Chapter-IV
Analysis & Interpretation
ANALYSIS AND INTERPRETATION OF DATA

With the introduction of scientific approach in education the data of result have become more reliable and valid. Research always precede particular to general to draw the conclusion according to the objectives made beforehand. Prof. F. C. Mill has rightly remarked "Scientific method involves observation, inferences and verifications of data, the result of observations must be put into definite form and given comprehend structure before the process of inference is possible." Analysis of data means to make the raw data meaningful or to draw some results from the data after the proper treatment. The null hypotheses are tested with the help of analysis of data so as to obtain some significant results.

In the present study, the analysis and interpretation of tabulated data was done on the basis of hypotheses given in chapter one. Thus hypotheses wise analysis and interpretation were done as follows-
Hypothesis I – There is no significance difference between the post test-I and post test-II in experimental group in terms of learning retention

Table 4.1
Result of t-test for correlated data of post test-I and post test-II in experimental group in terms of learning retention (in Phase III and Phase IV)

<table>
<thead>
<tr>
<th>Attitude Scores</th>
<th>N</th>
<th>Mean</th>
<th>S.D.</th>
<th>r</th>
<th>t-value</th>
</tr>
</thead>
<tbody>
<tr>
<td>Post-Test-I</td>
<td>60</td>
<td>45.623</td>
<td>5.484</td>
<td>0.893</td>
<td>1.589</td>
</tr>
<tr>
<td>Post-Test-II</td>
<td>60</td>
<td>41.115</td>
<td>6.306</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

Where,
*  = Significant at 0.05 level
** = Significant at 0.01 level
N  = No. of students (Sample)
df  = Degree of freedom
S.D. = Standard deviation
r   = Coefficient of correlation
For df = 59 (N-1)
Table t-value at .05 = 1.98
at .01 = 2.63

Interpretation: Table no 4.1 indicates that t-value was found to be 1.589 which was found to be smaller than the table value at degree of freedom (df=59), at 0.05 level of significance which was 1.98 and at 0.01 level of significance which was 2.63. Thus null hypothesis
accepted. So, it may be said that there is no significant difference between the learning retention of students in English achievement test given immediately after the treatment given (Phase-III) and test given after the gap of two weeks (Phase-IV) after the treatment that is teaching through blended strategy. This is shown through bar diagram in figure-II.
Hypothesis II – There is no significance difference between the post test-I and post test II of control group in terms of learning retention.

Table – 4.2

Result of t-test for correlated data of post test-I and post test-II in control group in terms of learning retention (in Phase III and Phase IV)

<table>
<thead>
<tr>
<th>Attitude Scores</th>
<th>N</th>
<th>Mean</th>
<th>S.D.</th>
<th>r</th>
<th>t-value</th>
</tr>
</thead>
<tbody>
<tr>
<td>Post-Test-I</td>
<td>60</td>
<td>36.902</td>
<td>5.576</td>
<td>0.698</td>
<td>2.775**</td>
</tr>
<tr>
<td>Post-Test-II</td>
<td>60</td>
<td>24.934</td>
<td>5.516</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

Where,
- * = Significant at 0.05 level
- ** = Significant at 0.01 level
- N = No. of students (Sample)
- r = Coefficient of correlation
- S.D. = Standard deviation

For df = 59 (N-1)

Table t-value at .05 = 1.98
- at .01 = 2.63

**Interpretation:** Table no 4.2 indicates that t-value was found to be 2.775 which was found to be greater than the table value at degree of freedom (df=59), at 0.05 level of significance which was 1.98 and at 0.01 level of significance which was 2.63. Thus null hypothesis is
rejected at 0.05 and 0.01 level of significance. So, it may be said that there is significant difference between the achievement in post test I and post test II after the treatments in control group that is teaching through traditional strategy. This is shown through bar diagram in figure III

**Fig. III** : Bar graph representing the learning retention in control group in phase III and in phase IV
Hypothesis III – There is no significance difference between the post test-I of both the groups, in terms of learning retention

Table – 4.3
Result of t-test for correlated data of post test-I of experimental and control group in terms of learning retention
(in Phase III)

<table>
<thead>
<tr>
<th>Attitude</th>
<th>N</th>
<th>Mean</th>
<th>S.D.</th>
<th>r</th>
<th>t-value</th>
</tr>
</thead>
<tbody>
<tr>
<td>Experimental group</td>
<td>60</td>
<td>45.623</td>
<td>5.484</td>
<td>118</td>
<td>8.640**</td>
</tr>
<tr>
<td>Control Group</td>
<td>60</td>
<td>36.902</td>
<td>5.576</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

