

## **CHAPTER 4: ANALYSIS AND INTERPRETATION**

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## 4.0 INTRODUCTION

Analysis and interpretation is a significant measure that has to be conducted after the collection of relevant data through the use of appropriate tools and techniques. Analysis of data incorporates the study of the tabulated material to determine solution for the research questions. The key process of analyzing the data usually includes statistics to draw inferences and generalizations from the observed data. So, it becomes inevitable to apply some statistical techniques based on the hypotheses of the study. Interpretation is the process of assigning meaning to the collected information and determining the conclusions, significance, and implications of the findings. The statistical analyses employed in this study to get the results are as follows:

- **Descriptive Analysis** which is a collective method to represent the data in a concise manner.
- **Correlation of independent and dependent variables** which is used to find out the relationship between the selected variables.
- **t-test** which is used to find out the significant difference between the means of two groups of the variables.
- **Analysis of variance (ANOVA)** which is used to find out the significant difference between the means of more than two groups.

### 4.1 DESCRIPTIVE ANALYSIS

Descriptive Analysis is the quantitative description of the main features of the collected data (Mann, 1995). It provides simple summaries about the sample and the observations that have been made.

#### 4.1.1 Percentage of students having visual, auditory and kinesthetic learning styles

**Table 4.1:** Percentage of students having visual, auditory and kinesthetic learning styles

Type of learners	N	Percentage (%)
Visual Learners	733	53.4
Auditory Learners	337	24.5
Kinesthetic Learners	175	12.7
Visual - Auditory Learners	63	4.6
Visual - Kinesthetic Learners	31	2.3
Auditory – Kinesthetic Learners	27	2.0
Visual - Auditory - Kinesthetic Learners	9	0.01
Total	1374	100

Table 4.1 depicts that 53.4% of the students are visual, 24.5% of the students are auditory and 12.7% of the students are kinesthetic in their learning style. It is also to be noted that 8.9% of the students preferred bimodal way of learning (visual-auditory 4.6%, visual-kinesthetic 2.3% and auditory-kinesthetic 2.0%). Trimodal way of learning was preferred by 0.01% of the students. Hence, it can be inferred that among the visual, auditory and kinesthetic learning styles, the most preferable learning style is visual and the least is kinesthetic. This can be illustrated in a pie chart in fig.4.0

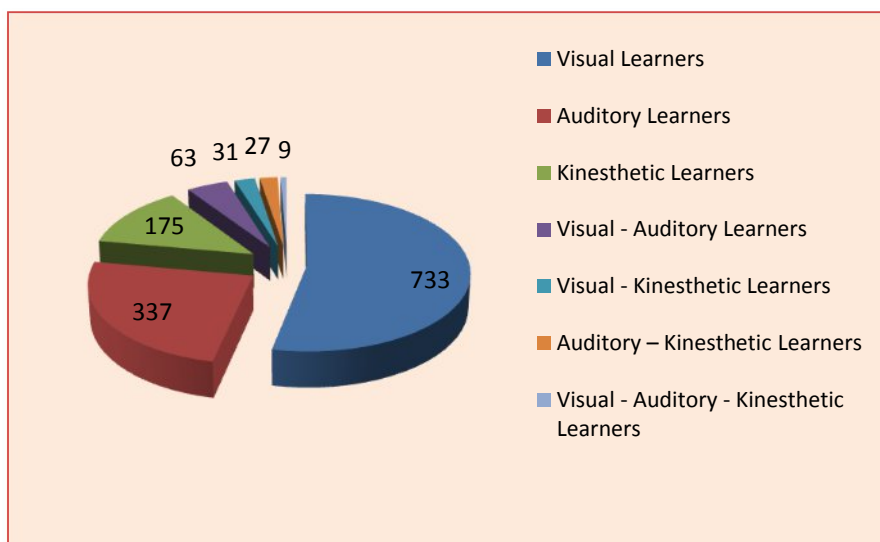


Figure 4.1: Percentage of students having visual, auditory and kinesthetic learning styles

This result supports the ‘cone of learning’ according to which we learn 83% through visual, 10% through auditory and 2% through the sense of touch i.e. kinesthetic (Wong & Sum, 2000). Students use these three modalities to receive and learn new information and experiences. Sometimes, students may prefer a combination of two or three learning styles to understand complicated information. Bimodal and trimodal learning preferences represent such situation. It is noteworthy to know that information should be presented to students using visual, auditory and kinesthetic learning styles, and they should be allowed to involve in all learning activities.

#### 4.1.2 Percentage of students using the usability and accessibility features of LMS

After scrutinizing the collected data, it was found that students use all the features of LMS but with different frequencies. So, percentage analysis was carried out to study the exact usage of LMS features. Table 4.2 presents the percentage of students using the usability and accessibility features of LMS with the frequencies Always, Often, Sometimes, Rarely and Never.

**Table 4.2:** Percentage of students using the usability and accessibility features of LMS

FEATURES	PERCENTAGE OF STUDENTS USING LMS				
	Always	Often	Sometimes	Rarely	Never
i) Learning Materials	27.19	26.61	24.46	15.20	08.61
ii) Assignments	28.13	25.83	19.58	14.35	12.13
iii) Quizzes	28.91	24.29	21.60	14.91	10.27
iv) Discussion Forums	14.30	20.52	24.50	20.15	20.57
v) Chats & E-mail	15.62	19.00	20.88	17.74	26.72
vi) Instant Messaging	22.46	21.70	18.58	14.18	23.06
vii) Calendar & Announcements	43.80	23.06	15.08	09.40	08.72
viii) Wikis & Blogs	09.66	13.13	20.46	20.44	36.31
ix) Glossaries & Surveys	10.60	15.80	23.23	19.67	30.73
x) Accessibility features	38.74	29.33	17.56	08.18	06.19

Figure 4.2 represents the percentage of students using the usability and accessibility features of LMS.

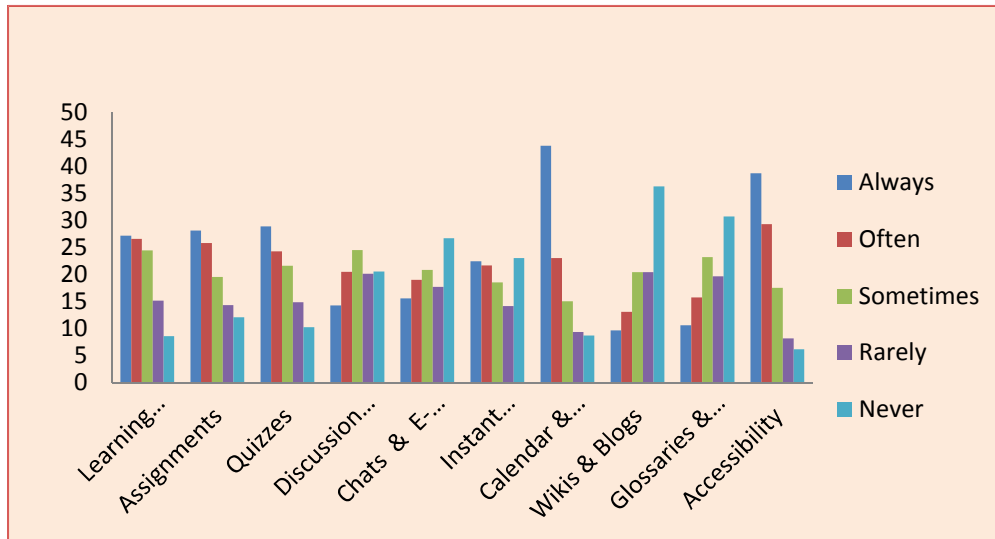


Figure 4.2: Frequency of using LMS features

In an LMS, usage of **Learning Materials** is flexible, convenient and available all the time. Therefore, majority of the students (27.19%) use this feature “always”. Only 15.20% of them use “rarely” and 8.61% of them “never” use this feature.

