CHAPTER III

ANALYSIS AND INTERPRETATION OF TEACHING ASSESSMENT BATTERY-0 RESULTS
CHAPTER III

3.0. FINDINGS OF THE STUDY AND INTERPRETATION OF RESULTS:

The preceding chapters are devoted to analyse the results obtained out of the experiment. The data collected through the use of test needs systematic organization, tabulation, classification, analysis and interpretation before they can serve any worthwhile purpose.

The present study is designed to find out the effect of micro-teaching and integration of skills through Diode, Additive and Summative models upon different treatment variables such as Teaching efficiency, General teaching competence and Attitude of the student teachers and the effect of experimental treatment over control group. In this study pretest post test experimental and control group design analysis has been used. Using the tools (TAB-O, TAB-S, ITCS and ATAI) all the four groups were measured before experiment (Pre test), after micro-teaching practice of skills (Post test I) and after practice of integration of skills (Post test II). The significant effect of micro-teaching and integration exercises were analysed in terms of gain in scores on these four variables for those four groups (G-I, G-II, G-III & G-IV). The Gain 1 score indicates the difference between post test I and pretest mean score, Gain 2 score represents the mean gain score between post test II and post test I and the Gain 3 score stands for the mean difference between post test II and pretest respectively.
3.1. **STATISTICAL TECHNIQUES USED:**

To find out the significance of difference between means, the correlated 't' ratio was preferred to other statistical methods like analysis of co-variance etc. The reason for using 't' ratio was to see the difference between the scores independently instead of viewing those as co-variates. As the groups were matched on the basis of age, academic achievement, and teaching experience, the co-rrelated 't' ratio was preferred. Since the 't' test is a parametric measure and the sample size is very small, the result of 't' ratio was validated against z value using non-parametric method of sum of ranks. Because the sample is small, we can rely on the result of non-parametric statistics. Therefore, the result of 't' ratio was validated against z value of the non-parametric method.

3.1.1. **SCHEME OF DATA ANALYSIS:**

The data have been treated through graphic representation which is followed by sophisticated statistical analysis. The graphic representation constitutes bar graph. The statistical analysis constitutes sample statistics and inferential statistics to explain the result of parametric measure. The z value includes analysis and interpretation of non-parametric statistics. The sample statistics is related to the calculation and discussion of measures of central tendency and measures of dispersion. The inferential statistics used here comprises 't' ratio (correlated). The choice of co-rrelated 't' ratio
was made in view of the nature and distribution of the variable and the number of sample groups used for the present study. Since the sample size was small enough, therefore, the mean, standard deviation and correlation were computed from the original score following non-parametric measure. Whatever measure might have been taken to compute 't' ratio but basically it is a parametric measure. Thus, to validate the parametric result non-parametric statistics Z test was used. The formulae used for the present study in analysing and interpreting the test results are discussed below:

**MEAN** - The formula for the mean (M) of a series of ungrouped measure is

\[ M = \frac{\Sigma X}{N} \]


**STANDARD DEVIATION**

Computation of Standard Deviation from the original score when N is smaller than 30.

\[ \sigma = \sqrt{\frac{\Sigma X^2 - (\Sigma X)^2}{N - 1}} \]


**CORRELATION**

The co-efficient of correlation was computed from raw score by using the formula.
The procedure followed in computing 't' ratio was:

\[ t = \frac{M_1 - M_2}{S_{ED}} \]

(The above formula can also be written as follows:

\[ t = \frac{M_1 - M_2}{\sqrt{\left(\frac{S_1}{N_1}\right)^2 + \left(\frac{S_2}{N_2}\right)^2 - 2r\left(\frac{S_1}{N_1}\right)\left(\frac{S_2}{N_2}\right)}} \]

(The formula used in computing z in Sum of Ranks Test is:

\[ z = \frac{2R_1 - N_1(N + 1)}{\sqrt{\frac{N_1N_2(N + 1)^2}{3}}} \]
3.2. ANALYSIS AND INTERPRETATION OF TAB-O TEST RESULTS (EXPERIMENTAL AND CONTROL GROUP):

Since our hypotheses were laid down on the basis of finding out the effect of different variables over experimental groups and control group, the results were analysed accordingly.