Where,

* = Significant at 0.05 level

** = Significant at 0.01 level

N = No. of students (Sample)
df = Degree of freedom
S.D. = Standard deviation

For df = 118 (N+N-2)
Table t-value at .05 =1.98
at .01 = 2.63

Interpretation: Table no 4.3 indicates that t-value was found to be 8.640 which was greater than the table value at degree of freedom (df=118), at 0.05 level of significance which was 1.98 and at 0.01 level of significance which was 2.63. Thus null hypothesis is rejected at 0.05 and 0.01 level of significance. So, it may be said that there is
significant difference between the Post test I for learning retention of students for English language immediately after both the treatments that is teaching through blended strategy and teaching through traditional strategy (phase-I). Mean scores of this are shown through bar diagram in figure IV

**Fig. IV:** Bar graph representing the mean scores of learning retention in Experimental group and Control group for post-test I in phase III
Hypothesis IV – There is no significance difference between the post test-II of both the groups in terms of learning retention

Table – 4.4

Result of t-test for correlated data of post test-II in experimental and control group in terms of learning retention (in Phase IV)

<table>
<thead>
<tr>
<th>Post-test -II</th>
<th>N</th>
<th>Mean</th>
<th>S.D.</th>
<th>Df</th>
<th>t-Value</th>
</tr>
</thead>
<tbody>
<tr>
<td>Experimental group</td>
<td>60</td>
<td>41.115</td>
<td>6.306</td>
<td>118</td>
<td>14.959**</td>
</tr>
<tr>
<td>Control Group</td>
<td>60</td>
<td>24.934</td>
<td>5.516</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

Where,

* = Significant at 0.05 level
** = Significant at 0.01 level
N = No. of students (Sample)
df = Degree of freedom
S.D. = Standard deviation

For df = 118 (N-2)
Table t-value at .05 = 1.98
at .01 = 2.63

Interpretation: Table no 4.4 indicates that t-value was found to be 14.959 which was found to be greater than the table value at degree of freedom (df=118), at 0.05 level of significance which was 1.98 and at 0.01 level of significance which was 2.63. Thus null hypothesis is rejected at 0.05 and 0.01 level of significance. So, it may be said that there is significant difference between the Post test II learning retention
of students for English language in phase II that is two weeks after both the treatments, teaching through blended strategy and teaching through traditional strategy. Their mean scores are shown through bar diagram in figure V.

**Fig. V**: Bar graph representing the mean scores of learning retention in Experimental group and Control group for post-test II in phase IV.
Hypothesis V – There is no significance difference between the attitude towards English language before and after teaching through blended strategy.

Table – 4.5
Result of t-test for correlated data of pre test and post test scores of Attitude scale towards English language in experimental group.

<table>
<thead>
<tr>
<th>Attitude Scores</th>
<th>N</th>
<th>Mean</th>
<th>S.D.</th>
<th>r</th>
<th>t-value</th>
</tr>
</thead>
<tbody>
<tr>
<td>Pre-Test</td>
<td>60</td>
<td>34.417</td>
<td>8.857</td>
<td>0.780</td>
<td>4.275**</td>
</tr>
<tr>
<td>Post-Test</td>
<td>60</td>
<td>66.267</td>
<td>11.888</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

Where,

* = Significant at 0.05 level
** = Significant at 0.01 level
N = No. of students (Sample)
r = Coefficient of correlation
S.D. = Standard deviation

For df = 69
Table t-value at .05 = 2.01
at .01 = 2.68

Interpretation: table no. 4.5 indicates that t-value was found to be 4.275 which is greater than the table value at degree of freedom (df=49), which is 2.01 at 0.05 level and at 2.68 at 0.01 level. Thus null hypothesis is rejected. so, it may be said that there is a significant difference between the attitude of students towards English language before and
after the treatment that is teaching through blended strategy. This is shown through bar diagram in figure VI.

**Fig. VI:** Bar graph representing the mean scores of pre test and post test of experimental group on Attitude scale in phase I and III (teaching through blended strategy)
Hypothesis VI – There is no significance difference between attitude towards English language before and after teaching through traditional strategy.

Table – 4.6

Result of t-test for correlated data of pre test and post test scores of Attitude scale towards English language in control group.

