frequency of Students (%)
<b>Inter-line spacing</b>			
a.	Narrow	6	12
b.	Medium	30	60
c.	Wide	10	20
d.	Irregular	4	8

**Graph-5: Inter-line Spacing among Hindi Medium students**

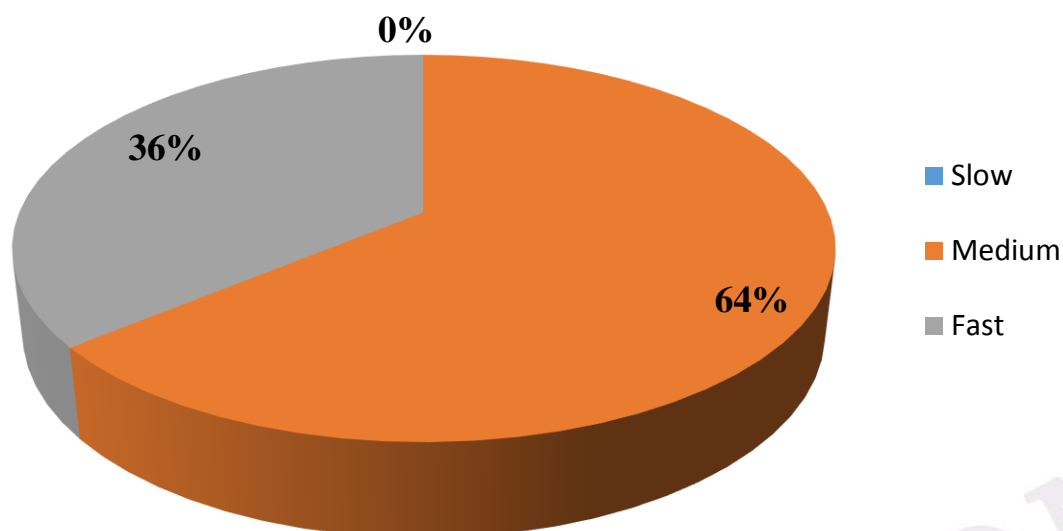


The above table indicates the *Inter-Line Spacing* of the handwriting of the Hindi medium students. The students having the *Narrow Spacing* are 6 in number their calculated frequency is 12%. In the same manner, those having *Medium*, *Wide* and *Irregular Spacing* are 30, 10 and 4 in numbers and their calculated frequencies are 60%, 20% and 8%.

From the above database, we observe that the students of Hindi medium schools having the *Medium inter-Line spacing* have the highest frequency.

<b>TABLE NO. -6</b>			
<b><u>SPEED AMONG HINDI MEDIUM STUDENTS</u></b>			
<b>S. No.</b>	<b>Speed</b>	<b>No. of Students</b>	<b>Frequency of Students (%)</b>
a.	Slow	-	-
b.	Medium	32	64
c.	Fast	18	36

Graph-6: Speed among Hindi Medium Students



The above table indicates the *Speed* of the writer. The students having the *Medium Speed* and *Fast Speed* are **32** and **18** in number and their calculated frequencies are **64%** and **36%**. There are no students having *Slow Writing Speed*.

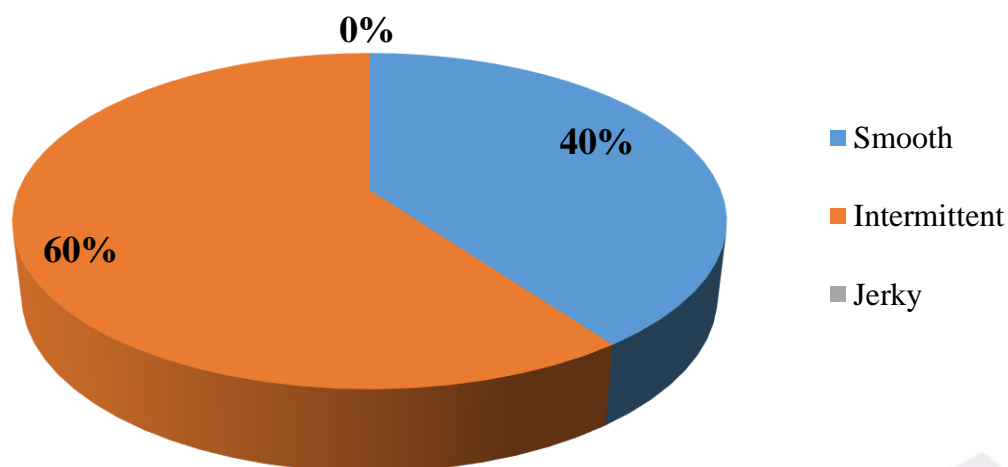
From the above database, we observe that the students of Hindi medium schools having the *Medium Speed* have the highest frequency.

**TABLE NO. -7****DIFFERENT RHYTHM AMONG HINDI MEDIUM STUDENTS**

S. No.	Rhythm	No. of Students	Frequency of Students (%)
a.	Smooth	20	40
b.	Intermittent	30	60
c.	Jerky	-	-



Graph-7: Rhythm among Hindi Medium Students



The above table indicates the *Rhythm* of the writer. The students having the *Smooth* and *Intermittent Rhythm* are 20 and 30 in number and their calculated frequencies are 40% and 60%. There are no students having *Jerky Rhythm*.

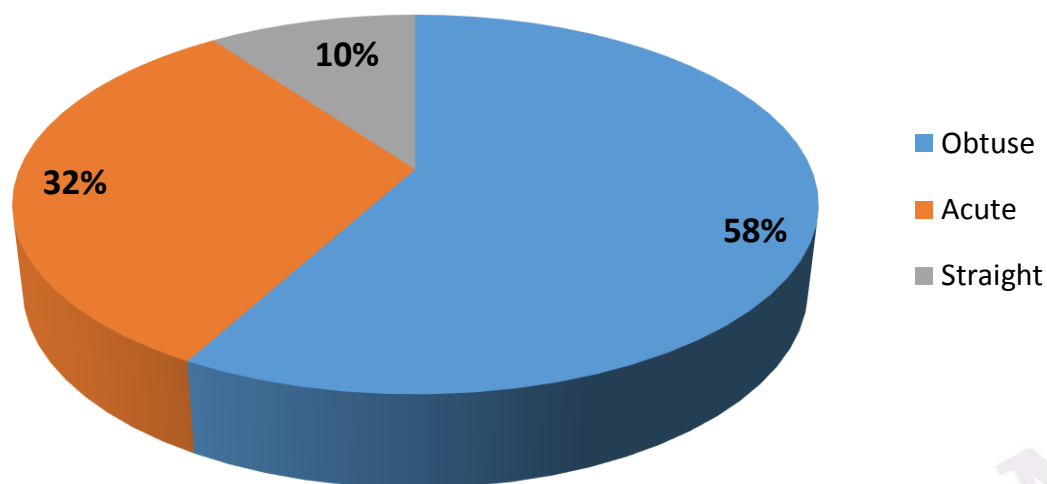
From the above database, we observe that the students of Hindi medium schools having the *Intermittent Rhythm* have the highest frequency.

TABLE NO.- 8

SLANT AMONG HINDI MEDIUM STUDENTS

S. No.	Slant	No. of Students	Frequency of Students (%)
a.	Obtuse	29	58
b.	Acute	16	32
c.	Straight	5	10

Graph-8: Slant among Hindi Medium Students



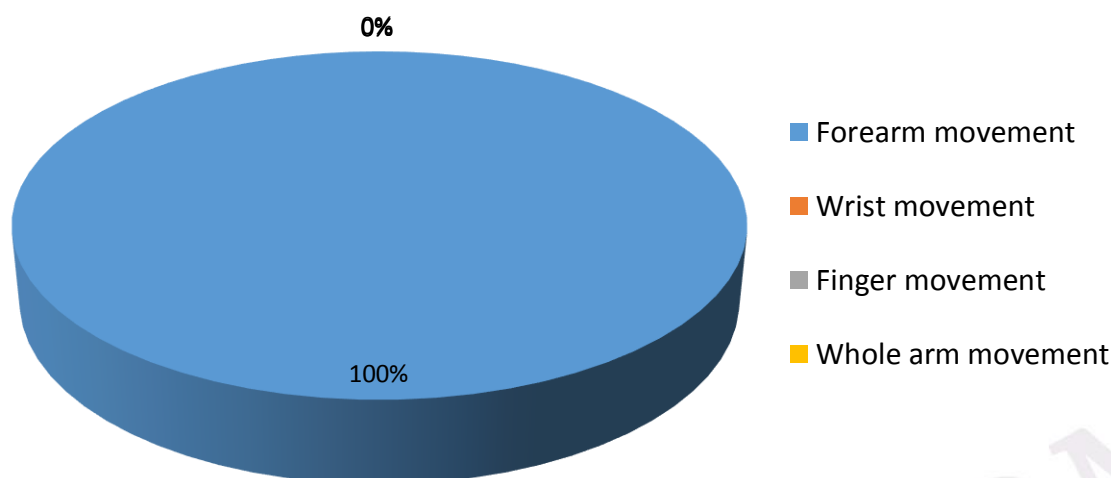
The above table indicates the *Slant* of the handwriting of the Hindi medium students. The students having the *Obtuse Slant* are **29** in number their calculated frequency is **58%**. In the same manner, those having *Acute* and *Straight* Slant are **5** and **16** in numbers and their calculated frequencies are **10%** and **32%**.

From the above database, we observe that the students of Hindi medium having the *Obtuse* Slant have the highest frequency.

**TABLE NO. -9****WRITING MOVEMENT AMONG HINDI MEDIUM STUDENTS**

S. No.	Writing movement	No. of Students	Frequency of Students (%)
a.	Forearm movement	50	100
b.	Wrist movement	-	-
c.	Finger movement	-	-
d.	Whole arm movement	-	-

**Graph-9: Writing Movement among Hindi Medium Students**



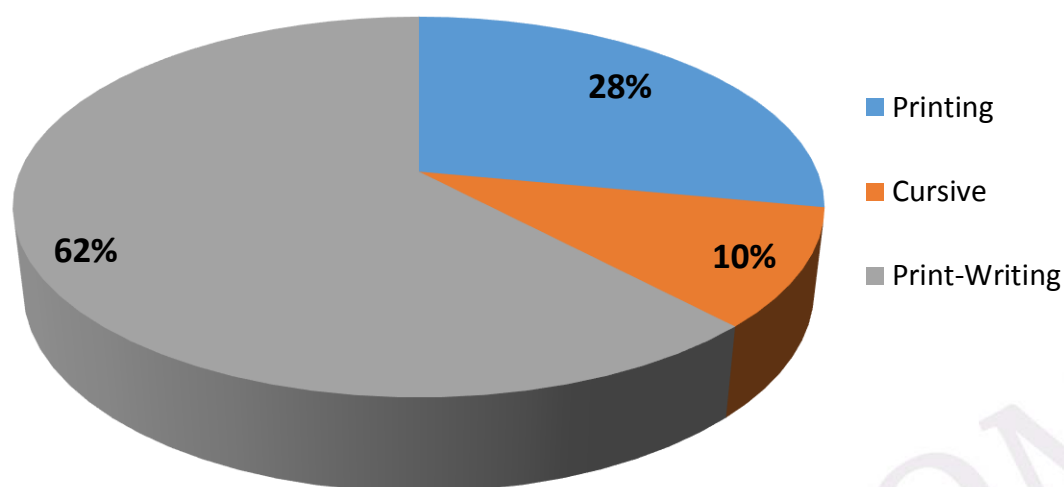
The above table indicates the *Writing Movement* of writer. And from the above database we observe that there are all the students having the *Forearm Writing Movement*.

**TABLE NO.- 10**

**WRITING STYLE AMONG HINDI MEDIUM STUDENTS**

S. No.	Writing Style	No. of Students	Frequency of Students (%)
a.	Printing	14	28
b.	Cursive	5	10
c.	Print-Writing	31	62

Graph-10: Writing Style among Hindi Medium Students

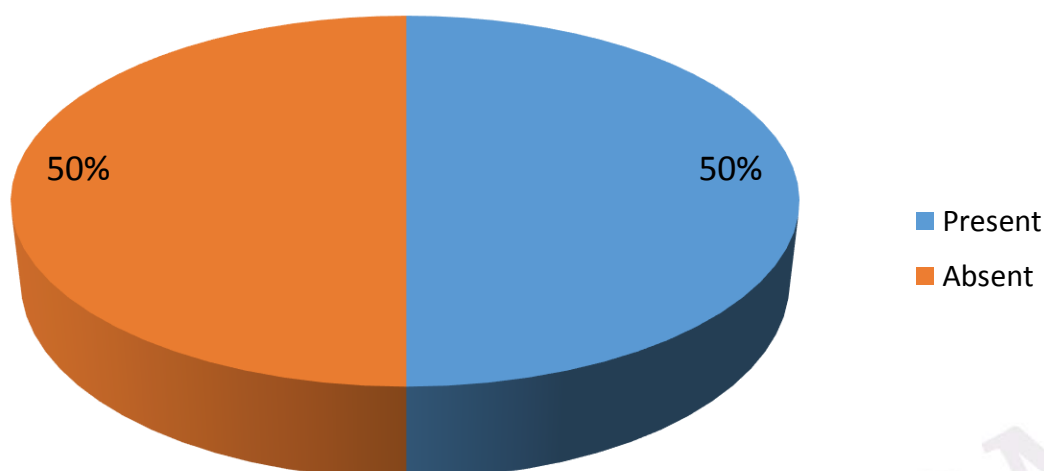


The above table indicates the writing style of writer. . The students having the **Printing Writing Style** are **14** in number their calculated frequency is **28%**. In the same manner, those having **Cursive** and **Print-writing** are **5** and **31** in numbers and their calculated frequencies are **10%** and **62%**.

From the above database, we observe that the students of Hindi medium having the **Print Writing** Style have the highest frequency.

<b>TABLE NO. -11</b>			
<b><u>TREMOR AMONG HINDI MEDIUM STUDENTS</u></b>			
<b>S. No.</b>	<b>Tremor</b>	<b>No. of Students</b>	<b>Frequency of Students (%)</b>
a.	Present	25	50
b.	Absent	25	50

Graph-11: Tremor among Hindi Medium Students

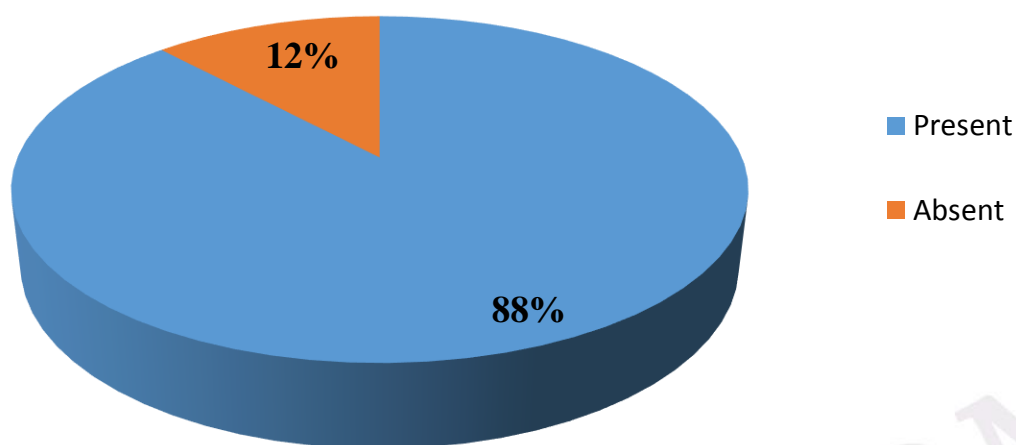


The above table indicates the presence and absence of *Tremor* in handwriting of Hindi Medium students.