3.2.1. SIGNIFICANT DIFFERENCE BETWEEN MEAN GAIN SCORES OF POST TEST-I AND PRETEST OF THE EXPERIMENTAL GROUPS AND CONTROL GROUP IN THE TEACHING ASSESSMENT BATTERY-O (PARAMETRIC TEST):

**TABLE 6**

SHOWING MEAN DIFFERENCES BETWEEN POST TEST-I AND PRE TEST OF EXPERIMENTAL GROUPS AND CONTROL GROUP ON TAB-O

<table>
<thead>
<tr>
<th>Group</th>
<th>Diode m</th>
<th>Summative</th>
<th>Additive</th>
<th>Control</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>Pre test</td>
<td>Post test I</td>
<td>Pre test</td>
<td>Post test I</td>
</tr>
<tr>
<td>Group I</td>
<td>53.83</td>
<td>105</td>
<td>95.17</td>
<td>52.33</td>
</tr>
<tr>
<td>Group II</td>
<td>7.99</td>
<td>7.99</td>
<td>11.91</td>
<td>5.34</td>
</tr>
<tr>
<td>Group III</td>
<td>3.26</td>
<td>3.06</td>
<td>4.86</td>
<td>2.18</td>
</tr>
<tr>
<td>Group IV</td>
<td>5.72</td>
<td>2.96</td>
<td>4.7</td>
<td>2.76</td>
</tr>
</tbody>
</table>

The 't' ratio to be significant at .05 and .01 level of significance with df (N-1) 5 is 2.57* and 4.03* respectively.
(i) The 't' ratio between post test I and pretest of Group I (Diode model) is 8.94 which is highly significant at .01 level of significance. This shows that the mean score of post test I (105) is significantly higher than the pretest mean score (53.83). The null hypothesis "There is no significant difference between each of the experimental groups and control group in respect of gain in scores in post test I and pretest in Teaching Assessment Battery-0", therefore, stands rejected and the result confirms the alternative hypothesis that significant difference exists between post test I and pretest of Group I in Teaching Assessment Battery-0. This reveals that micro-teaching practice significantly effects the student teachers of Group I in developing their teaching efficiency as observed by the observer.

(ii) The 't' ratio between post test I and pretest of Group II (Summative model) is 8.16 which is highly significant at .01 level of significance. The null hypothesis, "There is no significant difference between each of the experimental groups and control group in respect of gain in scores in post test I and pretest in Teaching Assessment Battery-0", therefore, stands rejected and the result confirms the alternative hypothesis that there is significant difference between post test I and pretest of Group II in TAB-0. This shows that the mean score of post test I (95.17) is significantly higher than the pretest mean.
score (52.33). This indicates that micro-teaching practice affects significantly in developing the teaching efficiency of the student teachers.

(iii) The 't' ratio between post test I and pretest of Group III (Additive model) is 8.8 which is highly significant at .01 level of significance. The stated null hypothesis, "There is no significant difference between each of the experimental groups and control group in respect of gain in scores in post test I and pretest in TAB-0, is, therefore, rejected on the ground that true and significant mean difference exists in between post test I and pretest in TAB-0 of Group III. This shows that the mean score of post test I (93.67) is significantly higher than pretest mean score (52.33). This reveals that micro-teaching practice affects significantly in developing the teaching efficiency of the student teachers as observed by the observer.

(iv) The 't' ratio between post test I and pretest of Group IV (Control group) is 13.64 which is highly significant at .01 level of significance. The stated null hypothesis, "There is no significant difference between each of the experimental groups and control group in respect of gain in scores in post test I and pretest in TAB-0", therefore, stands rejected and the result confirms the alternative hypothesis that there is significant difference between post test I and pretest mean score of Group IV on TAB-0.
Further interpretation of the result reveals that micro-teaching practice affects significantly in developing the teaching efficiency of the student teachers.

3.2.2. **INTERPRETATION OF SUM OF RANK TEST/ Z TEST:**

In the present study co-related 't' test was used to find out significance of difference between two means. Since the 't' test is a parametric measure and the sample size is small enough, it is not feasible to generalise the result of the small sample to the population parameter by using parametric measure. Therefore, in order to eliminate sampling error and to generalise the result to the population parameter non-parametric statistics i.e. Z test was used. Thus, analysis of 't' test result of each variable was followed by analysis and interpretation of Z test results.