Though the features **Assignments** and **Quizzes** are mandatory in the courses, only 57% of the students use these features “always” (28.91% and 28.13% respectively). Proper and regular usages of these features bring credits and grades to the students. Moreover, students’ expectation of getting immediate feedback from the teachers has also been fulfilled through online quizzes and assignments. Only 12.13% and 10.27% of the students “never” use this feature.

**Discussion Forums**, the powerful communication tool within LMS is used “always” by 15.62% of the students and “never” used by 20.57% of the students. The less usage may be due to the reason that discussion forums provide asynchronous communication, and it requires more time for responding.

Though **Chats & E-mail** are the main features of LMS, only 15.62 % of the students use this feature “always”, but 26.72% of the students “never” use this feature. The lack of peer students’ academic communication through LMS, and usage of private e-mail services for a long period of time from the past could be the reasons for the less usage of chats and e-mail in LMS.

In case of **Instant Messaging**, 22.46% of the students use this feature “always” and 23.06% of them “never” use this feature. Students prefer only to read the messages rather than sending messages to teachers and peer students. Wide and habitual usage of messaging in the mobile phones might decrease the use of this feature in the LMS.

Majority of the students (43.8%) use the **Calendar & Announcements** feature “always”. It is also inferred from the table that students use LMS predominantly for this feature. Particularly, timetables and dates for important events are mostly viewed by students.

The feature, **Wikis and Blogs** are “always” used by 9.66% of the students and 36.31% of them “Never” use this feature. **Glossaries and Surveys** are “always” used by 10.60% of the students and 30.73% of them “never” use this feature.

In case of **Accessibility** features, 38.74% of students represented to use it “always”. The facilities provided by the institutions allow the students to access LMS easily and hence uploading, downloading and submitting the learning materials and other assignments become very effortless. The table also explains that 8.18% of the students use this feature “rarely” and only 6.19% of the students “never” use this feature.

#### **4.2 CORRELATION OF ‘LEARNING STYLES’ AND ‘USABILITY AND ACCESSIBILITY FEATURES OF LMS’**

The correlation analysis is carried out to find out the relationship between the usage of LMS features and learning styles.

##### **Hypothesis 1:**

- a) There is no significant relationship between the usage of usability & accessibility features of LMS and visual learning style.
- b) There is no significant relationship between the usage of usability & accessibility features of LMS and auditory learning style.
- c) There is no significant relationship between the usage of usability & accessibility features of LMS and kinesthetic learning style.

**Table 4.3:** Correlation between the usage of usability and accessibility features of LMS and learning styles

<b>LMS FEATURES</b>	<b>VISUAL LEARNING</b>	<b>AUDITORY LEARNING</b>	<b>KINESTHETIC LEARNING</b>
Usability	0.198*	0.244*	0.152*
Accessibility	0.164*	0.288*	0.181*

\* Correlation is significant at the 0.05 level (2-tailed).

Table 4.3 presents the correlation coefficients of usage of usability and accessibility features of LMS and the learning styles. According to the table, the calculated r-values between the usage of usability & accessibility features of LMS and visual learning style are statistically significant at 0.05 level. Hence the formulated null hypothesis 1(a) is rejected and there is a significant relationship between the usage of usability and accessibility features of LMS and the visual learning style.

The calculated r-values between the usage of usability & accessibility features of LMS and auditory learning style are statistically significant at 0.05 level. Hence the formulated null hypothesis 1(b) is rejected, and there is a significant relationship between the usage of usability and accessibility features of LMS and the auditory learning style.

The calculated r-values between the usage of usability & accessibility features of LMS and kinesthetic learning style are statistically significant at 0.05 level. Hence the formulated null hypothesis 1(c) is rejected and there is a significant relationship between the usage of usability and accessibility features of LMS and the kinesthetic learning style. Therefore, it is concluded that there is a significant positive correlation between the usage of usability and accessibility features of LMS and the learning styles.

All the three learning styles have positive relationship with the usage of usability and accessibility features of LMS. It is necessary that learning materials and strategies should be tailored to reach students in the way they learn best. Students can be kept engaged and become more responsible for their own learning. The correlation results further propose

that making students aware of their learning styles is very important; providing them with learning materials that incorporates their individual learning styles is much more important.

To reach visual learners, learning materials should incorporate many visuals like graphics, pictures, video clips, visual themes and colorful backgrounds as they not only read but scan through the materials. To reach auditory learners, learning materials should incorporate auditory features like background sounds, lectures, music and audio-clips as they mainly focus on aural content. To reach kinesthetic learners, learning materials should incorporate move-on features like drag and drop activities and interactive tasks like games.

### 4.3 INFLUENCE OF PERSONAL VARIABLES ON USABILITY AND ACCESSIBILITY FEATURES OF LMS

#### Hypothesis 2

- a) There is no significant mean score difference between male and female students in using the usability features of LMS.
- b) There is no significant mean score difference between male and female students in using the accessibility features of LMS.

**Table 4.4:** Mean score difference between male and female students in using the usability and accessibility features of LMS.

LMS Features	Gender	N	Mean	SD	calculated t- value	p-value
Usability	Male	682	159.01	33.720	0.888	0.375 (NS)
	Female	692	160.63	33.974		
Accessibility	Male	682	34.44	7.474	1.602	0.109 (NS)
	Female	692	35.09	7.556		

(NS): Not significant



Table 4.4 shows the mean score difference in usability and accessibility features of LMS among the selected male and female students. The significance of difference in mean values is ensured by subjecting the data into t-test. The t-test scores were 0.888 and 1.602 for usability and accessibility features of LMS respectively and were found to be not significant at 0.05 level. Hence the formulated null hypotheses 2(a) and 2(b) were accepted, and there is no significant difference in the mean scores of using the usability and accessibility features of LMS among male and female students.

The results indicate that though the mean scores of female students are higher than male students, there is no difference between male and female students in using and accessing LMS features. Regardless of their gender, students are flexible enough to experience the features available in the LMS. Therefore, it can be concluded that a wide range of students uses LMS to cater to their educational needs irrespective of their gender.