And from the above database we found that the student having *Tremor* in handwriting is 25 in no. and their frequency is 50%. It means 50% students of Hindi Medium Schools have *Tremor* in their handwriting.

**TABLE NO.- 12****RETOUCHING AMONG HINDI MEDIUM STUDENTS**

S. No.	Retouching	No. of Students	Frequency of Students (%)
a.	Present	44	88
b.	Absent	6	12

**Graph-12: Retouching among Hindi Medium Students**

The above table indicates the presence and absence of **Retouching** in handwriting of Hindi Medium students.

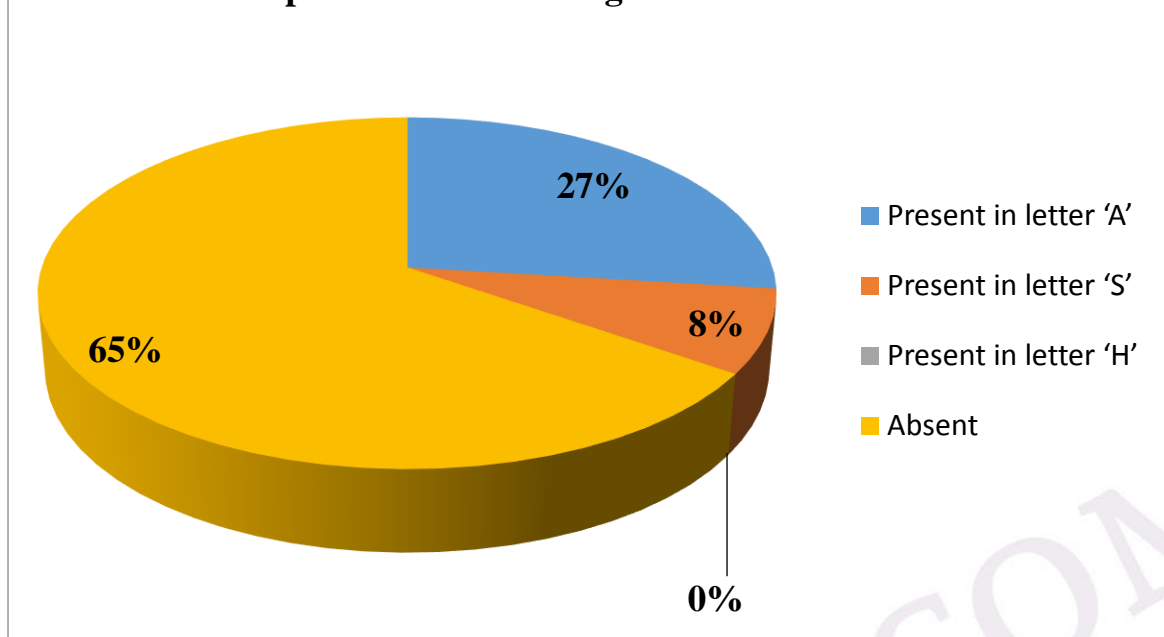
From the above database we found that the **44** student having **Retouching** in handwriting and their frequency is **88%**. It means **88%** students of Hindi Medium Schools have **Retouching** in their handwriting.

**TABLE NO.- 13****BUCKLE AMONG HINDI MEDIUM STUDENTS**

S. No.	Buckle	No. of Students	Frequency of Students (%)
a.	Present		
	• Present in letter 'A'	14	28
	• Present in letter 'S'	4	8
	• Present in letter 'H'	-	-
b.	Absent	34	68



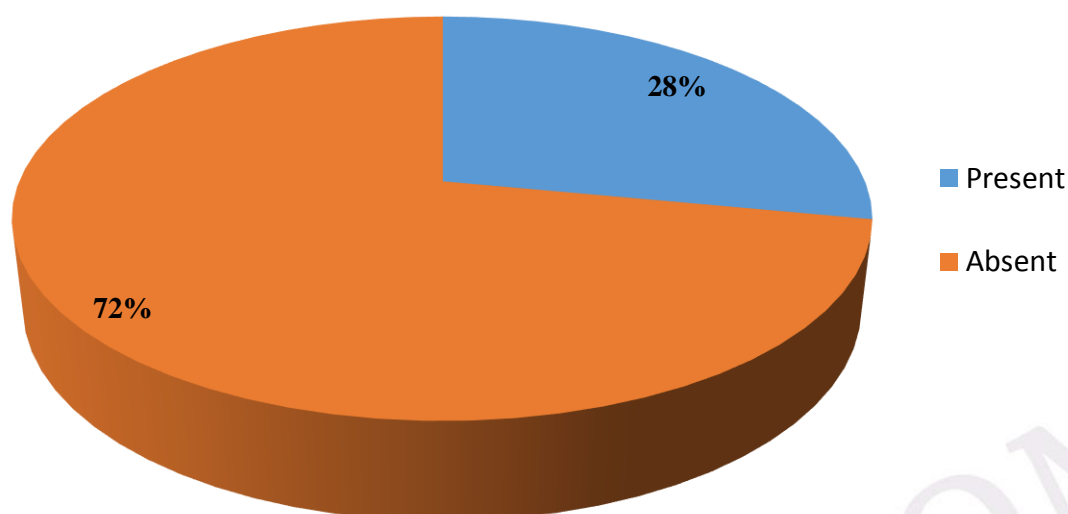
Graph-13: Buckle among Hindi Medium Students



The above table indicates the presence of **Buckle** in some letters of Hindi Medium Students.

From the above database we observe that there are **28%** students of Hindi Medium Schools having **Buckle** in letter 'A'. In same manner **8%** student having **Buckle** in letter 'S' and no student having **Buckle** in in letter 'H'.

TABLE NO. -14			
SPUR AMONG HINDI MEDIUM STUDENTS			
S. No.	Spur	No. of Students	Frequency of Students (%)
a.	Present	14	72
b.	Absent	36	28

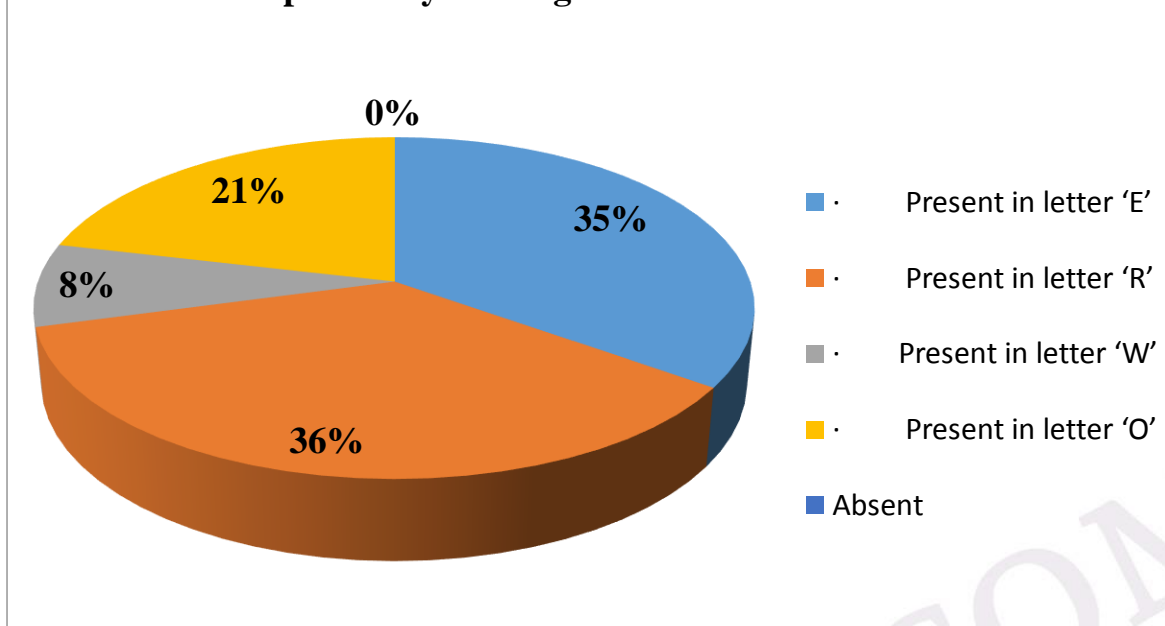
**Graph-14: Spur among Hindi Medium Students**

Above table indicates the presence or absence of *Spur* in handwriting of Hindi medium students.

From the above database we found that **14** students of Hindi medium school having **Spur** character in handwriting and their calculated frequency is **28%**.

<b>TABLE NO. -15</b>			
<b>EYE AMONG HINDI MEDIUM STUDENTS</b>			
<b>S. No.</b>	<b>Eye</b>	<b>No. of Students</b>	<b>Frequency of Students (%)</b>
a.	Present		
	• Present in letter 'E'	31	62
	• Present in letter 'R'	32	64
	• Present in letter 'W'	7	14
	• Present in letter 'O'	19	38
b.	Absent	-	-

Graph-15: Eye among Hindi Medium Students

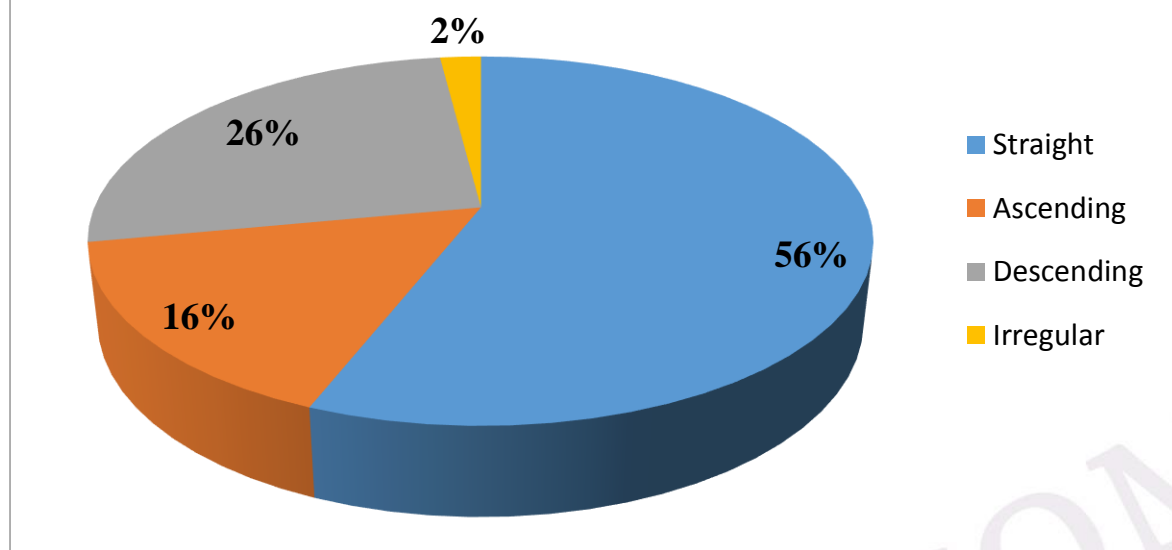


The above table indicates the presence of *Eye* in some letters of Hindi Medium Students.

From the above database we observe that there are **31** students of Hindi Medium Schools having *Eye* in letter '*E*'. In same manner **32** student having *Eye* in letter '*R*', **7** student having *EYE* in in letter '*W*' and **19** students having *Eye* in letter '*O*'. And their calculated frequencies are **62%, 64%, 14%, 38%**.

### **B. Analysis of English Medium Students** **(from table No. – 16 to 30)**

<b><u>TABLE NO. -16</u></b>			
<b><u>DIFFERENT ALIGNMENT AMONG ENGLISH MEDIUM STUDENTS</u></b>			
<b>S. No.</b>	<b>Alignment</b>	<b>No. of Students</b>	<b>Frequency of Students (%)</b>
a.	Straight	28	56
b.	Ascending	8	16
c.	Descending	13	26
d.	Irregular	1	2

**Graph-16: Alignment among English Medium Students**

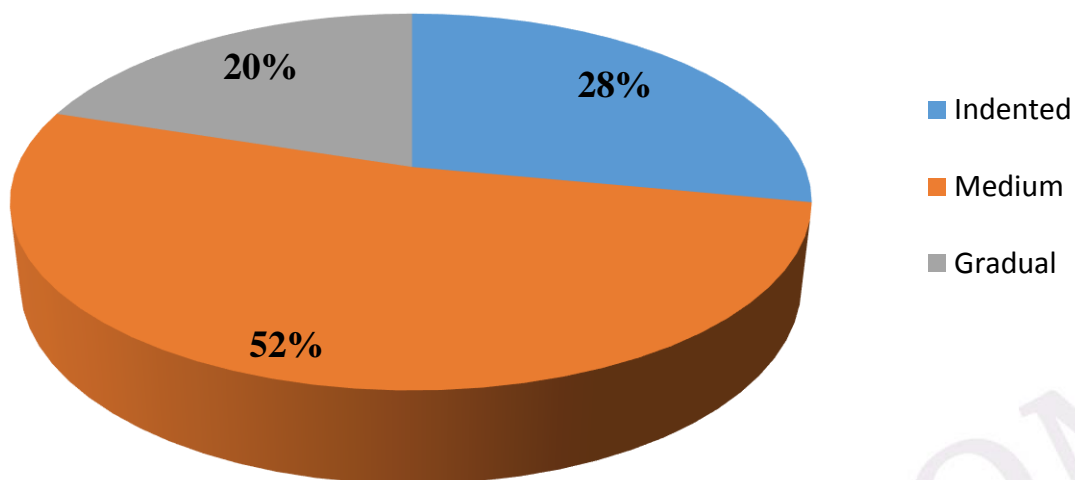
The above table indicates the *Alignment* character of the handwriting of the English medium students. The students having the *straight Alignment* are **28** in number their calculated frequency is **56%**. In the same manner, those having *Ascending*, *Descending*, and *Irregular* Alignment are **8**, **13**, and **1** in numbers and their calculated frequencies are **16%**, **26%**, and **2%**.

From the above database, we observe that the students of English medium having the *Straight* Alignment character have the highest frequency.