<table>
<thead>
<tr>
<th>Attitude Scores</th>
<th>N</th>
<th>Mean</th>
<th>S.D.</th>
<th>r</th>
<th>t-value</th>
</tr>
</thead>
<tbody>
<tr>
<td>Pre-Test</td>
<td>60</td>
<td>31.900</td>
<td>6.704</td>
<td>0.502</td>
<td>2.487*</td>
</tr>
<tr>
<td>Post-Test</td>
<td>60</td>
<td>50.433</td>
<td>14.155</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

Where,

* = Significant at 0.05 level
** = Significant at 0.01 level

N = No. of students (Sample)
r = Coefficient of correlation
S.D. = Standard deviation

For df = 69
Table t-value at .05 =2.01
at .01 = 2.68

Interpretation: Table no 4.6 indicates that t-value was found to be 2.487 which was found to be greater than the table value at degree of freedom (df=69), at 0.05 level of significance which was 2.01 but was found to be smaller than table value at 0.01 level of significance which was 2.68. Thus null hypothesis is rejected at 0.05 and not.
Hypothesis VII - There is no significance difference between the post tests of attitude towards English in both the groups.

For this, first of all researcher applied the t-test on the pre-test scores of both the groups (i.e., in Phase I) to find out whether there is difference in the attitude towards English of both the groups before treatment.

**Table - 4.7.1**

Result of t-test for correlated data of pre test scores of Attitude scale towards English language in both the group. (Phase I)

<table>
<thead>
<tr>
<th>Attitude Scores</th>
<th>N</th>
<th>Mean</th>
<th>S.D.</th>
<th>r</th>
<th>t-value</th>
</tr>
</thead>
<tbody>
<tr>
<td>Pre-Test (Experimental group)</td>
<td>60</td>
<td>34.417</td>
<td>8.857</td>
<td>118</td>
<td>1.755</td>
</tr>
<tr>
<td>Pre-Test (control group)</td>
<td>60</td>
<td>31.900</td>
<td>6.704</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

Where,

* = Significant at 0.05 level
** = Significant at 0.01 level
N = No. of students (Sample)
df = Degree of freedom
S.D. = Standard deviation
For df = 118
Table t-value at .05 = 1.98
at .01 = 2.63

**Interpretation:** Table no 4.7.1 indicates that t-value was found to be 1.755 which was found to be smaller than the table value at degree of freedom (df=118), at 0.05 level of significance which was 1.98 and at
0.01 level of significance which was 2.63. Thus null hypothesis is accepted at 0.05 and 0.01 level of significance. So, it may be said that there is no significant difference between the attitude of students towards English language in both the groups after treatment that is teaching through blended strategy and teaching through traditional strategy (i.e., in Phase I). This is shown through bar diagram in figure VIII.

**Fig. VIII:** Bar graph representing the mean scores of pre-test for attitude towards English language of both the groups before treatments (in phase-I)
So, now further t-test was applied on the post test of both the groups (i.e., in Phase III). This was shown in table 4.7.2

Table – 4.7.2

Result of t-test for correlated data of post test scores of Attitude scale towards English language in both the group. (Phase III)

<table>
<thead>
<tr>
<th>Attitude Scores</th>
<th>N</th>
<th>Mean</th>
<th>S.D.</th>
<th>Df</th>
<th>t-value</th>
</tr>
</thead>
<tbody>
<tr>
<td>Post-Test (Experimental group)</td>
<td>60</td>
<td>66.267</td>
<td>11.888</td>
<td>118</td>
<td>6.635**</td>
</tr>
<tr>
<td>Post-Test (control group)</td>
<td>60</td>
<td>50.433</td>
<td>14.155</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

Where,
* = Significant at 0.05 level
** = Significant at 0.01 level

N = No. of students (Sample)
df = Degree of freedom
S.D. = Standard deviation

For df = 118
Table t-value at .05 = 1.98
at .01 = 2.63

Interpretation: Table no 4.7.2 indicates that t-value was found to be 6.635 which was found to be greater than the table value at degree of freedom (df=98), at 0.05 level of significance which was 1.98 and at 0.01 level of significance which was 2.63. Thus null hypothesis is rejected at 0.05 and 0.01 level of significance. So, it may be said that there is significant difference between the attitude of students towards
English language after both the treatments that is teaching through blended strategy and teaching through traditional strategy. This is shown through bar diagram in figure IX

**Fig. IX:** Bar graph representing the mean scores of post-test for attitude towards English language of both the groups after treatments (in phase-III)

On the basis of the above analysis it may be said that as there was significant difference in the scores of both the groups in Phase III, and mean of experimental group is greater than that of control group. Therefore, on the basis of mean scores it may be stated that experimental treatment i.e., teaching through blended strategy was more effective for positive change in the attitude of students towards English language than traditional teaching.