### Hypothesis 3

- a) There is no significant mean score difference between UG and PG course students in using the usability features of LMS.
- b) There is no significant mean score difference between UG and PG course students in using the accessibility features of LMS.

**Table 4.5:** Mean score difference between UG and PG course students in using the usability and accessibility features of LMS

LMS Features	Course	N	Mean	SD	Calculated t -value	p-value
Usability	U.G	1269	159.23	33.840	2.277	0.023 (S)
	P.G	105	167.05	33.227		
Accessibility	U.G	1269	34.76	7.665	0.062	0.950 (NS)
	P.G	105	34.81	5.495		

(S): Significant; (NS): Not significant

Table.4.5 shows the mean score difference in usability and accessibility features of LMS among the selected UG and PG course students. The significance of difference in mean

values is ensured by subjecting the data into t-test. The t-test scores were 2.277 and 0.062 for usability and accessibility features of LMS respectively. The mean score difference for usability features of LMS was found to be statistically significant at 0.05 level and hence the formulated null hypothesis 3(a) was rejected, and there is a significant difference in the mean scores of using the usability features of LMS among UG and PG students.

The mean score difference for accessibility features of LMS was found to be statistically not significant at 0.05 level, and hence the formulated null hypothesis 3(b) was accepted, and there is no significant difference in the mean scores of using the accessibility features of LMS among UG and PG students.

The results indicate that PG students are using usability features more than the UG students. This may be due to the need for PG students to get updated learning materials, assignments and other information and particularly, the continuation of the experience in using LMS during their UG course of study. It is also to be noted that the subject knowledge or the course of study has not influenced the usage of accessibility features of LMS.

#### **Hypothesis 4**

- a) There is no significant mean score difference between the students of different branches of study in using the usability features of LMS.
- b) There is no significant mean score difference between the students of different branches of study in using the accessibility features of LMS.

**Table 4.6:** Mean score and standard deviation of the students of different branches of study in using the usability and accessibility features of LMS.

LMS Features	Branch of study	N	Mean	SD
Usability	CE	701	158.80	35.432
	EE	437	162.18	33.134
	ME	80	172.25	28.048
	BE	144	149.93	27.302
	CiE	12	170.50	37.667
Accessibility	CE	701	34.54	7.506
	EE	437	36.62	5.554
	ME	80	34.79	6.330
	BE	144	30.06	10.680
	CiE	12	36.75	6.621

Note: CE: Computer Engineering; EE: Electrical Engineering; ME: Mechanical Engineering; BE: Bio Engineering; CiE: Civil Engineering

Table 4.6 shows the mean score and standard deviation of the students of different branches of study in using the usability and accessibility features of LMS. The significance of difference in mean values is ensured by subjecting the data into Analysis of Variance (ANOVA).

**Table 4.7:** Mean score difference between the students of different branches of study in using the usability and accessibility features of LMS.

LMS Features	Groups	df	Sum of squares	Mean square	F	p-value
Usability	Between Groups	4	30980.889	7745.222	6.877	0.000 (S)
	Within Groups	1369	1541833.259	1126.248		
Accessibility	Between Groups	4	4788.644	1197.161	22.499	0.000 (S)
	Within Groups	1369	72843.894	53.210		

(S): Significant

Table 4.7 shows the mean score difference in usability and accessibility features of LMS among the selected students of different branches of study. The F-test scores were 6.877 and 22.499 for usability and accessibility features of LMS respectively and were found to be significant at 0.05 level. Hence the formulated null hypotheses 4(a) and 4(b) were rejected, and there is a significant difference in the mean scores of using the usability and accessibility features of LMS among the students of different branches of study.

**Table 4.8:** Duncan's Post Hoc Multiple Range test in using the usability features of LMS among the selected students of different branches of study.

Branch of study	N	Subset for alpha = 0.05	
		1	2
CE	701	158.80	158.80
EE	437	162.18	162.18
ME	80		172.25
BE	144	149.93	
CiE	12		170.50

The results of Duncan Multiple Range test shows that ME students are the maximum users of usability features followed by CiE students and are significantly different from BE students who use these features to the lowest extent. CE and EE students are not significantly different from other branch students in using the usability features of LMS. Therefore, it may be concluded that the students of ME, CiE, EE and CE may have been influenced by much usage of computer-based technologies.

**Table 4.9:** Duncan's Post Hoc Multiple Range test in using the accessibility features of LMS among the selected students of different branches of study.

Branch of study	N	Subset for alpha = 0.05	
		1	2
CE	701		34.54
EE	437		36.62
ME	80		34.79
BE	144	30.06	
CiE	12		36.75

The results of Duncan Multiple Range test shows that CiE students are the maximum users of accessibility features followed by EE, ME and CE students and are significantly different from BE students who use these features to the lowest extent. Therefore we can conclude that branch of study influences the usage of usability and accessibility features of LMS among the selected students. Furthermore, it is obvious that students' usage of LMS is not limited to a particular feature but stretches according to their branch of study.

### **Hypothesis 5**

- a) There is no significant mean score difference between UG students of different years of study in using the usability features of LMS.
- b) There is no significant mean score difference between UG students of different years of study in using the accessibility features of LMS.

**Table 4.10:** Mean score and standard deviation of UG students of different years of study in using the usability and accessibility features of LMS.

<b>LMS Features</b>	<b>Year of study</b>	<b>N</b>	<b>Mean</b>	<b>SD</b>
Usability of LMS	I Year	231	159.76	29.767
	II Year	450	157.64	33.722
	III Year	359	157.23	35.357
	IV Year	229	164.96	35.043
Accessibility of LMS	I Year	231	35.06	7.722
	II Year	450	33.22	8.329
	III Year	359	34.82	7.389
	IV Year	229	37.38	5.706

Table 4.10 shows the mean score and standard deviation of UG students of first, second, third and fourth year of study in using the usability and accessibility features of LMS. The significance of difference in mean values is ensured by subjecting the data into Analysis of Variance (ANOVA).

**Table 4.11:** Mean score difference between UG students of different years of study in using the usability and accessibility features of LMS.

<b>LMS Features</b>	<b>Groups</b>	<b>df</b>	<b>Sum of squares</b>	<b>Mean square</b>	<b>F</b>	<b>p-value</b>
Usability	Between Groups	3	10155.490	3385.163	2.970	0.031 (S)
	Within Groups	1265	1441916.932	1139.855		
Accessibility	Between Groups	3	2660.519	886.840	15.618	0.000 (S)
	Within Groups	1265	71831.610	56.784		

(S): Significant

Table 4.7.1 shows the mean score difference between UG students of different years of study in using the usability and accessibility features of LMS. The F-test scores were 2.970 and 15.618 for usability and accessibility features of LMS respectively and were found to be statistically significant at 0.05 level. Hence the formulated null hypotheses 5(a) and 5(b) were rejected and there is a significant difference in the mean scores of using the usability and accessibility features of LMS among the UG students of different years of study.