**TABLE NO. -17****PEN PRESSURE AMONG ENGLISH MEDIUM STUDENTS**

S. No.	Pen Pressure	No. of Students	Frequency of Students (%)
a.	Indented	14	28
b.	Medium	26	52
c.	Gradual	10	20

**Graph-17: Pen Pressure among English Medium Students**



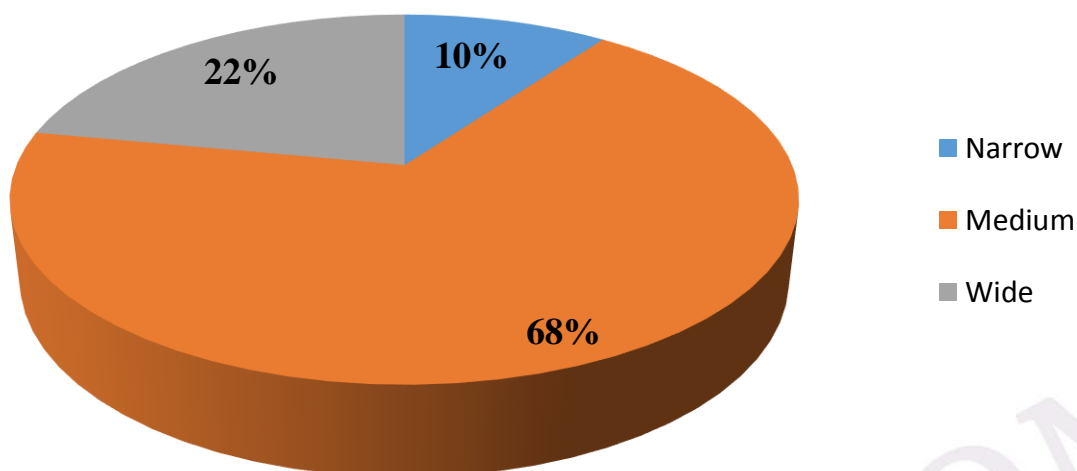
The above table indicates the *Pen pressure* character of the handwriting of the English medium students. The students having the *Indented Pen pressure* are **14** in number their calculated frequency is **28%**. In the same manner, those having *Medium* and *Gradual* Pen pressure are **26** and **10** in numbers and their calculated frequencies are **52%** and **20%**.

From the above database, we observe that the students of English medium schools having the *Medium* Pen pressure character have the highest frequency.

<b>TABLE NO. -18</b>			
<b><u>INTER-LETTER SPACING AMONG ENGLISH MEDIUM STUDENTS</u></b>			
<b>S. No.</b>	<b>Spacing</b>	<b>No. of Students</b>	<b>Frequency of Students (%)</b>
<b>Inter-letter spacing</b>			
a.	Narrow	5	10
b.	Medium	34	68
c.	Wide	11	22



**Graph-18: Inter-letter Spacing among English Medium Students**

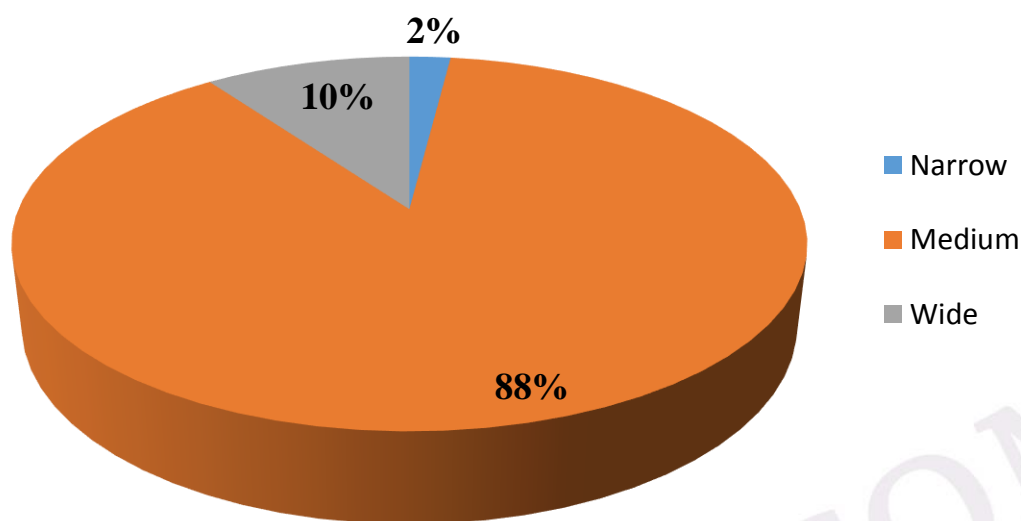


The above table indicates the *Inter-Letter Spacing* of the handwriting of the English medium students. The students having the *Narrow Spacing* are **5** in number their calculated frequency is **10%**. In the same manner, those having *Medium* and *Wide Spacing* are **34** and **11** in numbers and their calculated frequencies are **68%** and **22%**.

From the above database, we observe that the students of English medium schools having the *Medium inter-letter spacing* have the highest frequency.

<b>TABLE NO. - 19</b>			
<b>INTER-WORD SPACING AMONG ENGLISH MEDIUM STUDENTS</b>			
<b>S. No.</b>	<b>Spacing</b>	<b>No. of Students</b>	<b>Frequency of Students (%)</b>
<b>Inter-word spacing</b>			
a.	Narrow	1	2
b.	Medium	44	88
c.	Wide	5	10

**Graph-19: Inter-word Spacing among English Medium students**



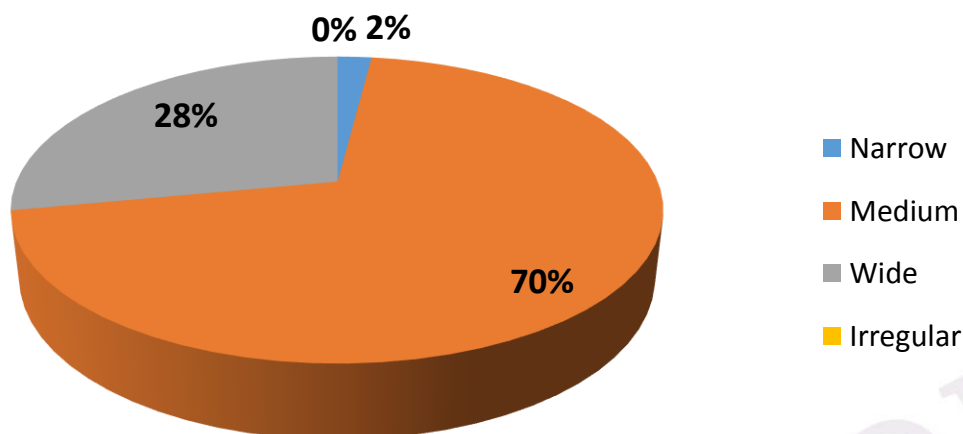
The above table indicates the *Inter-Word Spacing* of the handwriting of the English medium students. The students having the *Narrow Spacing* are **1** in number their calculated frequency is **2%**. In the same manner, those having *Medium* and *Wide Spacing* are **44** and **5** in numbers and their calculated frequencies are **88%** and **10%**.

From the above database, we observe that the students of English medium schools having the *Medium inter-Word spacing* have the highest frequency.

**TABLE NO. -20**

<b>INTER-LINE SPACING AMONG ENGLISH MEDIUM STUDENTS</b>			
<b>S. No.</b>	<b>Spacing</b>	<b>No. of Students</b>	<b>Frequency of Students (%)</b>
<b>Inter-line spacing</b>			
a.	Narrow	1	2
b.	Medium	35	70
c.	Wide	14	28
d.	Irregular	-	-

**Graph-20: Inter-line Spacing among English Medium students**

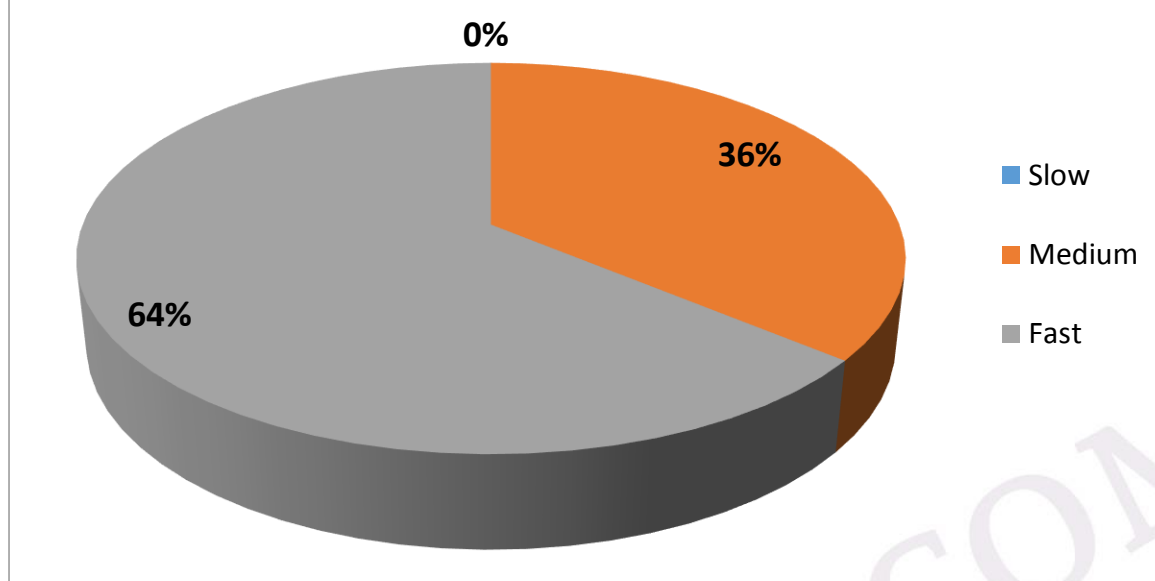


The above table indicates the *Inter-Line Spacing* of the handwriting of the English medium students. The students having the *Narrow Spacing* are 1 in number their calculated frequency is 2%. In the same manner, those having *Medium, Wide and Spacing* are 35 and 14 in numbers and their calculated frequencies are 70% and 28%. There is no student having *Irregular* line spacing.

From the above database, we observe that the students of English medium schools having the *Medium inter-Line spacing* have the highest frequency.

<b>TABLE NO. -21</b>			
<b><u>SPEED AMONG ENGLISH MEDIUM STUDENTS</u></b>			
<b>S. No.</b>	<b>Speed</b>	<b>No. of Students</b>	<b>Frequency of Students (%)</b>
a.	Slow	-	-
b.	Medium	18	36
c.	Fast	32	64

Graph-21: Speed among English Medium Students



The above table indicates the *Speed* of the writer. The students having the *Medium Speed* and *Fast Speed* are **18** and **32** in number and their calculated frequencies are **36%** and **64%**. There are no students having *Slow Writing Speed*.

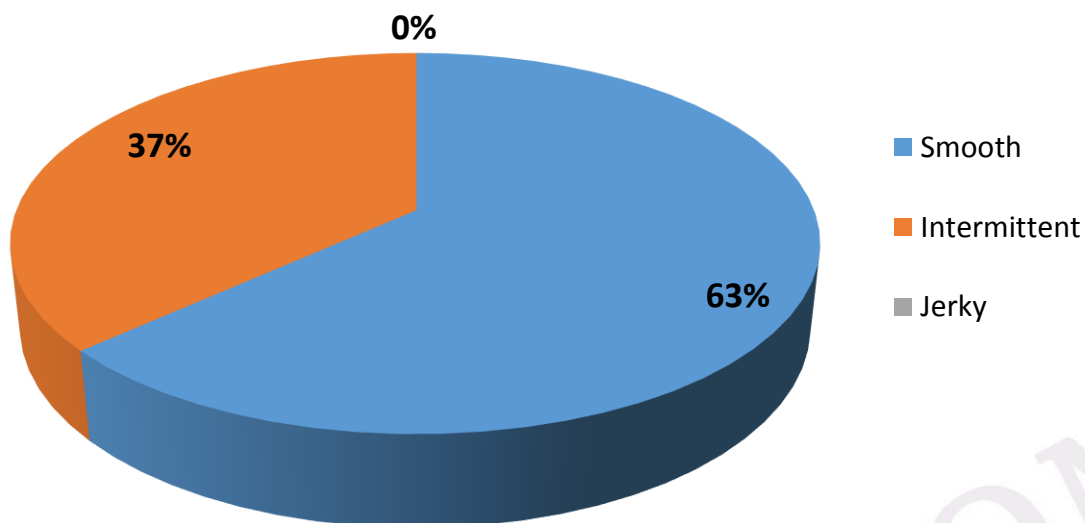
From the above database, we observe that the students of Hindi medium schools having the *Fast Speed* have the highest frequency.

TABLE NO. -22

**RHYTHM AMONG ENGLISH MEDIUM STUDENTS**

S. No.	Rhythm	No. of Students	Frequency of Students (%)
a.	Smooth	31	62
b.	Intermittent	18	36
c.	Jerky	-	-

Graph-22: Rhythm among English Medium Student



The above table indicates the *Rhythm* of the writer. The students having the *Smooth* and *Intermittent Rhythm* are 31 and 18 in number and their calculated frequencies are 62% and 36%. There are no students having *Jerky Rhythm*.

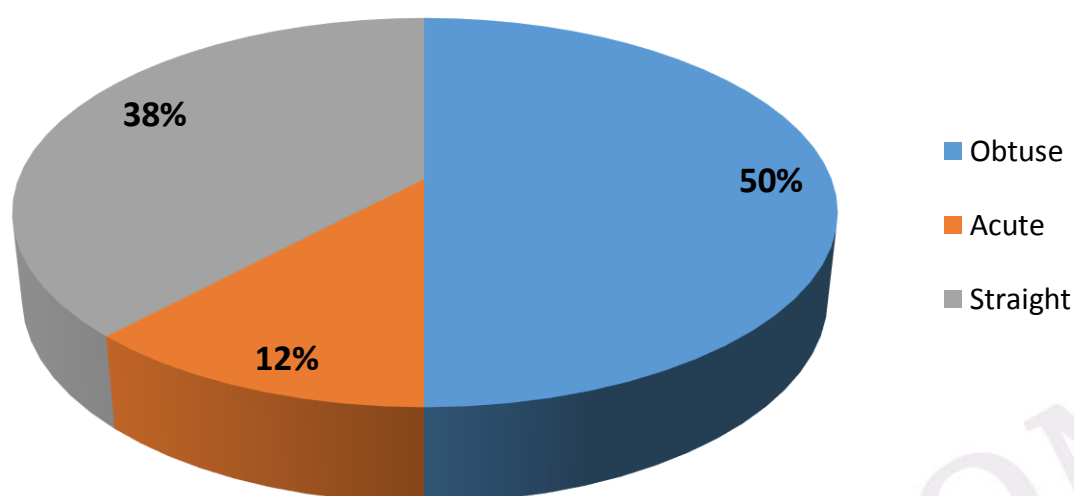
From the above database, we observe that the students of English medium schools having the *Smooth Rhythm* have the highest frequency.

**TABLE NO.- 23****SLANT AMONG ENGLISH MEDIUM STUDENTS**

S. No.	Slant	No. of Students	Frequency of Students (%)
a.	Obtuse	25	50
b.	Acute	6	12
c.	Straight	19	38



Graph-23: Slant among English Medium Students



The above table indicates the *Slant* of the handwriting of the English medium students. The students having the *Obtuse Slant* are **25** in number their calculated frequency is **50%**. In the same manner, those having *Acute* and *Straight* Slant are **6** and **19** in numbers and their calculated frequencies are **12%** and **38%**.