3.2.3. **ANALYSIS AND INTERPRETATION OF POST TEST-I AND PRETEST RESULT OF EXPERIMENTAL GROUPS AND CONTROL GROUP ON TEACHING ASSESSMENT BATTERY-O (NON-PARAMETRIC TEST)**

The significant difference in the sum of ranks between post test-I and pretest of the experimental groups and control group in the teaching assessment battery-O.

**TABLE 7**

Showing the sum of rank difference between post test-I and pretest of experimental groups and control group on TAB-O.
The Z value to be significant at .05 and .01 level of significance is 1.96 and 2.58 respectively.

The above table shows the Z value of post test I and pretest of Diode, Summative, Additive and Control group respectively. The analysis and interpretation of group wise results are discussed below -

(i) From table 7 - the result of Diode model shows that .2% of the normal curve lies to the right of 2.88 and .2% lies to the left. The P, therefore, is less than .01 and the null hypothesis, "There is no significant difference between each of the experimental groups and control group in respect of gain in scores in post test I and pretest in Teaching Assessment Battery-0", must be rejected. On the present evidence we can state that there is significant difference between post test I and pretest in mean achievement. This shows the positive and significant effect of micro-teaching in developing the teaching efficiency of the student teachers of Group I (Diode model).
(ii) The result of Group II (Summative model) shows that .2% of the normal curve lies to the right of 2.88 and .2% lies to the left. The P, therefore, is less than .01 and the null hypothesis, "There is no significant difference between each of the experimental groups and control group in respect of gain in scores in post test I and pretest in TAB-0", must be rejected. On the present evidence we can state that there is significant difference in between post test I and pretest in mean achievement. This shows the positive and significant effect of micro-teaching in developing the teaching efficiency of the student teachers of Group II (Summative model).

(iii) The result of Group III (Additive model) shows that .2% of the normal curve lies to the right of 2.88 and .2% lies to the left. The P, therefore, is less than .01 and the null hypothesis, "There is no significant difference between each of the experimental groups and control group in respect of gain in scores in post test I and pretest in TAB-0", must be rejected. On the present evidence we can state that there is significant difference in between post test I and pretest in mean achievement effect of micro-teaching in developing the teaching efficiency of the student teachers of Group III (Additive model).

(iv) The result of the control group shows that .2% of normal curve lies to the right of 2.88 and .2% lies to the
left. The $P$, therefore, is less than .01 and the null hypothesis 
"There is no significant difference between each of the experi-
mental groups and control group in respect of gain in scores 
in post test I and pretest in Teaching Assessment Battery-0", 
must be rejected. On the present evidence we can state that 
there is significant difference in between post test I and 
pretest in mean achievement. This shows the positive and 
significant effect of micro-teaching in developing the teaching 
efficiency of the student teachers of Group IV (Control group) 

The above analysis reveals that the 't' test results 
coincide with Z test results. Hence, the results analysed are 
reliable and valid. The overall result of TAB-0 of experimental 
groups and control group on 't' and Z test are significant. 
Therefore, the stated hypotheses are rejected and result 
can be further stated that micro-teaching practice has got 
significant effect on the experimental and control group in 
developing the teaching efficiency of the student teachers 
as all the groups including the control group followed the 
same micro-teaching treatment up to the giving of post test I.

3.2.4. ANALYSIS OF POST TEST II AND POST TEST I RESULTS OF 
TAB-O (PARAMETRIC TEST):

SIGNIFICANT OF DIFFERENCE BETWEEN MEAN SCORES OF POST TEST II 
AND POST TEST I OF THE EXPERIMENTAL GROUPS AND CONTROL GROUP 
IN THE TEACHING ASSESSMENT BATTERY-0.

TABLE 8
SHOWING MEAN DIFFERENCE BETWEEN POST TEST II 
AND POST TEST I ON TAB-O.
The *t* ratio to be significant at .05 and .01 level of significance with df (N-1) 5 is 2.57* and 4.03** respectively.