**Table 4.12:** Duncan’s Post Hoc Multiple Range test in using the usability features of LMS among the selected students of different years of study

Year of study	N	Subset for alpha = 0.05	
		1	2
I Year	231	159.76	159.76
II Year	450	157.64	
III Year	359	157.23	
IV Year	229		164.96

Based on Duncan Multiple Range Test, the maximum usage of usability features was found among the fourth year students (164.96) followed by first year students (159.76) and was significantly different from second and third year students. The maximum usage may be due to their experience of using LMS over a period of four years.

**Table 4.13:** Duncan’s Post Hoc Multiple Range test in using the accessibility features of LMS among the selected students of different years of study

Year of study	N	Subset for alpha = 0.05		
		1	2	3
I Year	231		35.06	
II Year	450	33.22		
III Year	359		34.82	
IV Year	229			37.38

Based on Duncan Multiple Range Test, the maximum usage of accessibility features was found among the fourth year students (37.38) and were significantly different from first, second and third year students. First and third year students are different from second and fourth year students. Second year students are the minimum users of accessibility features and are different from first, third and fourth year students.

Experience in using LMS and the urge to access the content and Quiz drives the senior students to access LMS more. It is concluded that fourth year students, due to their experience and accustom to the learning environment, are free to administrate and access LMS and get benefitted more than other year students. Therefore, we can conclude that year of study influences the usage of usability and accessibility features of LMS among the selected students.

### Hypothesis 6

- a) There is no significant mean score difference between first and second year PG students in using the usability features of LMS.
- b) There is no significant mean score difference between first and second year PG students in using the accessibility features of LMS.

**Table 4.14:** Mean score difference between first and second year PG students in using the usability and accessibility features of LMS.

LMS Features	Year of study	N	Mean	SD	Calculated t- Value	p-value
Usability	I Year	61	157.82	36.506	3.531	0.001 (S)
	II Year	44	179.84	22.854		
Accessibility	I Year	61	33.93	5.151	1.947	0.054 (NS)
	II Year	44	36.02	5.781		

(NS): Not significant, (S): Significant



Table 4.14 shows the mean score difference between first and second year PG students in using the usability and accessibility features of LMS. The significance of difference in mean values is ensured by subjecting the data into t-test. The t-test scores were 3.531 and 1.947 for usability and accessibility features of LMS respectively. The mean score difference for usability features of LMS was found to be statistically significant at 0.05 level and hence the formulated null hypothesis 6(a) was rejected and there is a significant difference in the mean scores of using the usability features of LMS among the first and second year PG students.

The mean score difference for accessibility features of LMS was found to be statistically not significant at 0.05 level and hence the formulated null hypothesis 6(b) was accepted, and there is no significant difference in the mean scores of using the accessibility features of LMS among the first and second year PG students.

One of the reasons for this result could be that first year students may be new to the LMS environment. From the results, it can also be inferred that first and second year students are equal in accessing the LMS features.

### Hypothesis 7

- a) There is no significant mean score difference between students with different years of experience in using computers in using the usability features of LMS.
- b) There is no significant mean score difference between students with different years of experience in using computers in using the accessibility features of LMS.

**Table 4.15:** Mean score difference between different years of experience in using computers in using the usability and accessibility features of LMS

LMS Features	Years of Experience in using computers	N	Mean	SD	Calculated t Value	p-value
Usability	Less than 5 years	701	161.20	32.367	1.527	0.127 (NS)
	More than 5years	673	158.41	35.288		
Accessibility	Less than 5 years	701	35.10	6.998	1.675	0.094 (NS)
	More than 5 years	673	34.42	8.017		

(NS): Not significant

Table 4.15 shows the mean score difference in usability and accessibility features of LMS among the students with different years of experience (less than 5 years & more than 5 years) in using computers. The significance of difference in mean values is ensured by subjecting the data into t-test. The t-test scores were 1.527 and 1.675 for usability and accessibility features of LMS respectively and were found to be not significant at 0.05 level. Hence the formulated null hypotheses 7(a) and 7(b) were accepted, and there is no significant difference in the mean scores of using the usability and accessibility features of LMS among the students with different years of experience in using computer.

The results indicate that different years of experience in using computers does not influence the usage of usability and accessibility features of LMS among the selected students.

**Hypothesis 8:**

- a) There is no significant mean score difference between students with different years of experience in using internet in using the usability features of LMS.
- b) There is no significant mean score difference between students with different years of experience in using internet in using the accessibility features of LMS.

**Table 4.16:** Mean score difference between different years of experience in using internet in using the usability and accessibility features of LMS.

LMS Features	Years of experience in using Internet	N	Mean	SD	Calculated t- Value	p-value
Usability	Less than 5 years	902	161.05	32.345	1.852	0.064 (NS)
	More than 5 years	472	157.49	36.464		
Accessibility	Less than 5 years	902	35.40	6.799	4.322	0.000 (S)
	More than 5 years	472	33.56	8.612		

(NS): Not significant; (S): Significant

Table 4.16 shows the mean score difference in usability and accessibility features of LMS among the students with different years of experience (less than 5 years & more than 5 years) in using internet. The significance of difference in mean values is ensured by subjecting the data into t-test. The t-test scores were 1.852 and 4.322 for usability and accessibility features of LMS respectively. The mean score difference for usability features of LMS was found to be statistically not significant at 0.05 level, and hence the formulated null hypothesis 8(a) was accepted, and there is no significant difference in the mean scores of using the usability features of LMS among the students with different years of experience in using internet

The mean score difference for accessibility features of LMS was found to be statistically significant at 0.05 level, and hence the formulated null hypothesis 8(b) was rejected, and there is a significant difference in the mean scores of using the accessibility features of LMS among the students with different years of experience in using internet

The mean score value signifies that irrespective of number of years of using internet, students are using all the features of LMS to gain better learning experiences. The mean values also indicate that students with less than 5 years' experience of using internet are found to be more comfortable in using the accessibility features of LMS.

### **Hypothesis 9**

- a) There is no significant mean score difference between daily, frequent and rare users of computers in using the usability features of LMS.
- b) There is no significant mean score difference between daily, frequent and rare users of computers in using the accessibility features of LMS

**Table 4.17:** Mean score and standard deviation of daily, frequent and rare users of computers in using the usability and accessibility features of LMS.

LMS Features	Frequency of using computers	N	Mean	SD
Usability	Daily	1048	159.54	34.746
	Frequently	274	161.23	29.578
	Rarely	52	158.17	36.826
Accessibility	Daily	1048	34.77	7.803
	Frequently	274	34.99	6.518
	Rarely	52	33.46	6.554

Table.4.17 shows the mean score and standard deviation of daily, frequent and rare users of computers in using the usability and accessibility features of LMS. The significance of difference in mean values is ensured by subjecting the data into Analysis of Variance (ANOVA).