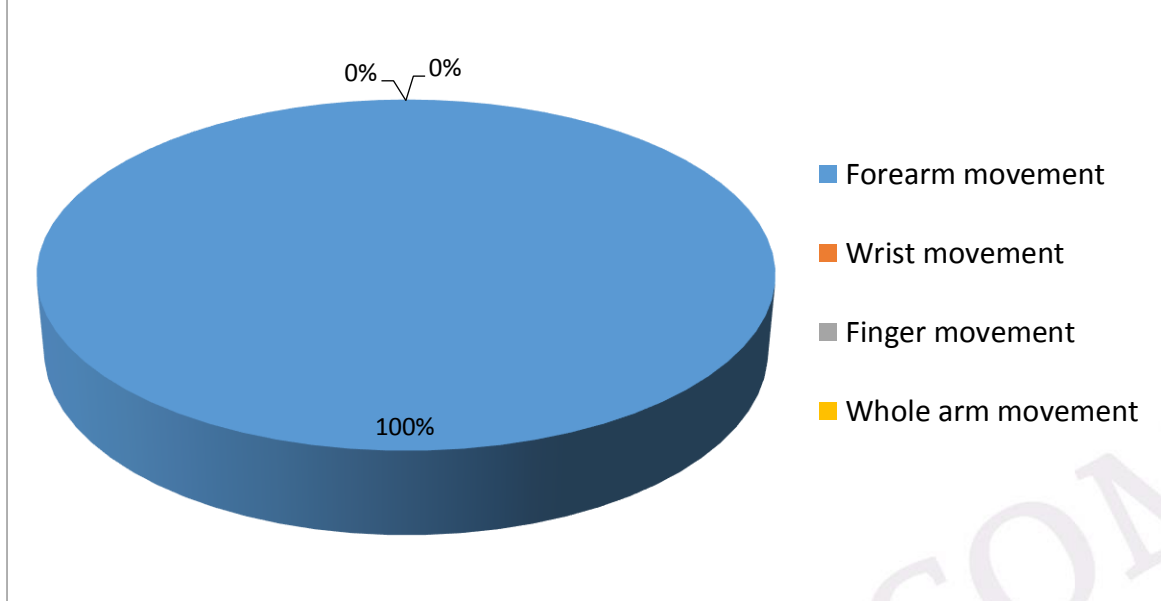
From the above database, we observe that the students of English medium having the *Obtuse* Slant have the highest frequency.

TABLE NO. -24

**WRITING MOVEMENT AMONG ENGLISH MEDIUM STUDENTS**

S. No.	Writing movement	No. of Students	Frequency of Students (%)
a.	Forearm movement	50	100
b.	Wrist movement	-	-
c.	Finger movement	-	-
d.	Whole arm movement	-	-

**Graph-24: Writing Movement among English Medium Students**

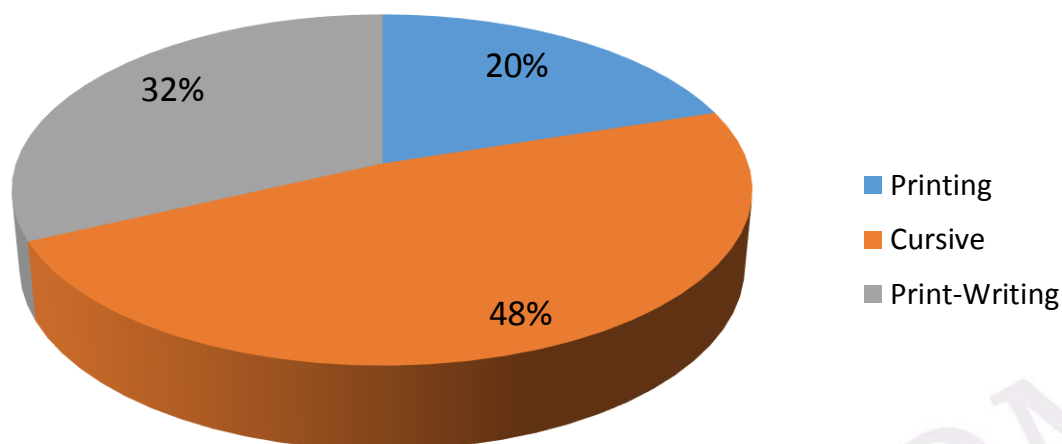


**Table-24: Different types of Handwriting Movement among English medium students**

The above table indicates the *Writing Movement* of writer. And from the above database we observe that there are all the students having the *Forearm Writing Movement*.

<b>TABLE NO.- 25</b>			
<b>WRITING STYLE AMONG ENGLISH MEDIUM STUDENTS</b>			
<b>S. No.</b>	<b>Writing Style</b>	<b>No. of Students</b>	<b>Frequency of Students (%)</b>
a.	Printing	10	20
b.	Cursive	24	48
c.	Print-Writing	16	32

Graph-25: Writing Style among English Medium Students

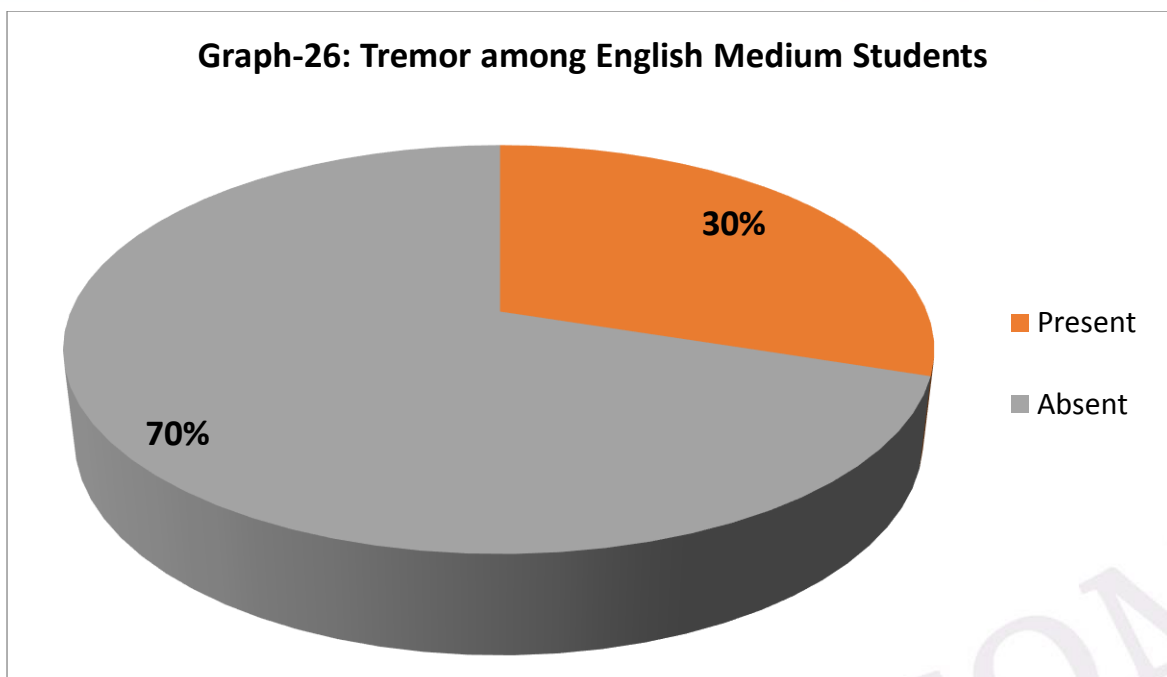


The above table indicates the writing style of writer. . The students having the **Printing Writing Style** are **10** in number their calculated frequency is **20%**. In the same manner, those having **Cursive** and **Print-writing** are **24** and **16** in numbers and their calculated frequencies are **48%** and **32%**.

From the above database, we observe that the students of Hindi medium having the **Cursive Writing Style** have the highest frequency.

<b>TABLE NO. -26</b>			
<b><u>TREMOR AMONG ENGLISH MEDIUM STUDENTS</u></b>			
<b>S. No.</b>	<b>Tremor</b>	<b>No. of Students</b>	<b>Frequency of Students (%)</b>
a.	Present	15	30
b.	Absent	35	70

Graph-26: Tremor among English Medium Students

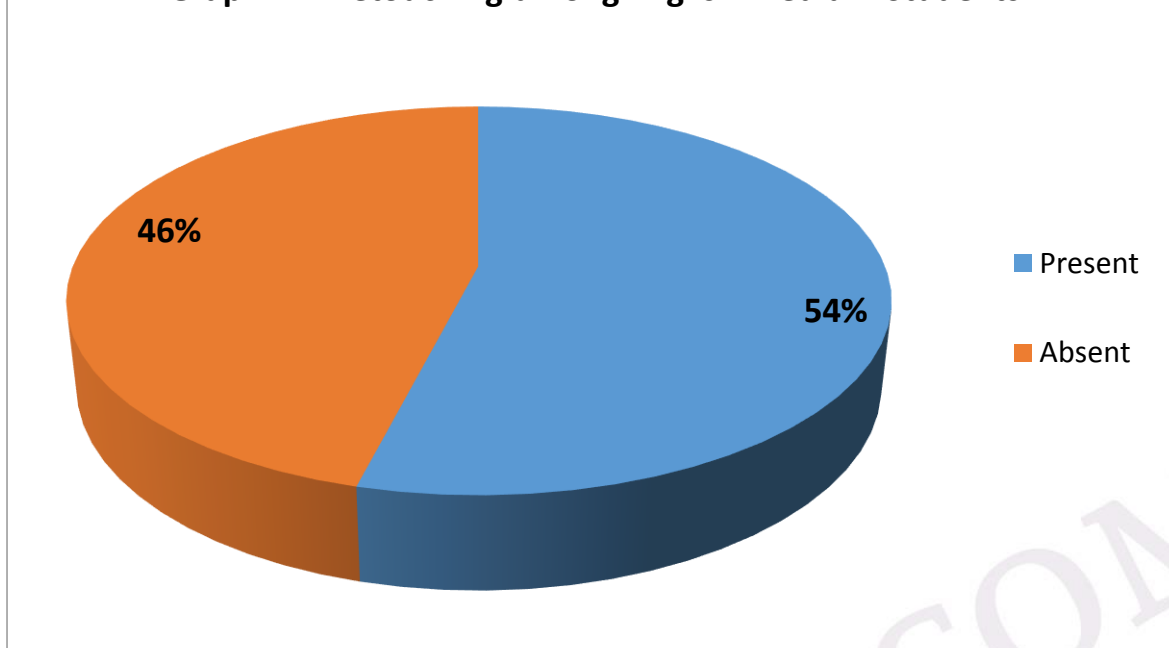


The above table indicates the presence and absence of *Tremor* in handwriting of English Medium students.

And from the above database we found that the student having *Tremor* in handwriting is 15 in no. and their frequency is 30%.

<b>TABLE NO.- 27</b>			
<b><u>RETOUCHING AMONG ENGLISH MEDIUM STUDENTS</u></b>			
<b>S. No.</b>	<b>Retouching</b>	<b>No. of Students</b>	<b>Frequency of Students (%)</b>
a.	Present	27	54
b.	Absent	23	46

Graph-27: Retouching among English Medium Students

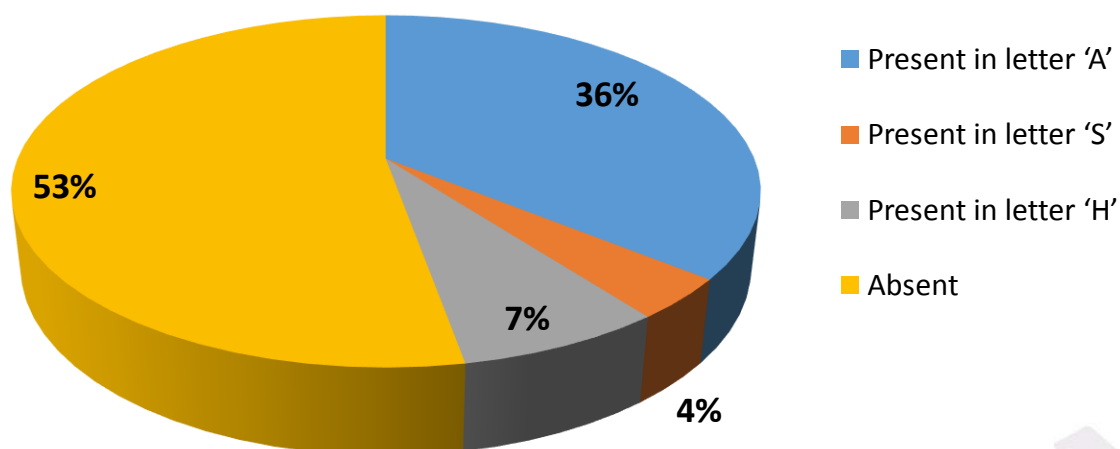


The above table indicates the presence and absence of **Retouching** in handwriting of English Medium students.

And from the above database we found that the 27 student having **Retouching** in handwriting and their frequency is **54%**. It means **54%** students of English Medium Schools have **Retouching** in their handwriting.

TABLE NO.- 28			
BUCKLE AMONG ENGLISH MEDIUM STUDENTS			
S. No.	Buckle	No. of Students	Frequency of Students (%)
a.	Present		
	• Present in letter 'A'	19	38
	• Present in letter 'S'	2	4
	• Present in letter 'H'	4	8
b.	Absent	28	56

Graph-28: Buckle among English Medium Student



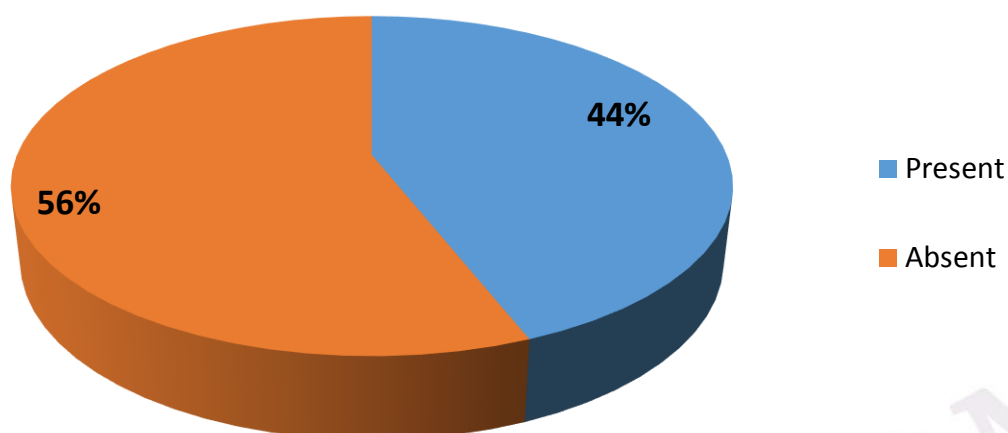
The above table indicates the presence of **Buckle** in some letters of English Medium Students.

And from the above database we observe that there are **38%** students of English Medium Schools having **Buckle** in letter 'A'. In same manner **4%** student having **Buckle** in letter 'S' and **8%** student having **Buckle** in in letter 'H'.

TABLE NO. -29			
SPUR AMONG ENGLISH MEDIUM STUDENTS			
S. No.	Spur	No. of Students	Frequency of Students (%)
a.	Present	22	44
b.	Absent	28	56



Graph-29: Spur among English Medium Students

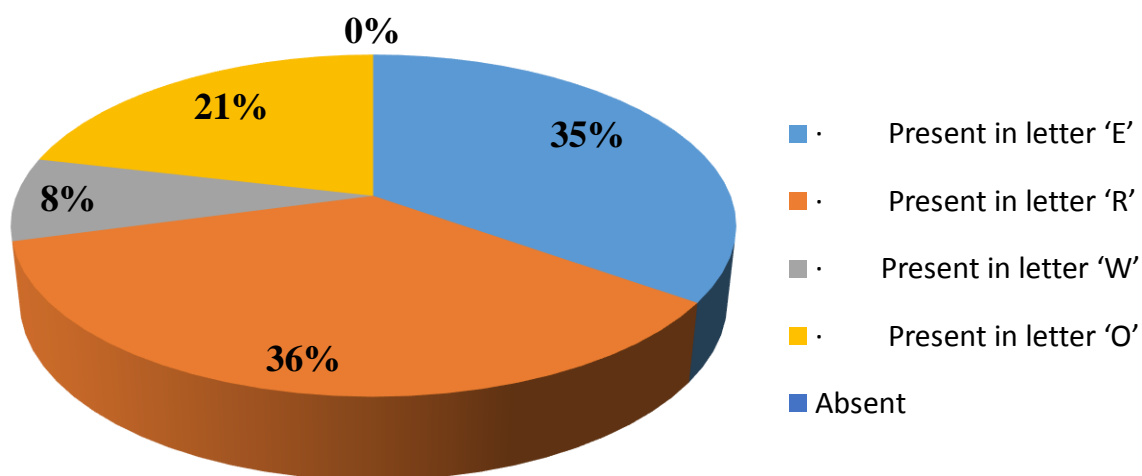


Above table indicates the presence or absence of *Spur* in handwriting of English medium students.