(i) The *t* ratio between post test II and post test I of Group I (Diode model) is 8.16, which is highly significant at .01 level of significance. The null hypothesis, 'There is no significant difference between each of the experimental groups and the control group on the gain in scores between post test II and post test I in respect of TAB-0,' therefore, stands rejected and the result can be further stated that the mean gain score on TAB-0 in post test II (129.16) is significantly higher than the post-test I mean score (105). This shows that the group I which underwent integration training through Diode model had scored significantly higher in Teaching Assessment Battery as observed by the investigator after integration exercise. This reveals that micro-teaching practice followed by Diode model of integration exercise has helped
the student teachers significantly in developing their teaching efficiency.

(ii) The 't' ratio between post test II and post test I of Group II (Integration through Summative model) is 8.94, which is highly significant at .01 level of significance. The null hypothesis, "There is no significant difference between each of the experimental groups and the control group on the gain in scores between post test II and post test I in respect of TAB-0", therefore, stands rejected and henceforth the result can be stated that the mean gain score in post test II (129.33) is more than the post test I (95.17). This reveals that the Group II which underwent integration training through Summative model had scored significantly higher in Teaching Assessment Battery as observed by the investigator in post test II as compared to the post test I. This means that micro-teaching practice followed by integration through Summative model has helped the student teachers in developing teaching efficiency.

(iii) The 't' ratio between post test II and post test I of Group III (Additive model) is 10.57, which is highly significant at .01 level of significance. The null hypothesis, "There is no significant difference between each of the experimental groups and the control group on the gain in scores between post test II and post test I in respect of TAB-0", therefore, stands rejected and the result can
be further stated that there is significant difference between post test II and post test I of Group III. This shows that the student teachers of Group III have scored significantly higher in their mean score in post test II (132.88) than post test I (93.67). This reveals that micro-teaching practice followed by integration exercise through Additive model has helped the student teachers in developing in their teaching efficiency.

(iv) The 't' ratio between post test II and post test I of Group IV (Control group) is 00, which is quite not significant. The null hypothesis, "There is no significant difference between each of the experimental groups and the control group on the gain in scores between post test II and post test I in respect of TAB-0" therefore, cannot be rejected and the result can be stated that there is no significant difference between post test I and post test II mean score in TAB as observed by the observer. The result shows that the mean score of post test II (87.17) is not significantly different from the post test I mean score (91.33). This reveals that micro-teaching practice followed by vicarious integration had not increased the teaching efficiency of the control group.

3.2.5 ANALYSIS AND INTERPRETATION OF POST TEST II AND POST TEST I RESULT OF EXPERIMENTAL AND CONTROL GROUP IN TEACHING ASSESSMENT BATTERY-O (NON-PARAMETRIC TEST)
THE SIGNIFICANT DIFFERENCE IN THE SUM OF RANKS BETWEEN POST TEST II AND POST TEST I OF THE EXPERIMENTAL GROUPS AND CONTROL GROUP IN THE TEACHING ASSESSMENT BATTERY-0.

TABLE 9
SHOWING THE SUM OF RANK DIFFERENCE BETWEEN POST TEST II AND POST TEST I OF EXPERIMENTAL GROUPS AND CONTROL GROUP ON TAB-0

<table>
<thead>
<tr>
<th>Group I</th>
<th>Group II</th>
<th>Group III</th>
<th>Group IV</th>
</tr>
</thead>
<tbody>
<tr>
<td>Diode</td>
<td>Summative</td>
<td>Additive</td>
<td>Control</td>
</tr>
<tr>
<td>Post test I</td>
<td>Post test II</td>
<td>Post test I</td>
<td>Post test II</td>
</tr>
<tr>
<td>Rank</td>
<td>21</td>
<td>57</td>
<td>21</td>
</tr>
<tr>
<td>level of sig.</td>
<td>.01</td>
<td>.01</td>
<td>.01</td>
</tr>
<tr>
<td>% of cases</td>
<td>.2%</td>
<td>.2%</td>
<td>.2%</td>
</tr>
</tbody>
</table>

The Z value to be significant at .05 and .01 level of significance is 1.96* and 2.58** respectively.

The above table shows the Z value of post test II and post test I of TAB-0 of Diode, Summative, Additive and Control group respectively.