**Table 4.18:** Mean score difference between daily, frequent and rare users of computers in using the usability and accessibility features of LMS.

LMS Features	Groups	df	Sum of squares	Mean square	F	p-value
Usability	Between Groups	2	767.763	383.881	0.335	0.716 (NS)
	Within Groups	1371	1572046.386	1146.642		
Accessibility	Between Groups	2	101.724	50.862	0.899	0.407 (NS)
	Within Groups	1371	77530.815	56.551		

(NS): Not significant

The Table 4.18 shows the mean score difference in usability and accessibility features of LMS among the students who have different frequencies of using computers (daily, frequently and rarely). The F-test scores were 0.335 and 0.899 for usability and accessibility features of LMS respectively and were found to be not significant at 0.05 level. Hence, the formulated null hypotheses 9(a) and 9(b) were accepted and there is no significant difference in the mean scores of using the usability and accessibility features of LMS among students with different frequencies of using computers.

The results indicate that frequency of using computers of selected students does not influence the usage of usability and accessibility features of LMS. However, from the mean values, it is also to be noted that frequent users of computers are using the LMS features more than the daily and rare users of computers.

### **Hypothesis 10**

- a) There is no significant mean score difference between daily, frequent and rare users of internet in using the usability features of LMS.
- b) There is no significant mean score difference between daily, frequent and rare users of internet in using the accessibility features of LMS.

**Table 4.19:** Mean score and standard deviation of daily, frequent and rare users of internet in using the usability and accessibility features of LMS

<b>LMS Features</b>	<b>Frequency of using internet</b>	<b>N</b>	<b>Mean</b>	<b>SD</b>
Usability	Daily	944	158.84	34.670
	Frequently	354	162.75	30.899
	Rarely	76	158.58	36.191
Accessibility	Daily	944	34.47	7.981
	Frequently	354	35.58	6.378
	Rarely	76	34.63	6.207

Table 4.19 shows the Mean score and standard deviation of daily, frequent and rare users of internet in using the usability and accessibility features of LMS. The significance of

difference in mean values is ensured by subjecting the data into Analysis of Variance (ANOVA).

**Table 4.20:** Mean score difference between daily, frequent and rare users of internet in using the usability and accessibility features of LMS

<b>LMS Features</b>	<b>Groups</b>	<b>df</b>	<b>Sum of squares</b>	<b>Mean square</b>	<b>F</b>	<b>p-value</b>
Usability	Between Groups	2	4067.448	2033.724	1.777	0.169 (NS)
	Within Groups	1371	1568746.700	1144.235		
Accessibility	Between Groups	2	317.341	158.671	2.814	0.060 (NS)
	Within Groups	1371	77315.197	56.393		

(NS): Not significant

Table.4.20 shows the mean score difference in usability and accessibility features of LMS among the students who have different frequencies of using internet (daily, frequently and rarely). The F-test scores were 1.777 and 2.814 for usability and accessibility features of LMS respectively and were found to be not significant at 0.05 level. Hence, the formulated null hypotheses 10(a) and 10(b) were accepted and there is no significant difference in the mean scores of using the usability and accessibility features of LMS among students with different frequencies of using internet.

The results indicate that frequency of using internet of selected students does not influence the usage of usability and accessibility features of LMS. However, from the mean values, it is also to be noted that frequent users of internet are using the LMS features more than the daily and rare users of internet.

#### 4.4 INFLUENCE OF PERSONAL VARIABLES ON LEARNING STYLES

##### Hypothesis 11

- a) There is no significant mean score difference between male and female students in visual learning style.
- b) There is no significant mean score difference between male and female students in auditory learning style.
- c) There is no significant mean score difference between male and female students in kinesthetic learning style.

**Table 4.21:** Mean score difference between male and female students in visual, auditory and kinesthetic learning styles.

Learning Styles	Gender	N	Mean	SD	Calculated t- Value	p-value
Visual	Male	682	30.47	4.349	3.295	0.001 (S)
	Female	692	31.20	3.923		
Auditory	Male	682	28.46	4.415	2.850	0.004 (S)
	Female	692	29.14	4.407		
Kinesthetic	Male	682	26.65	4.793	1.776	0.076 (NS)
	Female	692	26.18	5.020		

(S): Significant; (NS): Not Significant

Table 4.21 shows the mean score difference in visual, auditory and kinesthetic learning styles among the selected male and female students. The significance of difference in mean values is ensured by subjecting the data into t-test. The t-test scores were 3.295, 2.850 and 1.776 for visual, auditory and kinesthetic learning styles respectively. The mean score difference for visual and auditory learning styles were found to be statistically significant at 0.05 level and hence the formulated null hypotheses 11(a) and 11(b) were rejected and there is a significant difference in the mean scores of male and female students in visual and auditory learning styles.

The mean score difference for kinesthetic learning style was found to be statistically not significant at 0.05 level and hence the formulated null hypothesis 11(c) was accepted and there is no significant difference in the mean scores of male and female students in kinesthetic learning style.

The mean scores of female students are significantly higher than male students in visual and auditory learning styles. This implies that visual and auditory learning is higher among female students than male students. Though the mean scores of male students are slightly higher than female students in kinesthetic learning style, it shall be reported that kinesthetic learning is equal among male and female students as the difference is not significant.

### **Hypothesis 12**

- a) There is no significant mean score difference between UG and PG course students in visual learning style.
- b) There is no significant mean score difference between UG and PG course students in auditory learning style.
- c) There is no significant mean score difference between UG and PG course students in kinesthetic learning style.

**Table 4.22:** Mean score difference between UG and PG course students in visual, auditory and kinesthetic learning styles.

<b>Learning Styles</b>	<b>Course</b>	<b>N</b>	<b>Mean</b>	<b>SD</b>	<b>Calculated t Value</b>	<b>p-value</b>
Visual	U.G	1269	30.77	4.225	1.981	0.048 (S)
	P.G	105	31.61	3.099		
Auditory	U.G	1269	28.72	4.433	2.453	0.014 (S)
	P.G	105	29.82	4.185		
Kinesthetic	U.G	1269	26.42	4.950	0.058	0.954 (NS)
	P.G	105	26.39	4.456		

(S): Significant; (NS): Not Significant



Table 4.22 shows the mean score difference in visual, auditory and kinesthetic learning styles among the selected UG and PG course students. The significance of difference in mean values is ensured by subjecting the data into t-test. The t-test scores were 1.981, 2.453 and 0.058 for visual, auditory and kinesthetic learning styles respectively. The mean score difference for visual and auditory learning styles were found to be statistically significant at 0.05 level and hence the formulated null hypotheses 12(a) and 12(b) were rejected and there is a significant difference in the mean scores of UG and PG course students in Visual and Auditory Learning Styles.

The mean score difference for kinesthetic learning style was found to be statistically not significant at 0.05 level and hence the formulated null hypothesis 12(c) was accepted and there is no significant difference in the mean scores of UG and PG course students in kinesthetic learning style.