From the above database we found that 22 students of English medium school having *Spur* character in handwriting and their calculated frequency is 44%.

TABLE NO. -30			
EYE AMONG ENGLISH MEDIUM STUDENTS			
S. No.	Eye	No. of Students	Frequency of Students (%)
a.	Present		
	• Present in letter 'E'	36	72
	• Present in letter 'R'	36	72
	• Present in letter 'W'	7	14
	• Present in letter 'O'	25	50
b.	Absent	-	-

Graph-30: Eye among English Medium Students

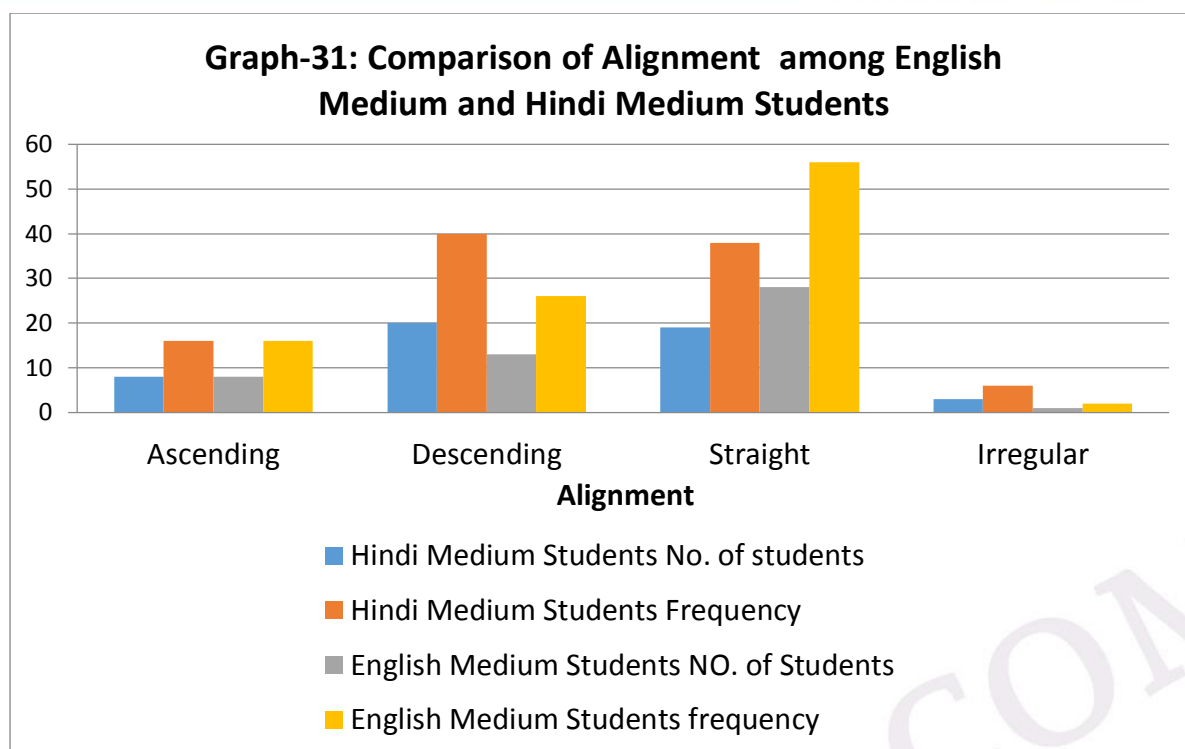


The above table indicates the presence of *Eye* in some letters of Hindi Medium Students.

And from the above database we observe that there are **36** students of Hindi Medium Schools having *Eye* in letter '*E*'. In same manner **36** student having *Eye* in letter '*R*', **7** student having *EYE* in in letter '*W*' and **25** students having *Eye* in letter '*O*'. And their calculated frequencies are **72%, 72%, 14%, 50%**.

#### Comparison of Handwriting characters of Hindi Medium Students and English Medium Students

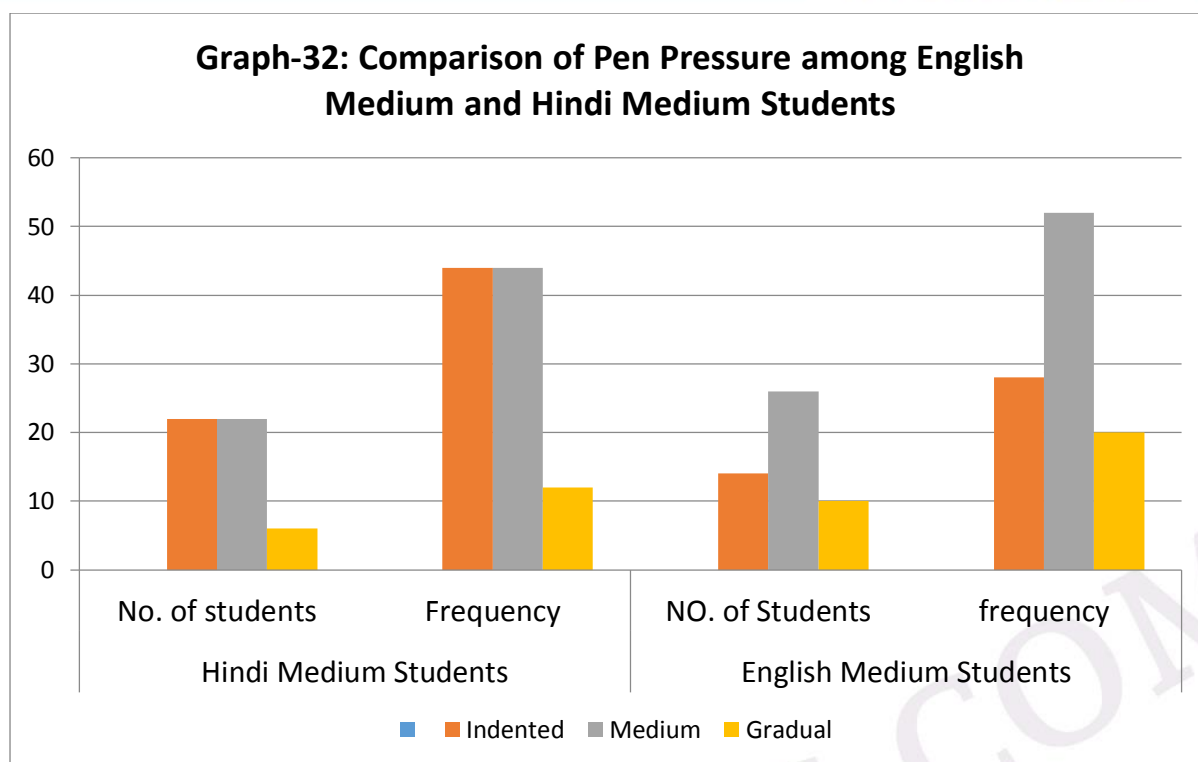
<b>TABLE NO.- 31</b>					
<b>COMPARISON OF ALIGNMENT AMONG HINDI MEDIUM AND ENGLISH MEDIUM STUDENTS</b>					
S. No.	Characters	<u>Hindi Medium Students</u>		<u>English Medium Students</u>	
	<u>Alignment</u>	No. of Students	Frequency (%)	No. of Students	Frequency (%)
a.	Ascending	8	16	8	16
b.	Descending	20	40	13	26
c.	Straight	19	38	28	56
d.	Irregular	3	6	1	2



Above table shows the comparison of **Alignment** among Hindi Medium Students and English Medium Students.

It is observed by the table that **Descending Alignment** is more occur in **Hindi medium students** although **English Medium student** has **Straight Alignment**.

TABLE NO.- 32					
<b>COMPARISON OF PEN PRESSURE AMONG HINDI MEDIUM AND ENGLISH MEDIUM STUDENTS</b>					
S. No.	Characters	<u>Hindi Medium Students</u>		<u>English Medium Students</u>	
	<u>Pen Pressure</u>	No. of Students	Frequency (%)	No. of Students	Frequency (%)
a.	Indented	22	44	14	28
b.	Medium	22	44	26	52
c.	Gradual	6	12	10	20

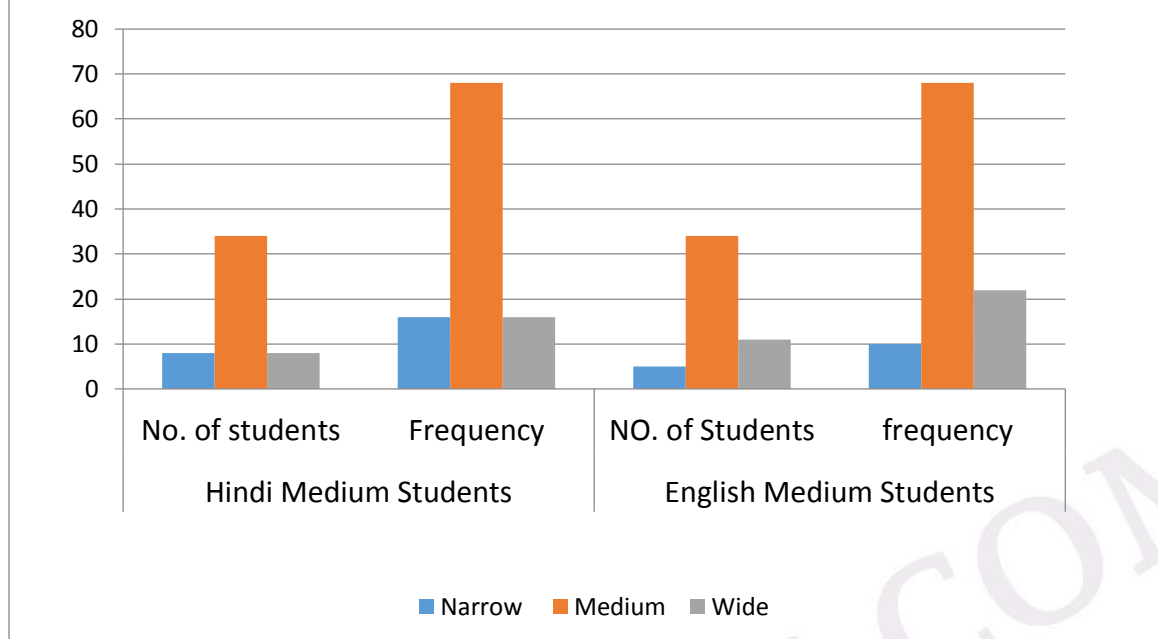


Above table shows the comparison of **Pen pressure** among Hindi Medium Students and English Medium Students.

It is observed by the table that **Indented and Medium Pen pressure** is more occur in **Hindi medium students** although English Medium student has **Medium pen pressure**.

<u>TABLE NO.- 33</u>					
<u>COMPARISON IF INTER-LETTER SPACING AMONG HINDI MEDIUM AND ENGLISH MEDIUM STUDENTS</u>					
S. No.	Characters	<u>Hindi Medium Students</u>		<u>English Medium Students</u>	
	Spacing				
	<u>Inter-Letter Spacing</u>	No. of Students	Frequency (%)	No. of Students	Frequency (%)
a.	Narrow	8	16	5	10
b.	Medium	34	68	34	68
c.	Wide	8	16	11	22

**Graph-33: Comparison of Inter-letter Spacing among Hindi Medium and English Medium Students**

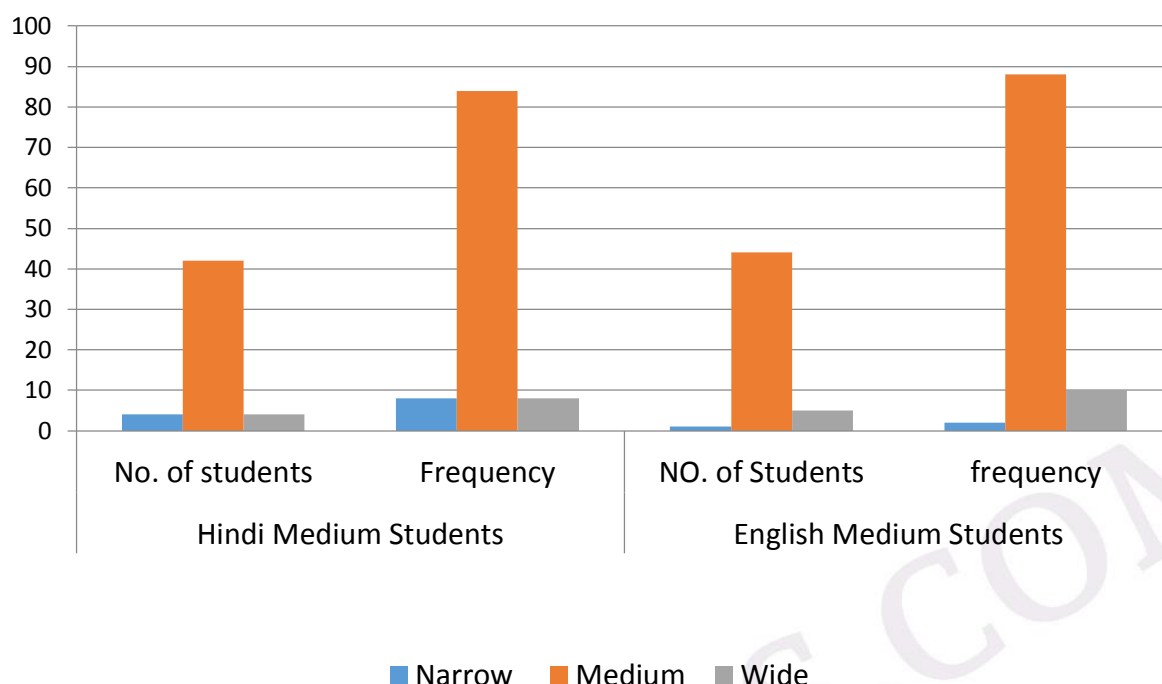


Above table shows the comparison of **Inter-letter Spacing** among Hindi Medium Students and English Medium Students.

It is observed by the table both medium's student (Hindi **medium students** and **English Medium student**) has **Medium Inter-letter Spacing**.