(i) From table 9 the result of Diode model shows that .2% of the normal curve lies to the right and .2% lies to the left of 2.88 . The P, therefore, is less than .01 and the null hypothesis, "There is no significant difference between each of the experimental groups and the control group on the gain in scores between post test II and post test I in respect of TAB-0", is rejected. With the present
evidence in hand we can state that there is significant difference between scores in post II and post I. This reveals that Diode model of integration exercise produces significant increase in teaching efficiency of the student teachers as viewed by the observer in TAB-0.

(ii) The Summative model result shows that .2% of the normal curve lies to the right and .2% of the normal curve lies to the left of 2.88 $\sim$. The P, therefore, is less than .01 and the null hypothesis, "There is no significant difference between each of the experimental groups and the control group on the gain in scores between post test II and post test I in respect of TAB-0", must be rejected. With the present evidence we can state that there is significant difference between scores in post test II and post test I. This reveals that Summative model of integration exercise has produced significant increase in the teaching efficiency of the student teachers as viewed by the observer.

(iii) The result of Additive model shows that .2% of the normal curve lies to the right and .2% lies to the left of 2.88 $\sim$. The P, therefore, is less than .01 and the null hypothesis, "There is no significant difference between each of the experimental groups and the control group on the gain in scores between post test II and post test I in respect of TAB-0", must be rejected. With the present evidence we can state that there is difference between scores in post test II and post test I.
This reveals that Additive model of integration exercise produces significant increase in the teaching efficiency of the student teachers as viewed by the observer.

(iv) The result of the control group shows that 21.19% lies to the right and 21.19% to the left of .8. The P, therefore, is .42 and the null hypothesis, "There is no significant difference between each of the experimental groups and the control group on the gain in scores between post test II and post test I in respect of TAB-0", is rejected. With the present evidence we can state that there is no significant difference between post test II and post test I scores of control group. The result can be further interpreted as vicarious integration practice does not show any significant increase on the teaching efficiency of the student teachers of control group as viewed by the observer in TAB-0 beyond the level obtained in post test I (at the end of micro-teaching practice).

The overall analysis of the Z value results shows that significant differences are found between post test II and post test I of all experimental groups, whereas no significant difference exists between post test II and post test I of control group. The result of Z value confirms the result of 't' ratio discussed earlier. The result, therefore, can be stated as micro-teaching practice followed by integration training exercises (Diode, Summative and Additive) shows
significant effect in increasing teaching efficiency. The micro-teaching practice followed by vicarious integration exercises fails to show any further increase on the teaching efficiency.

3.3. ANALYSIS AND INTERPRETATION OF MEAN GAIN SCORE RESULTS (INTER GROUP COMPARISON):

The mean gain score here means the difference between post test I & II score and pretest score. In this way three mean gain scores were found out for each group. The first gain score termed as Gain (1) score, showed the difference between post test I and pretest score. The second Gain (2) score showed the difference between post test II and post test I score. The third Gain(3) score showed the difference between post test II and pretest score. The intergroup comparison would be among Group I (G-I), Group II (G-II), Group III (G-III) and Group IV (G-IV). The Groups I, II and III underwent integration training through Diode, Summative and Additive model respectively and the Group IV was regarded as control group which did not have any integration practice after micro-teaching.

3.3.1. ANALYSIS AND INTERPRETATION: MEAN GAIN(1) SCORE RESULTS (PARAMETRIC TEST):

Gain(1) scores i.e. difference post test I and pretest for the different groups were obtained and significance of means between different groups were tested. The relevant statistics are presented below:

TABLE 10
SHOWING THE MEAN GAIN(1)SCORE RESULTS OF TAB-0

SAMPLE STATISTICS

<table>
<thead>
<tr>
<th>GROUPS</th>
<th>MEAN Gain(1) Score</th>
<th>SD</th>
<th>SE</th>
</tr>
</thead>
<tbody>
<tr>
<td>GI- DIODE (D)</td>
<td>51.17</td>
<td>9.78</td>
<td>3.99</td>
</tr>
<tr>
<td>GII - SUMMATIVE(S)</td>
<td>45.00</td>
<td>8.76</td>
<td>3.58</td>
</tr>
<tr>
<td>GIII - ADDITIVE(A)</td>
<td>45.17</td>
<td>6.44</td>
<td>2.63</td>
</tr>
<tr>
<td>G-IV - CONTROL (C)</td>
<td>37.67</td>
<td>15.56</td>
<td>6.35</td>
</tr>
</tbody>
</table>