The mean scores of PG students are higher than that of UG students in visual and auditory learning styles. This implies that visual and auditory learning is higher among PG students than UG students. It shall also be inferred that kinesthetic learning is equal among UG and PG students.

### **Hypothesis 13**

- a) There is no significant mean score difference between students of different branches of study in visual learning style.
- b) There is no significant mean score difference between students of different branches of study in auditory learning style.
- c) There is no significant mean score difference between students of different branches of study in kinesthetic learning style.

**Table 4.23:** Mean score and standard deviation of students of different branches of study in visual, auditory and kinesthetic learning styles

<b>Learning Styles</b>	<b>Branch of study</b>	<b>N</b>	<b>Mean</b>	<b>SD</b>
Visual	CE	701	31.27	3.464
	EE	437	31.00	4.106
	ME	80	29.49	4.438
	BE	144	29.00	6.181
	CiE	12	30.83	3.810
Auditory	CE	701	28.78	4.310
	EE	437	29.55	4.394
	ME	80	29.44	3.514
	BE	144	26.30	4.557
	CiE	12	28.92	5.316
Kinesthetic	CE	701	26.93	4.729
	EE	437	26.42	4.766
	ME	80	25.98	5.057
	BE	144	24.01	5.337
	CiE	12	28.08	6.112

Note: CE: Computer Engineering; EE: Electrical Engineering; ME: Mechanical Engineering; BE: Bio Engineering; CiE: Civil Engineering

Table 4.23 shows the mean score and standard deviation of students of different branches of study in visual, auditory and kinesthetic learning styles. The significance of difference in mean values is ensured by subjecting the data into Analysis of Variance.

**Table 4.24:** Mean score difference between students of different branches of study in visual, auditory and kinesthetic learning styles.

<b>Learning Style</b>	<b>Groups</b>	<b>df</b>	<b>Sum of squares</b>	<b>Mean square</b>	<b>F</b>	<b>p-value</b>
Visual	Between Groups	4	775.527	193.882	11.576	0.000 (S)
	Within Groups	1369	22928.604	16.748		
Auditory	Between Groups	4	1177.723	294.431	15.698	0.000 (S)
	Within Groups	1369	25677.221	18.756		
Kinesthetic	Between Groups	4	1071.967	267.992	11.443	0.000 (S)
	Within Groups	1369	32062.075	23.420		

(S): Significant

Table 4.24 shows the mean score difference in visual, auditory and kinesthetic learning styles among the selected students of different branches of study. The F-test scores were 11.576, 15.698 and 11.443 for visual, auditory and kinesthetic learning styles respectively and were found to be significant at 0.05 level. Hence the formulated null hypotheses 13(a), 13(b) and 13(c) were rejected and there is a significant difference in the mean scores of visual, auditory and kinesthetic learning styles among the students of different branches of study.

**Table 4.25:** Duncan's Post Hoc Multiple Range test in visual learning among the selected students of different branches of study

Branch of study	N	Subset for alpha = 0.05	
		1	2
CE	701		31.27
EE	437		31.00
ME	80	29.49	29.49
BE	144	29.00	
CiE	12		30.83

Based on Duncan Multiple Range Test, CE students are highly visual learners (31.27) followed by EE and CiE students. BE students have the lowest mean score with high deviations among their mean values. This indicates that BE students are less visual learners (29.00) than other students. ME students are not significantly different from other branches as they fall in both the subsets.

**Table 4.26:** Duncan's Post Hoc Multiple Range test in auditory learning among the selected students of different branches of study

Branch of study	N	Subset for alpha = 0.05	
		1	2
CE	701		28.78
EE	437		29.55
ME	80		29.44
BE	144	26.30	
CiE	12		28.92

Based on Duncan Multiple Range Test, EE students are more towards auditory learning (29.55) followed by ME and CiE students. The mean values also reveal that BE students are significantly different from all other branches of study. It is evident that they depend more on lectures, class discussion and demonstrations done in their classrooms.

**Table 4.27:** Duncan's Post Hoc Multiple Range test in kinesthetic learning among the selected students of different branches of study

Branch of study	N	Subset for alpha = 0.05	
		1	2
CE	701		26.93
EE	437		26.42
ME	80		25.98
BE	144	24.01	
CiE	12		28.08

Based on Duncan Multiple Range Test, CiE students are incredibly high (28.08) kinesthetic learners which indicate that they are in favor of activity based or practical oriented learning. On the contrary, the mean value for BE students is the least (24.01) and are different from other branch students. The text based and theoretical content could be one of the reasons that BE students are not using kinesthetic style for learning.

#### **Hypothesis 14**

- a) There is no significant mean score difference between UG students of different years of study in visual learning style.
- b) There is no significant mean score difference between UG students of different years of study in auditory learning style.
- c) There is no significant mean score difference between UG students of different years of study in kinesthetic learning style.

**Table 4.28:** Mean score and standard deviation of UG students of different years of study in visual, auditory and kinesthetic learning styles.

<b>Learning Styles</b>	<b>Year of study</b>	<b>N</b>	<b>Mean</b>	<b>SD</b>
Visual	I Year	231	30.29	5.262
	II Year	450	30.42	4.375
	III Year	359	31.17	3.474
	IV Year	229	31.35	3.693
Auditory	I Year	231	27.45	4.108
	II Year	450	28.78	4.429
	III Year	359	28.90	4.547
	IV Year	229	29.61	4.324
Kinesthetic	I Year	231	25.05	5.660
	II Year	450	26.46	4.820
	III Year	359	26.40	4.660
	IV Year	229	27.76	4.519

Table 4.28 shows the mean score and standard deviation of students of different years of study in visual, auditory and kinesthetic learning styles. The significance of difference in mean values is ensured by subjecting the data into Analysis of Variance.

**Table 4.29:** Mean score difference between UG students of different years of study in visual, auditory and kinesthetic learning styles.

<b>Learning Style</b>	<b>Groups</b>	<b>df</b>	<b>Sum of squares</b>	<b>Mean square</b>	<b>F</b>	<b>p-value</b>
Visual	Between Groups	3	244.363	81.454	4.601	0.003 (S)
	Within Groups	1265	22393.180	17.702		
Auditory	Between Groups	3	562.710	187.570	9.743	0.000 (S)
	Within Groups	1265	24353.419	19.252		
Kinesthetic	Between Groups	3	841.552	280.517	11.739	0.000 (S)
	Within Groups	1265	30227.419	23.895		

(S): Significant

The Table 4.29 shows the mean score difference in visual, auditory and kinesthetic learning styles among the selected UG students of different years of study. The F-test scores were 4.601, 9.743 and 11.739 for visual, auditory and kinesthetic learning styles respectively and were found to be significant at 0.05 level. Hence the formulated null hypotheses 14(a), 14(b) and 14(c) were rejected and there is a significant difference in the mean scores of visual, auditory and kinesthetic learning styles among the UG students in different years of study. Therefore we can conclude that year of study influences the visual, auditory and kinesthetic learning styles of the selected students.