<u>TABLE NO.- 34</u>					
<u>COMPARISON OF INTER-WORD SPACING AMONG HINDI MEDIUM AND ENGLISH MEDIUM STUDENTS</u>					
S. No.	Characters	<u>Hindi Medium Students</u>		<u>English Medium Students</u>	
	Spacing				
	<u>Inter-Word Spacing</u>	No. of Students	Frequency (%)	No. of Students	Frequency (%)
a.	Narrow	4	8	1	2
b.	Medium	42	84	44	88
c.	Wide	4	8	5	10

**Graph-34: Comparison of Inter-Word Spacing among Hindi Medium and English Medium Students**

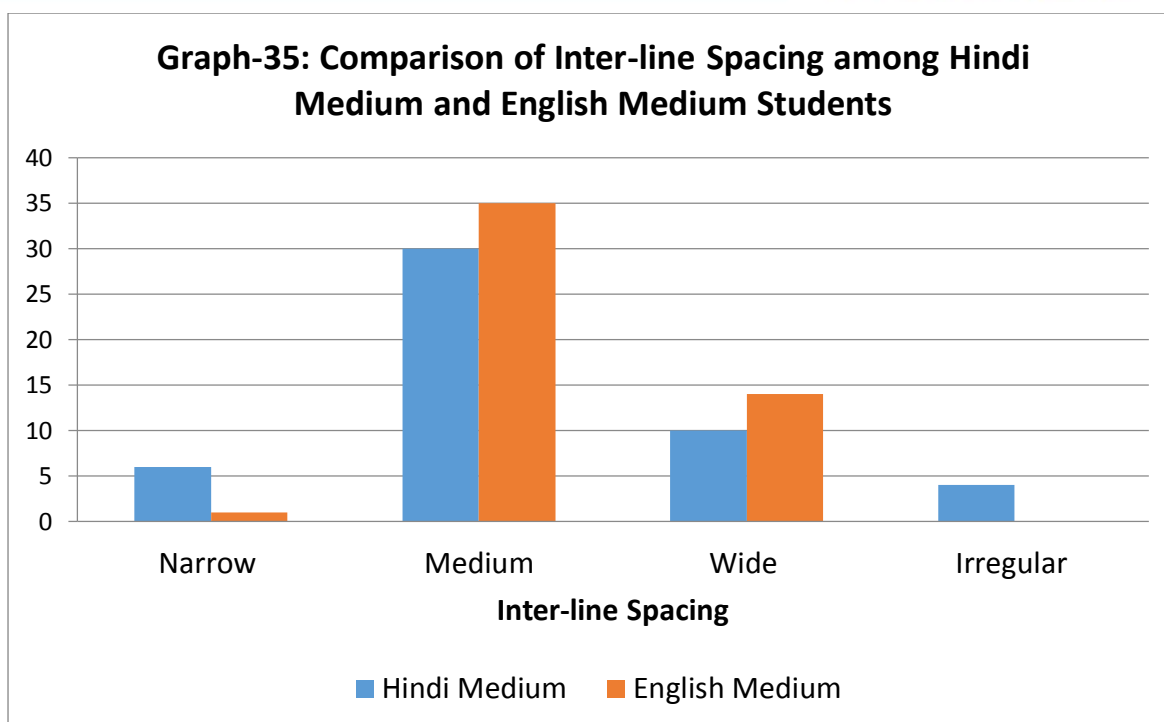


Above table shows the comparison of **Inter-word Spacing** among Hindi Medium Students and English Medium Students.

It is observed by the table both medium's student (Hindi medium students and English Medium student) has **Medium Inter-word Spacing**.

TABLE NO.- 35					
<u>COMPARISON OF INTER-LINE SPACING AMONG HINDI MEDIUM AND ENGLISH MEDIUM STUDENTS</u>					
S. No.	Characters	<u>Hindi Medium Students</u>		<u>English Medium Students</u>	
	Spacing				
	<u>Inter-line Spacing</u>	No. of Students	Frequency (%)	No. of Students	Frequency (%)
a.	Narrow	6	12	1	2
b.	Medium	30	60	35	70
c.	Wide	10	20	14	28
d.	Irregular	4	8	0	0

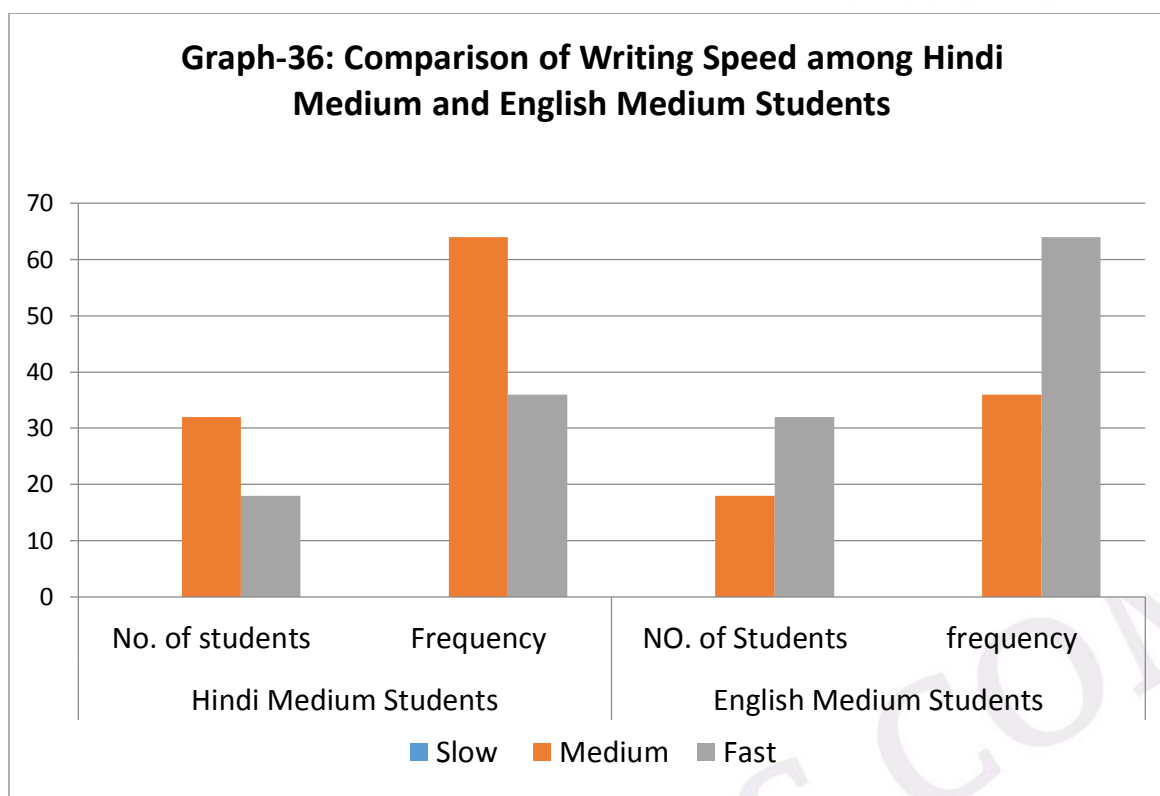




Above table shows the comparison of **Inter-line Spacing** among Hindi Medium Students and English Medium Students.

It is observed by the table both medium's student (Hindi **medium students** and **English Medium student**) has **Medium Inter-line Spacing**.

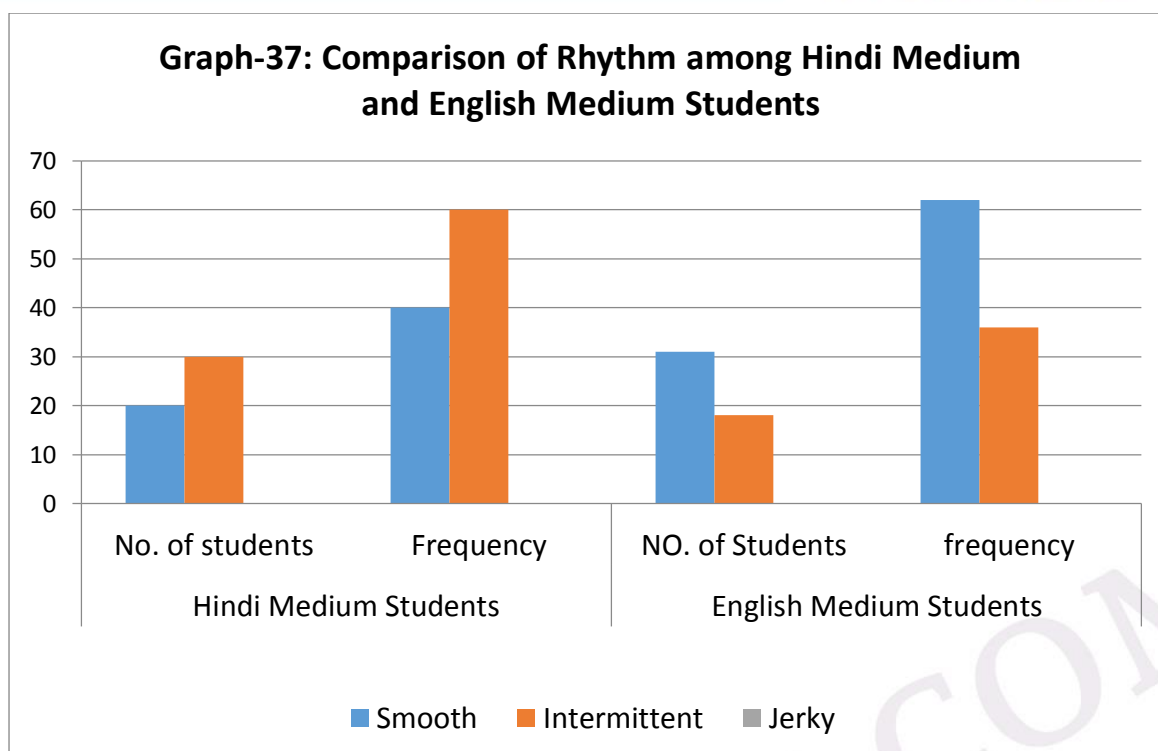
TABLE NO.- 36					
<u>COMPARISON OF WRITING SPEED AMONG HINDI MEDIUM AND ENGLISH MEDIUM STUDENTS</u>					
S. No.	Characters	<u>Hindi Medium Students</u>		<u>English Medium Students</u>	
	<u>Speed</u>	No. of Students	Frequency (%)	No. of Students	Frequency (%)
a.	Slow	0	0	0	0
b.	Medium	32	64	18	36
c.	Fast	18	36	32	64



Above table shows the comparison of **writing Speed** among Hindi Medium Students and English Medium Students.

It is observed by the table that **Medium Speed** is more occur in **Hindi medium students** although English **Medium student** has **Fast Speed**.

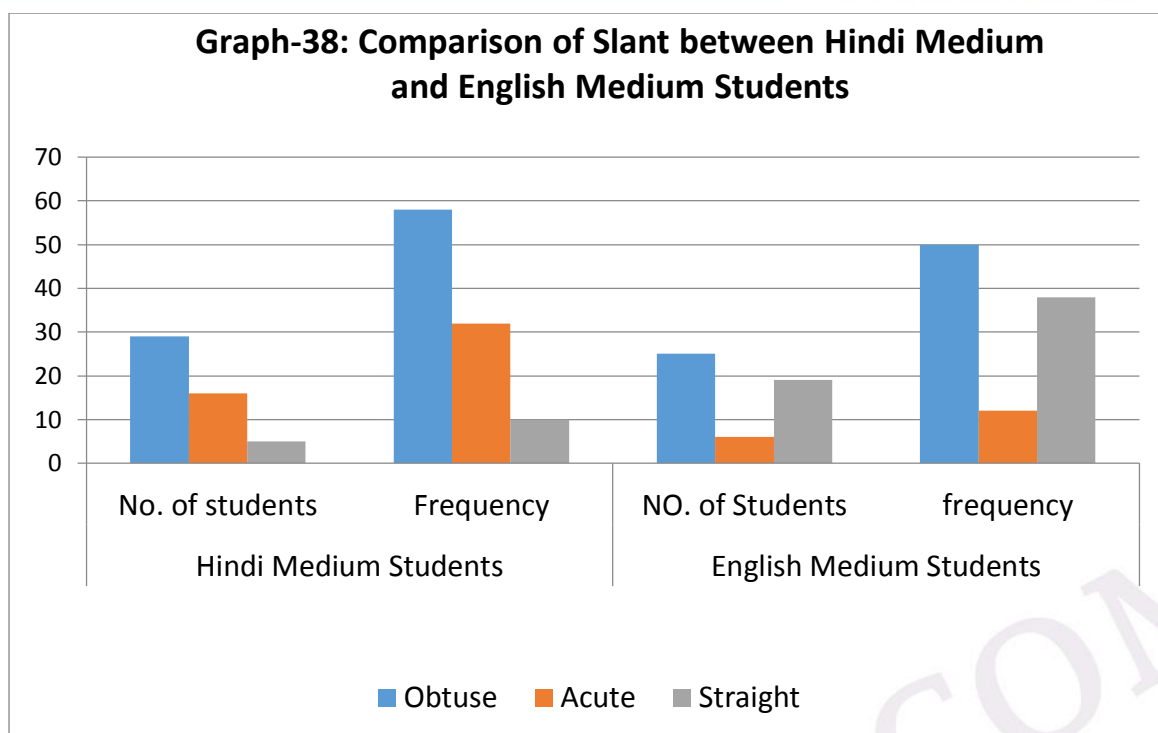
<b>TABLE NO.- 37</b>					
<b>COMPARISON OF RHYTHM AMONG HINDI MEDIUM AND ENGLISH MEDIUM STUDENTS</b>					
S. No.	Characters	<u>Hindi Medium Students</u>		<u>English Medium Students</u>	
	<u>Rhythm</u>	No. of Students	Frequency (%)	No. of Students	Frequency (%)
a.	Smooth	20	40	31	62
b.	Intermittent	30	60	18	36
c.	Jerky	0	0	0	0



Above table shows the comparison of **Rhythm** among Hindi Medium Students and English Medium Students.

It is observed by the table that **Intermittent** is more occur in **Hindi medium students** although **English Medium student** has **Jerky**.

<b>TABLE NO.- 38</b>					
<b>AMONG HINDI MEDIUM AND ENGLISH MEDIUM STUDENTS</b>					
S. No.	Characters	<u>Hindi Medium Students</u>		<u>English Medium Students</u>	
	<u>Slant</u>	No. of Students	Frequency (%)	No. of Students	Frequency (%)
a.	Obtuse	29	58	25	50
b.	Acute	16	32	6	12
c.	Straight	5	10	19	38

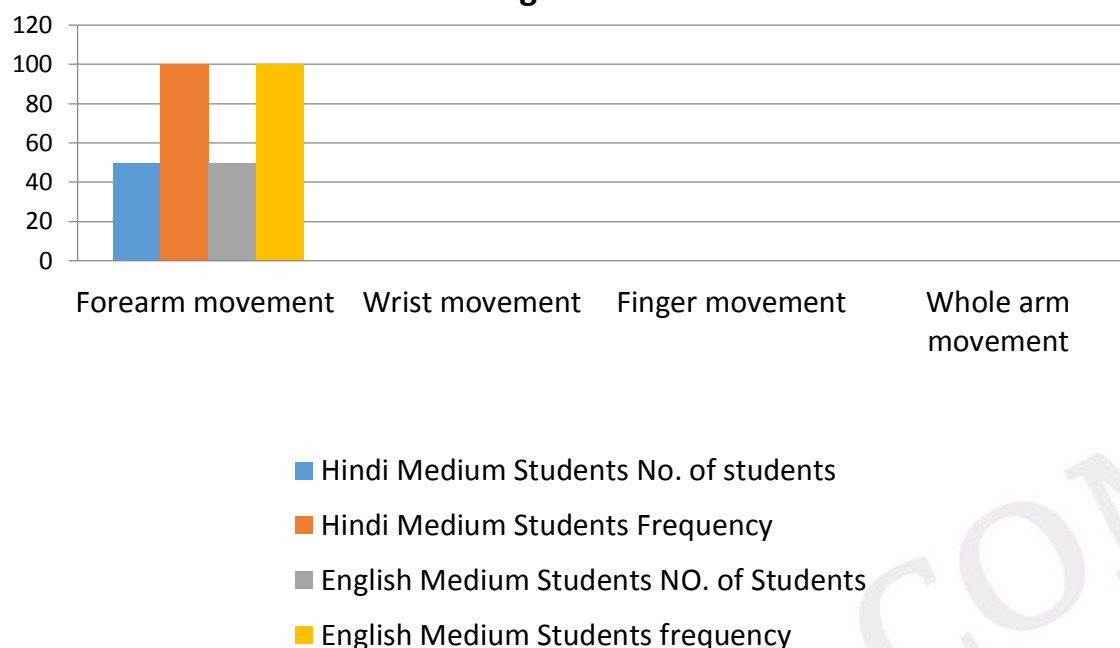


Above table shows the comparison of **Slant** among Hindi Medium Students and English Medium Students.