INFERENTIAL STATISTICS (for difference of Means)

<table>
<thead>
<tr>
<th>GROUPS</th>
<th>GI GII DS</th>
<th>GI GII DA</th>
<th>GI GII 'SA</th>
<th>GI GIV DC</th>
<th>GII GIV SC</th>
<th>GIII GIV AC</th>
</tr>
</thead>
<tbody>
<tr>
<td>SED</td>
<td>5.04</td>
<td>4.62</td>
<td>3.65</td>
<td>8.51</td>
<td>5.64</td>
<td>6.16</td>
</tr>
<tr>
<td>t</td>
<td>.02</td>
<td>1.3</td>
<td>.05</td>
<td>1.59</td>
<td>1.3</td>
<td>1.22</td>
</tr>
</tbody>
</table>

The 't' ratio to be significant at .05 and .01 level of significance with df (N-1) is 2.57* and 4.03** respectively.

The 't' ratio between GI GII is 1.02, which is not significant. This shows that mean score of GI (51.17) is statistically not significant than GII (45) mean score. The null hypothesis, "There is no significant difference between Diode model and Summative model on the gain in scores between post test I and pretest in respect of TAB-0", therefore, cannot be rejected and the results can be further stated that there
is no significant difference between Diode model and Summative model in developing teaching efficiency of the student teachers as viewed by the observer.

The 't' ratio between GI & GIII is 1.3, which is not significant. The mean gain GI (51.17) score is not significantly higher than GIII (45.17) mean score. The null hypothesis, "There is no significant difference between Diode model and Additive model on the gain in scores between post test I and pretest in respect of TAB-O", therefore, cannot be rejected and the result can be further stated that there is no difference between Diode model and Additive model in developing teaching efficiency of the student teachers as viewed by the observer.

The 't' ratio between GII & GIII is 0.05, which is not significant. The mean gain GII (45) is not statistically significant than GIII (45.17) mean score. The null hypothesis, "There is no significant difference between Summative model and Additive model on the gain in scores between post test I and pretest in respect of TAB-O", therefore, cannot be rejected and the result can be further stated that there is no difference between Summative model and Additive model in developing teaching efficiency of the student teachers as viewed by the observer.

The 't' ratio between GI GIV, GII GIV, GIII GIV are 1.59, 1.3 and 1.22 respectively. Which are not significant.
The null hypothesis, "There is no significant difference between each of the experimental groups and control group in respect of gain in scores in post test I and pretest in TAB-O", Therefore cannot be rejected. On the present evidence we can say that there is no significant difference between experimental groups (Diode, Summative and Additive model) and control group in developing teaching efficiency of the student teachers as viewed by the observer.

The above analysis of results reveals that no significant difference is found among the experimental groups in their post test I and pretest mean gain score. Also no significant difference is found between any experimental groups and control group in their mean gain(1) score. Since up to post test I, all the four groups underwent the same micro-teaching treatment, no significant difference in gain(1) score (post test I minus pretest ) of these groups is but natural and expected.

3.3.2. ANALYSIS AND INTERPRETATION OF MEAN GAIN(1) SCORE RESULTS (NON-PARAMETRIC TEST):

THE SUM OF RANK DIFFERENCE AMONG GI, GII, GIII AND GIV IN MEAN GAIN(1) SCORE ON TEACHING ASSESSMENT BATTERY-0.