**Table 4.30:** Duncan's Post Hoc Multiple Range test in visual learning among the selected UG students in different years of study

Year of study	N	Subset for alpha = 0.05	
		1	2
I Year	231	30.29	
II Year	450	30.42	
III Year	359		31.17
IV Year	229		31.35

Based on Duncan Multiple Range Test, fourth year students are highly visual learners (31.35) and are significantly different from first and second year students. From the mean values, it is depicted that first year students are the least visual learners.

**Table 4.31:** Duncan's Post Hoc Multiple Range test in auditory learning among the selected UG students in different years of study

Year of study	N	Subset for alpha = 0.05		
		1	2	3
I Year	231	27.45		
II Year	450		28.78	
III Year	359		28.90	28.90
IV Year	229			29.61



Based on Duncan Multiple Range Test, fourth year students are highly auditory learners (29.61) and are significantly different from first and second year students. From the mean values, it is depicted that first year students are the least auditory learners (27.45) and are significantly different from second, third and fourth year students.

**Table 4.32:** Duncan’s Post Hoc Multiple Range test in kinesthetic learning among the selected UG students in different years of study

Year of study	N	Subset for alpha = 0.05		
		1	2	3
I Year	231	25.05		
II Year	450		26.46	
III Year	359		26.40	
IV Year	229			27.76

Based on Duncan Multiple Range Test, fourth year students are highly kinesthetic learners (27.76) and are significantly different from first, second and third year students. From the mean values, it is depicted that first year students are the least kinesthetic learners (25.05) and are significantly different from other year students.

On the whole, fourth year students are found to be highly visual, auditory and kinesthetic and first year students are found to be the least visual, auditory and kinesthetic learners.

**Hypothesis 15**

- a) There is no significant mean score difference between first and second year PG students in visual learning style.
- b) There is no significant mean score difference between first and second year PG students in auditory learning style.
- c) There is no significant mean score difference between first and second year PG students in kinesthetic learning style.

**Table 4.33:** Mean score difference between PG students of different years of study in visual, auditory and kinesthetic learning styles.

Learning Styles	Year of study	N	Mean	SD	Calculated t Value	p-value
Visual	I Year	61	31.30	3.100	1.227	0.223 (NS)
	II Year	44	32.05	3.080		
Auditory	I Year	61	29.56	4.433	0.753	0.453 (NS)
	II Year	44	30.18	3.835		
Kinesthetic	I Year	61	26.00	4.450	1.058	0.293 (NS)
	II Year	44	26.93	4.459		

(NS): Not Significant

Table 4.33 shows the mean score difference in visual, auditory and kinesthetic learning styles among the selected UG and PG course students. To ensure the significance between the mean differences, the data were subjected to further analysis i.e. t-test. The t-test scores were 1.227, 0.753 and 1.058 for visual, auditory and kinesthetic learning styles respectively. The mean score difference for visual, auditory and kinesthetic learning styles were found to be statistically not significant at 0.05 level and hence the formulated null hypotheses 15(a), 15(b) & 15(c) were accepted and there is no significant difference in the mean scores of visual, auditory and kinesthetic learning styles of first and second year PG students. Therefore we can conclude that both first and second year PG students show no difference in their visual, auditory and kinesthetic learning styles.

### **Hypothesis 16**

- a) There is no significant mean score difference between different years of experience in using computers in visual learning style.
- b) There is no significant mean score difference between different years of experience in using computers in auditory learning style.
- c) There is no significant mean score difference between different years of experience in using computers in kinesthetic learning style.

**Table 4.34:** Mean score difference between different years of experience in using computers in visual, auditory and kinesthetic learning styles.

Learning Styles	Experience in using Computers	N	Mean	SD	Calculated t Value	p-value
Visual	Less than 5 years	701	30.67	4.221	1.491	0.136 (NS)
	More than 5 years	673	31.01	4.081		
Auditory	Less than 5 years	701	28.85	4.231	0.387	0.699 (NS)
	More than 5 years	673	28.76	4.617		
Kinesthetic	Less than 5 years	701	26.06	4.918	2.724	0.007 (S)
	More than 5 years	673	26.78	4.883		

(S): Significant; (NS): Not Significant

Table 4.34 shows the mean score difference in visual, auditory and kinesthetic learning styles among the selected students who have different years of experience in using computer (less than 5 years & more than 5 years). To ensure the significance between the mean differences, the data were subjected to further analysis i.e. t-test. The t-test scores 1.491, 0.387 and 2.724 for visual, auditory and kinesthetic learning styles respectively. The mean score difference for visual and auditory learning styles were found to be statistically not significant at 0.05 level and hence the formulated null hypotheses 16(a) & 16(b) were accepted and there is no significant difference in the mean scores of visual and auditory learning styles among students with different years of experience in using computer.

The mean score difference for kinesthetic learning style was found to be statistically significant at 0.05 level and hence the formulated null hypothesis 16(c) was rejected and there is a significant mean score difference in kinesthetic learning style among the students with different years of experience in using computer.

The results indicate that the number of years of using computers does not influence visual and auditory learning styles among the selected students. However, it is

noted from the mean values that students who use computers for more than 5 years are more visual and students who use computers for more than 5 years are less auditory though the difference is statistically not significant. It is also inferred that students who use computers for more than 5 years are more kinesthetic than students who use computers for less than 5 years. Hence, the result confirms that kinesthetic learning style is influenced by experience in using computers. As kinesthetic learning is learning through experience, and mostly online technologies are used in the process of learning, kinesthetic learning increases with the number of years of usage of computers.

**Hypothesis 17**

- a) There is no significant mean score difference between different years of experience in using internet in visual learning style.
- b) There is no significant mean score difference between different years of experience in using internet in auditory learning style.
- c) There is no significant mean score difference between different years of experience in using internet in kinesthetic learning style.

**Table 4.35:** Mean score difference between different years of experience in using internet in visual, auditory and kinesthetic learning styles.

Learning Styles	Experience in using Internet	N	Mean	SD	Calculated t Value	p-value
Visual	Less than 5 years	902	30.72	4.044	1.426	0.154 (NS)
	More than 5 years	472	31.06	4.356		
Auditory	Less than 5 years	902	28.89	4.262	1.031	0.303 (NS)
	More than 5 years	472	28.63	4.715		
Kinesthetic	Less than 5 years	902	26.24	4.825	1.842	0.066 (NS)
	More than 5 years	472	26.75	5.064		

(NS): Not Significant

Table 4.35 shows the mean score difference in visual, auditory and kinesthetic learning styles among the selected students who have different years of experience in using internet (less than 5 years & more than 5 years). To ensure the significance between the mean differences, the data were subjected to further analysis i.e. t-test. The t-test scores 1.426, 1.031 and 1.842 for visual, auditory and kinesthetic learning styles respectively. The mean score difference for visual, auditory and kinesthetic learning styles were found to be statistically not significant at 0.05 level and hence the formulated null hypotheses 17(a), 17(b) & 17(c) were accepted and there is no significant difference in the mean scores of visual, auditory and kinesthetic learning styles among students with different years of experience in using internet.