It is observed by the table both medium's student (Hindi **medium students** and **English Medium student**) has **obtuse slant**.

<b>TABLE NO.- 39</b>					
<b>COMPARISON OF WRITING MOVEMENT AMONG HINDI MEDIUM AND ENGLISH MEDIUM STUDENTS</b>					
S. No.	Characters	<u>Hindi Medium Students</u>		<u>English Medium Students</u>	
	<u>Writing Movement</u>	No. of Students	Frequency (%)	No. of Students	Frequency (%)
a.	Forearm movement	50	100	50	100
b.	Wrist movement	0	0	0	0
c.	Finger movement	0	0	0	0
d.	Whole arm movement	0	0	0	0

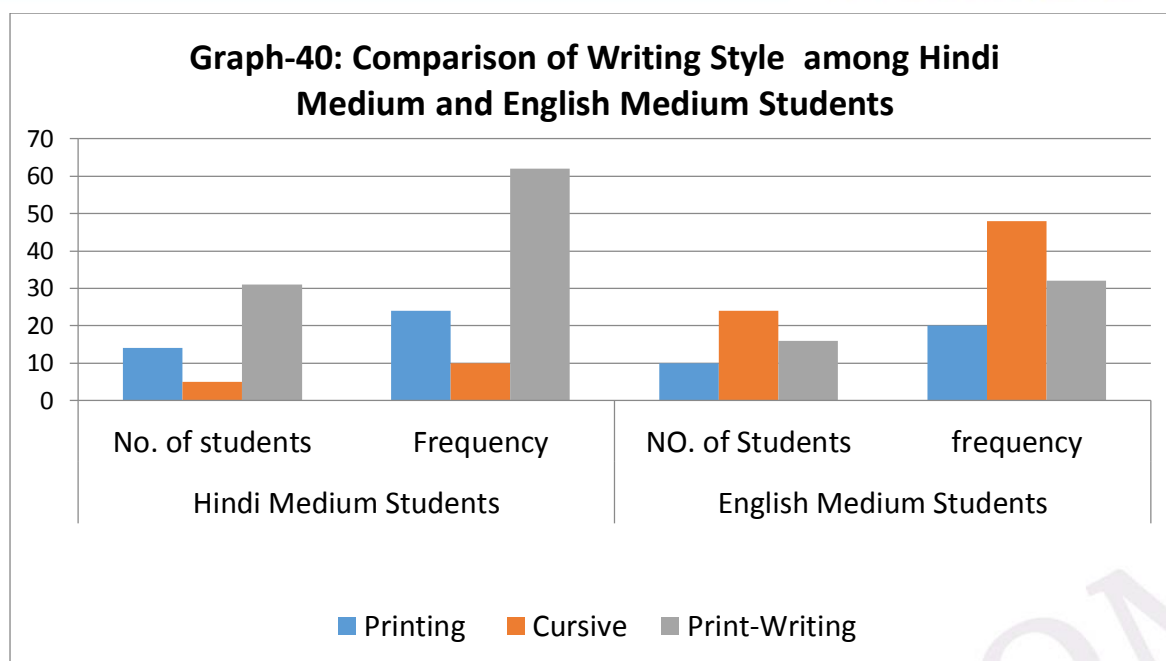
**Graph-39: Comparison of Writing Movement among Hindi Medium and English Medium Students**



Above table shows the comparison of **Writing movement** among Hindi Medium Students and English Medium Students.

It is observed by the table that both medium's student (Hindi **medium students** and **English Medium student**) has **Forearm movement**.

<b>TABLE NO.- 40</b>					
<b>COMPARISON OF WRITING STYLE AMONG HINDI MEDIUM AND ENGLISH MEDIUM STUDENTS</b>					
<b>S. No.</b>	<b>Characters</b>	<b><u>Hindi Medium Students</u></b>		<b><u>English Medium Students</u></b>	
	<b><u>Writing Style</u></b>	<b>No. of Students</b>	<b>Frequency (%)</b>	<b>No. of Students</b>	<b>Frequency (%)</b>
a.	Printing	14	24	10	20
b.	Cursive	5	10	24	48
c.	Print-Writing	31	62	16	32

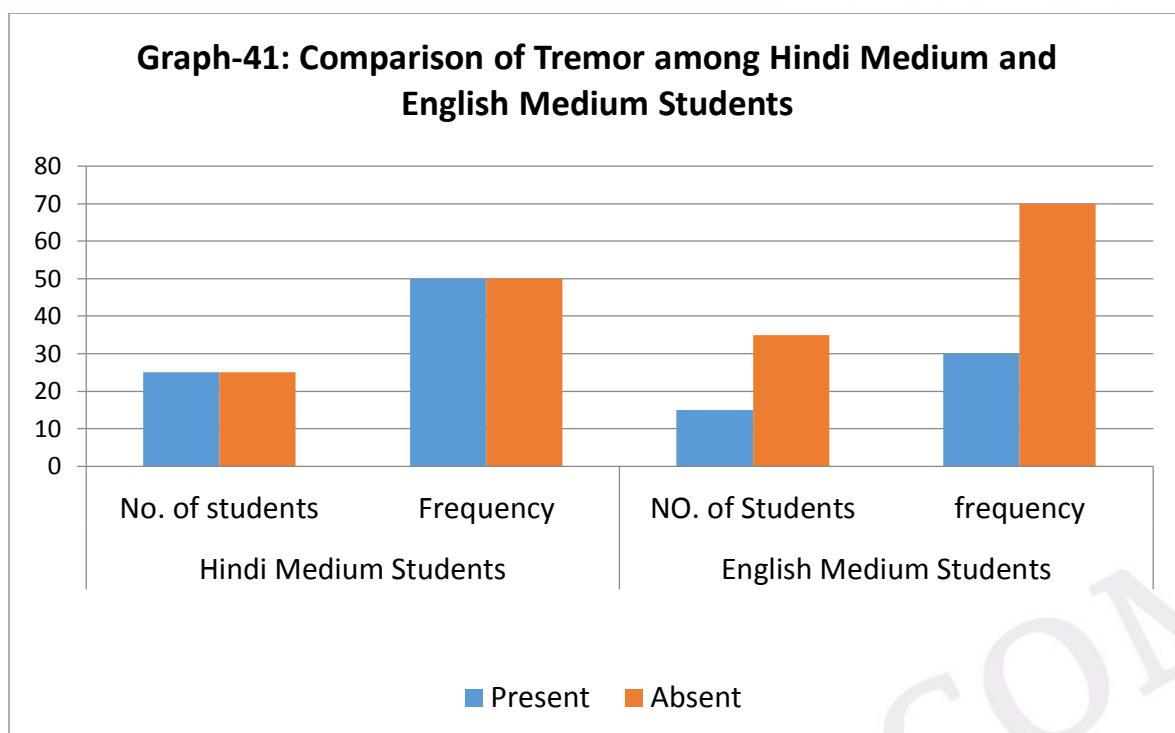


Above table shows the comparison of **Writing Style** among Hindi Medium Students and English Medium Students.

It is observed by the table that **Print-Writing Style** is more occur in **Hindi medium students** although English Medium student has **Cursive Writing Style**.

<b>TABLE NO.- 41</b>					
<b><u>COMPARISON OF TREMOR AMONG HINDI MEDIUM AND ENGLISH MEDIUM STUDENTS</u></b>					
<b>S. No.</b>	<b>Characters</b>	<b><u>Hindi Medium Students</u></b>		<b><u>English Medium Students</u></b>	
	<b><u>Tremor</u></b>	<b>No. of Students</b>	<b>Frequency (%)</b>	<b>No. of Students</b>	<b>Frequency (%)</b>
a.	Present	25	50	15	30
b.	Absent	25	50	35	70



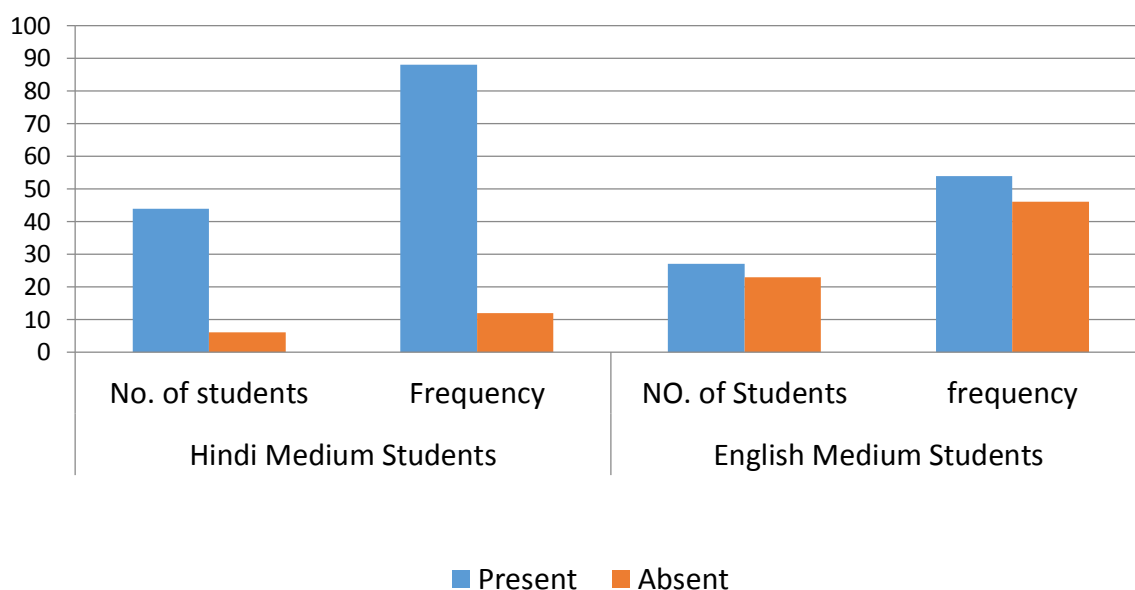


Above table shows the comparison of **Tremor** among Hindi Medium Students and English Medium Students.

It is observed by the table that **50%** of **Hindi medium students** have **Tremor** in their handwriting although **30%** students **English Medium student** has **Tremor** in their writing.

<b>TABLE NO.- 42</b>					
<b>COMPARISON OF RETOUCHING AMONG HINDI MEDIUM AND ENGLISH MEDIUM STUDENTS</b>					
<b>S. No.</b>	<b>Characters</b>	<b>Hindi Medium Students</b>		<b>English Medium Students</b>	
	<b>Retouching</b>	<b>No. of Students</b>	<b>Frequency (%)</b>	<b>No. of Students</b>	<b>Frequency (%)</b>
a.	Present	44	88	27	54
b.	Absent	6	12	23	46

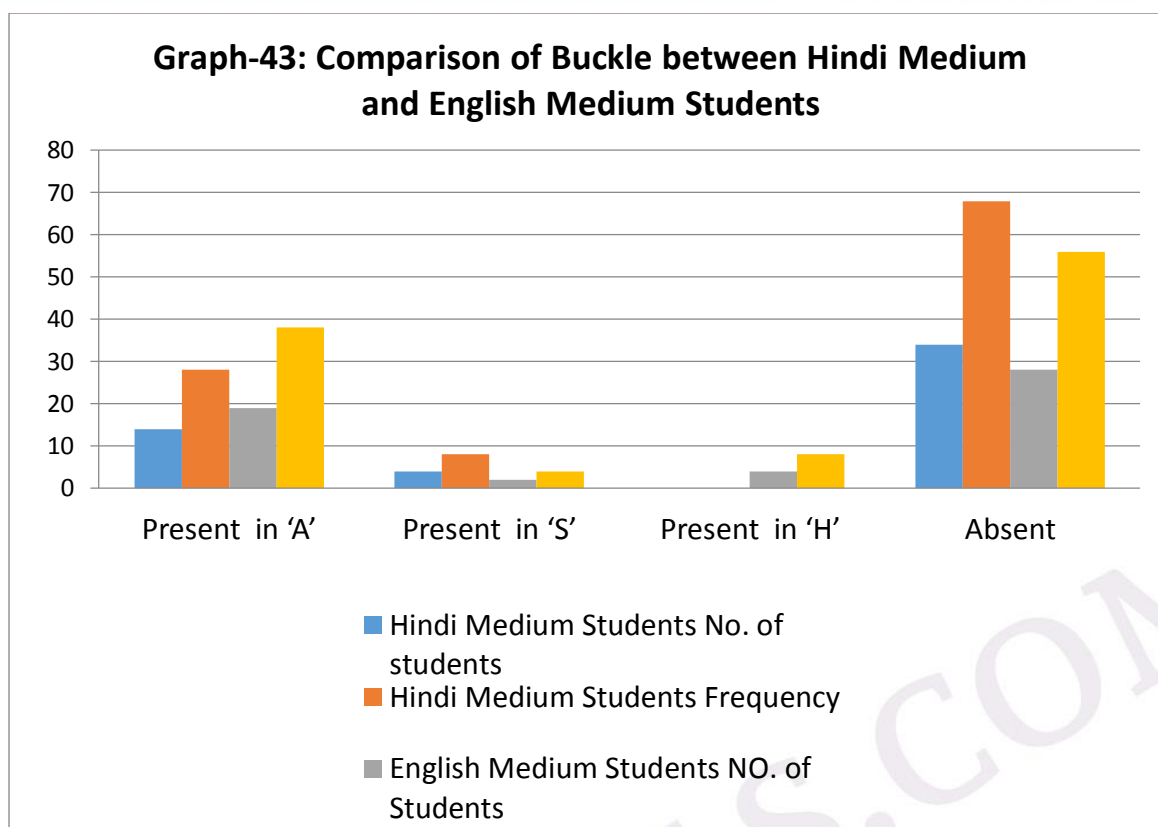
**Graph-42: Comparison of Retouching among Hindi Medium and English Medium Students**



Above table shows the comparison of **Retouching** among Hindi Medium Students and English Medium Students.