From the results, it is confirmed that different years of experiences in using internet does not influence visual, auditory and kinesthetic learning styles among the selected students of this study. It is also inferred that students who use internet for more than 5 years are highly visual and kinesthetic learners. The students who use internet for less than 5 years are found to be more auditory, but the mean score differences are statistically not significant

### **Hypothesis 18**

- a) There is no significant mean score difference between daily, frequent and rare users of computers in visual learning style.
- b) There is no significant mean score difference between daily, frequent and rare users of computers in auditory learning style.
- c) There is no significant mean score difference between daily, frequent and rare users of computers in kinesthetic learning style.

**Table 4.36:** Mean score and standard deviation of different frequencies of using computers in visual, auditory and kinesthetic learning styles.

<b>Learning Styles</b>	<b>Frequency of using computers</b>	<b>N</b>	<b>Mean</b>	<b>SD</b>
Visual	Daily	1048	31.03	4.104
	Frequently	274	30.49	4.219
	Rarely	52	28.87	4.293
Auditory	Daily	1048	28.87	4.505
	Frequently	274	28.64	4.229
	Rarely	52	28.27	3.695
Kinesthetic	Daily	1048	26.51	5.018
	Frequently	274	26.16	4.634
	Rarely	52	25.87	4.107

Table 4.36 shows the mean score and standard deviation of students who have different frequencies of using computers (daily, frequently and rarely) in visual, auditory and kinesthetic learning styles. The significance of difference in mean values is ensured by subjecting the data into Analysis of Variance.

**Table 4.37:** Mean score difference between different frequencies of using computers in visual, auditory and kinesthetic learning styles.

<b>Learning Style</b>	<b>Groups</b>	<b>df</b>	<b>Sum of squares</b>	<b>Mean square</b>	<b>F</b>	<b>p-value</b>
Visual	Between Groups	2	272.336	136.168	7.967	0.000 (S)
	Within Groups	1371	23431.795	17.091		
Auditory	Between Groups	2	27.835	13.917	0.711	0.491 (NS)
	Within Groups	1371	26827.108	19.568		
Kinesthetic	Between Groups	2	43.893	21.947	0.909	0.403 (NS)
	Within Groups	1371	33090.148	24.136		

(S): Significant; (NS): Not Significant

Table 4.37 shows the mean score difference in visual, auditory and kinesthetic learning styles among the selected students who have different frequencies of using computers. The F-test scores were 7.967, 0.711 and 0.909 for visual, auditory and kinesthetic learning styles respectively. The mean score difference for visual learning style was found to be statistically significant at 0.05 level and hence the formulated null hypothesis 18(a) was rejected and there is a significant difference in the mean scores of visual learning style among daily, frequent and rare users of computer.

The mean score differences for auditory and kinesthetic learning Styles were found to be statistically not significant at 0.05 level and hence the formulated null hypotheses 18(b) & 18(c) were accepted and there is a significant difference in the mean scores of auditory and kinesthetic learning Styles among the daily, frequent and rare users of computers.

**Table 4.38:** Duncan's Post Hoc Multiple Range test in visual learning style among the daily, frequent and rare users of computers

Frequency of using computers	N	Subset for alpha = 0.05	
		1	2
Daily	1048		31.03
Frequently	274		30.49
Rarely	52	28.87	

Based on Duncan Multiple Range Test, daily and frequent users of computers are more visual learners than rare users.

The results reveal that daily users are better in visual, auditory and kinesthetic learning. Particularly, visual learning is strengthened for daily users as they may have been attracted by visual features present in the course materials. Therefore, we can conclude that frequency of using computers influences the visual learning style of the students but not the auditory and kinesthetic learning styles.

**Hypothesis 19**

- a) There is no significant mean score difference between daily, frequent and rare users of internet in visual learning style.
- b) There is no significant mean score difference between daily, frequent and rare users of internet in auditory learning style.
- c) There is no significant mean score difference between daily, frequent and rare users of internet in kinesthetic learning style.



**Table 4.39:** Mean score and standard deviation of different frequencies of using internet in visual, auditory and kinesthetic learning styles.

Learning Styles	Frequency of using internet	N	Mean	SD
Visual	Daily	944	30.87	4.306
	Frequently	354	30.94	3.670
	Rarely	76	29.96	4.322
Auditory	Daily	944	28.74	4.504
	Frequently	354	29.06	4.184
	Rarely	76	28.37	4.484
Kinesthetic	Daily	944	26.32	5.001
	Frequently	354	26.82	4.686
	Rarely	76	25.80	4.761

**Table 4.40:** Mean score difference between different frequencies of using internet in visual, auditory and kinesthetic learning styles.

Learning Style	Groups	df	Sum of squares	Mean square	F	p-value
Visual	Between Groups	2	62.998	31.499	1.827	0.161 (NS)
	Within Groups	1371	23641.133	17.244		
Auditory	Between Groups	2	40.427	20.214	1.033	0.356 (NS)
	Within Groups	1371	26814.516	19.558		
Kinesthetic	Between Groups	2	94.641	47.321	1.964	0.141 (NS)
	Within Groups	1371	33039.400	24.099		

(NS): Not Significant

Table 4.40 shows the mean score difference in visual, auditory and kinesthetic learning styles among the selected students who have different frequencies of using internet (daily, frequently and rarely). The F-test scores were 1.827, 1.033 and 1.964 and were found to be statistically not significant at 0.05 level for visual, auditory and kinesthetic learning styles. and hence the formulated null hypotheses 17(a), 17(b) & 17(c) were accepted and there is no significant difference in the mean scores of visual, auditory and kinesthetic learning styles among students with different years of experience in using the internet. Hence the formulated null hypotheses 19(a), 19(b) & 19(c) were accepted and there is no significant difference in the mean scores of visual, auditory and kinesthetic learning styles among daily, frequent and rare users of internet. Therefore we can conclude that frequencies of using internet of selected students do not influence the visual, auditory and kinesthetic learning Styles.

The mean values further indicate that frequent users exhibit the maximum extent of visual, auditory and kinesthetic learning styles, whereas rare users show the least score in visual, auditory and kinesthetic learning styles. It can be presumed specifically that entertainment programmes and interactivity is limited in the computer but in internet, there are enormous entertainment programmes to attract the students. Therefore, it can be concluded that due to the user friendliness and interactive nature of the internet, it is not restricted to one particular learning style.

#### **4.5 SUMMARY**

This chapter portrayed the interpretation of the results obtained by statistical analysis of data collected for studying the relationship between learning styles and features of LMS. The results and interpretations presented in this chapter eventually lead to certain conclusions. Meaningful conclusions were drawn from testing the formulated hypotheses using statistical techniques. The next chapter discusses the findings and summary of the study in detail.