It is observed by the table that **80%** of **Hindi medium students** have **Retouching** in their handwriting although **54%** students **English Medium student** has **Retouching** their writing

<b>TABLE NO.- 43</b>					
<b><u>COMPARISON OF BUCKLE AMONG HINDI MEDIUM AND ENGLISH MEDIUM STUDENTS</u></b>					
S. No.	Characters	<u>Hindi Medium Students</u>		<u>English Medium Students</u>	
	<u>Buckle</u>	No. of Students	Frequency (%)	No. of Students	Frequency (%)
a.	Present				
i.	Present in 'A'	14	28	19	38
ii.	Present in 'S'	4	8	2	4
iii.	Present in 'H'	0	0	4	8
b.	Absent	34	68	28	56

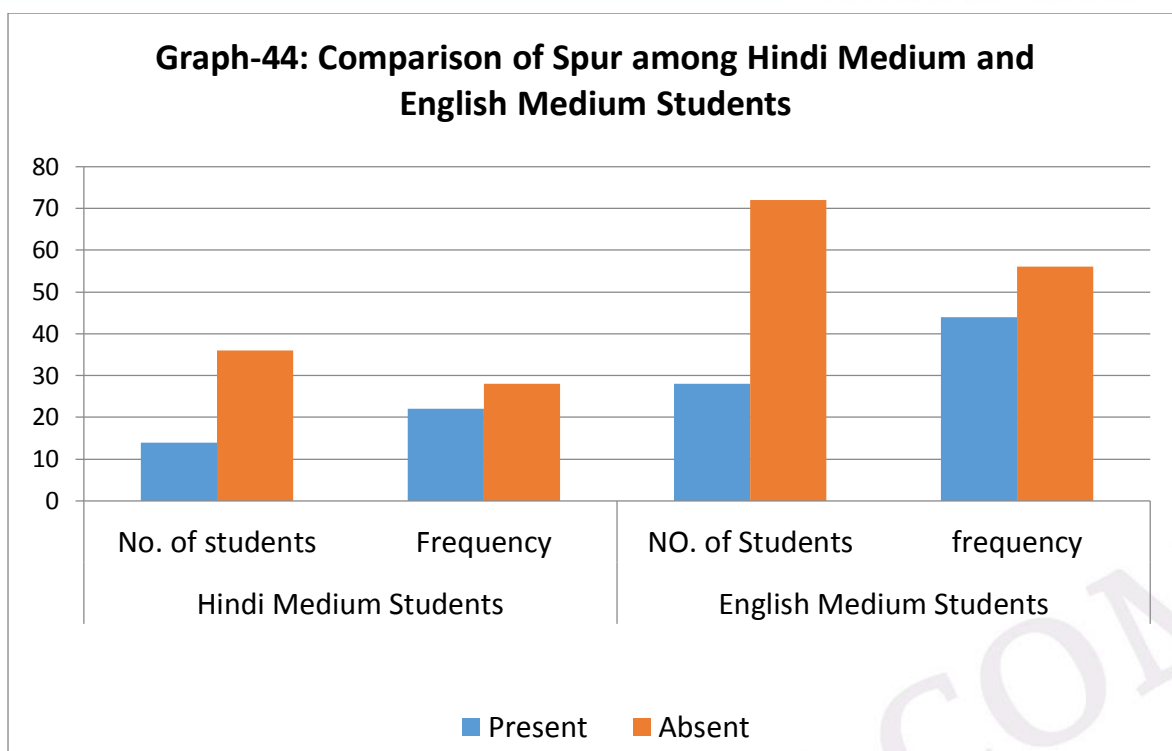


Above table shows the presence and absence of the character 'Buckle' in English and Hindi Medium Students.

It is observed that in Hindi medium students, the character 'Buckle' is present in letter 'A' and 'S' in 14 students and 4 students respectively and is absent in the letter 'H'. There is the absence of the character in 34 students.

In English medium students, the same is present in letter 'A', 'S' and 'H' in 19 students, 2 students and 4 students respectively. there is the absence of the character in 28 students.

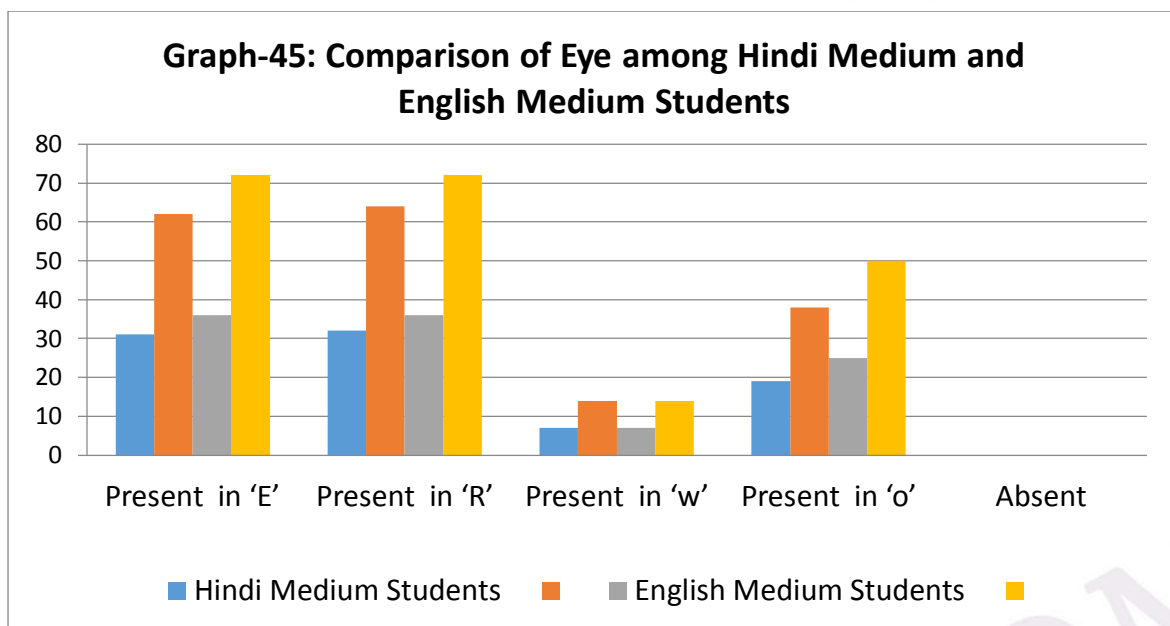
<b>TABLE NO.- 44</b>					
<b>COMPARISON OF SPUR AMONG HINDI MEDIUM AND ENGLISH MEDIUM STUDENTS</b>					
S. No.	Characters	<u>Hindi Medium Students</u>		<u>English Medium Students</u>	
	<u>Spur</u>	No. of Students	Frequency (%)	No. of Students	Frequency (%)
a.	Present	14	22	28	44
b.	Absent	36	28	72	56



Above table shows the comparison of presence of **Spur** among Hindi Medium Students and English Medium Students.

It is observed by the table that **22%** of **Hindi medium students** have **Spur** in their handwriting although **56%** students **English Medium student** has **Spur** in their writing.

<b>TABLE NO.- 45</b>					
<b>COMPARISON OF EYE AMONG HINDI MEDIUM AND ENGLISH MEDIUM STUDENTS</b>					
S. No.	Characters	<u>Hindi Medium Students</u>		<u>English Medium Students</u>	
	<u>Eye</u>	No. of Students	Frequency (%)	No. of Students	Frequency (%)
a.	Present				
i.	Present in 'E'	31	62	36	72
ii.	Present in 'R'	32	64	36	72
iii.	Present in 'w'	7	14	7	14
iv.	Present in 'o'	19	38	25	50
b.	Absent	0	0	0	0



Above table shows the presence and absence of the character 'Eye' in English and Hindi Medium Students.

It is observed that in Hindi medium students, the character 'Buckle' is present in letter 'E', 'R', 'W' and 'O' in 31, 32, 7 and 19 students respectively

In English medium students, the same is present in letter 'E', 'R', 'W' and 'O' in 36, 36, 7 and 25 students respectively

### Discussion

After analyzing the various handwriting characteristics of Hindi medium and English medium students it is observed that 16% of students of Hindi medium students having Ascending Alignment, 40% having Descending Alignment, 38% having Straight Alignment and 6% having mixed or Irregular Alignment, While 16% of students of English medium students having Ascending Alignment, 26% having Descending Alignment, 56% having Straight Alignment and 2% having Irregular Alignment.

Similarly 44% students of Hindi medium students have indented or medium Pen pressure in handwriting and 12% having gradual pen pressure, while 28% students of English medium students having indented or 52% having medium Pen pressure in handwriting and 12% having Gradual pen pressure.

In same manner 40% students of Hindi medium students have smooth Rhythm in handwriting and 60% having Intermittent Rhythm, while 28% students of English medium students have indented or 62% having Smooth Rhythm in handwriting and 36% having Intermittent Rhythm.

Similarly 58% students of Hindi medium students have Obtuse Slant or 32% have Acute Slant in handwriting and 10% having Straight Slant, while 50% students of English medium students having Obtuse Slant or 12% have Acute Slant in handwriting and 38% having Straight Slant.

Similarly 50% students of Hindi Medium having Tremor in their handwriting while English Medium Students having 30%. In same manner 88% students of Hindi Medium having Retouching in their handwriting while English Medium Students having 46%.

In same manner 62% students of Hindi medium have Print-Writing style, 24% having printing and 10% having cursive, While the English medium students having 32% Print-writing, 32% Printing writing style and 48% Cursive writing style.

The various workers had also made studies to find out the characteristic features in the handwriting of individual, **Mohamed et al. (2010)** studied the common characteristic features amongst Malaysian. He collected the samples from 60 individuals and find out those 28.3% respondents has Cursive writing style, 26.7% of respondents have Printing writing style and 45.0% has mixed writing style. In same manner 6.7% writer has larger letter size, 23.3% having medium and 36.7% having smaller letter size. Similarly there are 20.0% respondents having forward slant, 10.0% having backward slant and 36.7% having mixed slant. Similarly 18.3% of respondents having Horizontal Alignment, 38.3% having Ascending Alignment, 11.7% having Descending Alignment and 31.7% having Mixed Alignment. And last 40.0% of respondents having Consistent word spacing and 60.0% having inconsistent word spacing in handwriting. So result of the present study is not similar with the results of **Mohamed et al. (2010)**



SUMMARY AND CUNCLUSION

A handwriting is a certain visual sign or marks which are accept by two or more fellowmen or group or person of individual of a town, city or country as a mean of communication of information one's idea to other for particular manner or understanding or sending message to other in a broad sense is known as '**Handwriting**'. This may include painting, alphabets, numeral or symbols etc.

The present study has been concluded on the randomly collected writing sample of 100 individuals to determine the various writing characteristics features of a person which is common peculiar and useful to compare the handwriting of English medium and Hindi medium students.

The handwriting sample was collected from the higher secondary and senior higher secondary students, who are study in two different medium (i.e. Hindi medium students and English medium students). The subjects were familiar with the writing English language. The handwriting sample taken from subject on white bond paper with blue ball pen and they were not allowed to change their pen and paper for writing sample. The writing samples were studied with the help of protector, hand lens, stencil, coloured pencil.

The writing sample were very critically and exhaustively examined with regard to the general as well as individual characteristics features for comparison of Hindi medium student and English medium students and following conclusions have emerged out from the present study -

The findings of the present study gives important information about the various characteristics features of handwriting of Hindi medium and English medium students.

- The Hindi medium students have more tendencies towards **Descending alignment (40%)** as compare to English medium students **(26%)**. While the English medium students have more tendency towards **Straight alignment (56%)** as compare to Hindi medium students **(38%)**.
- The Hindi medium students have more tendencies towards **Indented pen pressure (44%)** as compare to English medium students **(28%)**. While the English medium students have more tendency towards **medium pen pressure (52%)** as compare to Hindi medium students **(44%)**.
- The Hindi medium and English medium students both have more tendencies towards **Medium spacing between letter, word and lines.**
- The Hindi medium students are prone to **Medium writing speed (64%)** as compare to English medium students **(36%)**. While the English medium students have prone to **fast writing speed (64%)** as compare to Hindi medium students **(36%)**.
- The Hindi medium students have more tendencies towards **intermittent rhythm (60%)** as compare to English medium students **(36%)**. While the English medium students have more tendency towards **smooth rhythm (62%)** as compare to Hindi medium students **(40%)**.

- Hindi medium students and English medium students are more prone to **leftward slant (58%)** in Hindi medium and **(50%)** in English medium.
- Hindi medium students and English medium students are more prone to **Forearm writing movement**.
- The Hindi medium students have more tendencies towards **Print-Writing style (62%)** as compare to English medium students **(32%)**. While the English medium students have more tendency towards **cursive style (46%)** as compare to Hindi medium students **(10%)**.
- The Hindi medium students have **Tremor** in handwriting **(50%)** as compare to English medium students **(30%)**.
- The Hindi medium students have **Retouching** in handwriting **(88%)** as compare to English medium students **(54%)**.
- The English medium students have **Spur** in handwriting **(44%)** as compare to Hindi medium students **(22%)**.

**Reference**

**Allen, D. (1999)** "Handwriting examination of unfamiliar scripts", International Journal Of Forensic Document Examiners; vol. 5, 1999, p.p.424 - 429

**Champa, H.N. and Kumar, A. (2010)** "Artificial Neural Network Behavior Prediction Through Handwriting Analysis", International Journal Of Computer Applications; volume (2)-No. (12), October 2010, p.p.36-40

**Chauhan, V. R. S. (2007)** "A Study to Identify Characteristic Features in Determining Left and Right Handwritings", Ph.D. thesis, Bundelkhand University, Jhansi, p.p. 32-41

**Harrison, W. R. (1958)** "Suspect documents"; Praeger publishers, p.p.165-171

**Hilton, O. (1993)** "Scientific examination of questioned documents", Revised Ed.; CRC press, p.p.19-24

**Huber, R. A. and Headrick (1999)** "Handwriting identification: facts and fundamentals", CRC Press, p.p.88-120

**Kamath et al. (2011)** "Development Of An Automated Handwriting Analysis System", ARPN Journal Of Engineering And Applied Sciences; volume (6), No. (9), p.p.135-140

**Kelly, J.S. Lindblom, B.S. (2006)** "Scientific examination of question documents", 2<sup>nd</sup> ed., CRC press, p.p.145-150

**Lal, B. and Chandra, R. (2010)** "Cross examination of handwriting expert", selective and scientific books publications, p.p.1-20

**Mathur, S. and Chaudhary, K.S. (2014)** "Examination Of Handwritten Documents Of Unfamiliar Scripts: A Forensic Viewpoint On Various Indian Languages", IMPACT: International Journal Of Research In Applied; vol. (2), issue (4), p.p.137-139

**Mehta, M. K. (1961)** "Identification of handwriting and cross- examination of expert", 2<sup>nd</sup> ed.; N.M. Tripathi publication, p.p.10-15

**Mohamed, R. et al. (2010)** "Statistical Examination Of Common Characteristics For Disguised Handwriting Amongst Malaysian" Health and the Environment Journal; Vol. (1), No. (2), p.p.30-36

**Prasad, S. et al.(2010)** "Handwriting Analysis Based on Segmentation Method for Prediction of Human Personality Using Support Vector Machine", International Journal Of Computer Applications; volume (8), No. (12), p.p. 26-29



**Rahiman, A.M. et al. (2003)** "HABIT: Handwriting Analysis Based Individualistic Traits Prediction", International Journal Of Image Processing (IJIP); volume (7): Issue (2), p.p. 209-217

**Sharma B.R. (2012)** "Law related to handwriting forensics", Universal law publishing, p.p. 1-15

XOURNALS.COM



**Ms. Jaya Shukla**

M.Sc. Forensic Science

Institute of Forensic Science & Criminology

Bundelkhand University, Jhansi (U.P.) – INDIA

XOURNALS.COM