TABLE 11

SHOWING SUM OF RANK DIFFERENCES IN MEAN GAIN(1)
SCORE ON TAB-O
<table>
<thead>
<tr>
<th>GROUPS</th>
<th>RANK</th>
<th>Z VALUE</th>
<th>LEVEL OF SIG.</th>
<th>PERCENTAGE OF CASES</th>
</tr>
</thead>
<tbody>
<tr>
<td>G-I</td>
<td>45</td>
<td>-0.96</td>
<td>N.S</td>
<td>16.85</td>
</tr>
<tr>
<td>G-II</td>
<td>33</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>G-I</td>
<td>47</td>
<td>1.28</td>
<td>N.S</td>
<td>10.03</td>
</tr>
<tr>
<td>G-III</td>
<td>31</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>G-II</td>
<td>41.5</td>
<td>0.4</td>
<td>N.S</td>
<td>34.46</td>
</tr>
<tr>
<td>G-III</td>
<td>36.5</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>G-I</td>
<td>48.5</td>
<td>-1.44</td>
<td>N.S</td>
<td>7.49</td>
</tr>
<tr>
<td>G-IV</td>
<td>29.5</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>G-II</td>
<td>48.5</td>
<td>1.52</td>
<td>N.S</td>
<td>6.43</td>
</tr>
<tr>
<td>G-IV</td>
<td>29.5</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>G-III</td>
<td>48.5</td>
<td>1.52</td>
<td>N.S</td>
<td>6.43</td>
</tr>
<tr>
<td>G-IV</td>
<td>29.5</td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

(N.S = Not significant)

The Z value to be significant at .05 and .01 level of significance is 1.96 and 2.58 respectively.

(i) From the above table the result of mean gain(1) score between GI and GII shows that 16.85% of the normal curve lies to the right and left of -0.96. The P, therefore, is .32 and the null hypothesis, "There is no significant difference between Diode model and Summative model on the gain in scores between post test I and pretest in respect of TAB-0", stands retained. With the present evidence we can state that there is no significant difference in between GI and GII mean gain(1) score. The further
interpretation of results shows that the micro-teaching practice shows similar effect on the student teachers in developing teaching efficiency.

(ii) The result of mean gain(1) score between GI and GIII shows that 10.03% of the normal curve lies to the right and left of 1.28 . The P, therefore, is .21 and the null hypothesis, "There is no significant difference between Diode model and Additive model on the gain in scores between post test I and pretest in respect of TAB-0", stands retained. With the present evidence we can state that there is no significant difference between GI and GIII mean gain(1) score. Further interpretation of results shows that the micro-teaching practice has got similar effect on the student teachers in developing teaching efficiency.

(iii) The result of mean gain(1) score between GII and GIII shows that 34.46% of the normal curve lies to the right and left of 0.4c . The P, therefore, is .68 and the null hypothesis, "There is no significant difference between Summative model and Additive model on the gain in scores between post test I and pretest in respect of TAB-0", cannot be rejected. With the present evidence in hand we can say that there is no significant difference in between GII and GIII mean gain(1) score. Further interpretation of the results shows that micro-teaching
practice has got similar effect on the student teachers in developing teaching efficiency.

(iv) The result of mean gain(1) score between GI and GIV, shows that 7.49% of cases lie to the left and right of -1.44 $c$. The P, therefore is .15 and the null hypothesis, "There is no significant difference between each of the experimental groups and control group in respect of gain in scores in post test I and pretest in TAB-0", cannot be rejected. With the present evidence we can state that there is no significant difference between GI and GIV mean gain(1) score. This, however, shows that micro-teaching practice has got similar effect in developing teaching efficiency of the student teachers of GI and GIV.

(v) The result of mean gain(1) score between GII and GIV shows that 6.43% of the normal curve lie to the left and right of 1.52 $c$. The P, therefore, is .13 and the null hypothesis, "There is no significant difference between each of the experimental groups and control group in respect of gain in scores in post test I and pretest in TAB-0", cannot be rejected. With the present evidence we can state that there is no significant difference found in between GII and GIV mean gain(1) score. This, however, shows that micro-teaching practice has got similar effect in developing teaching efficiency of the student teachers of GII and GIV.
(vi) The result of mean gain(1) score between GIII and GIV shows that 6.43% of the normal curve lie to the left and right of 1.520. The P, therefore, is .13 and the null hypothesis, "There is no significant difference between each of the experimental groups and control group in respect of gain in scores in post test I and pretest in TAB-O", cannot be rejected. With the present evidence we can state that there is no significant difference found in between GIII and GIV mean gain(1) score. This, however, shows that micro-teaching practice has got similar effect in developing teaching efficiency of the student teachers of GIII and GIV.

The analysis of 't' and Z test results confirm each other. Therefore, the result may be stated that all the four groups, who underwent micro-teaching practice do not show any significant difference among the groups in gain(1) score in TAB-O. On the other hand, micro-teaching practice has got similar effect in developing the teaching efficiency of all the four groups.

3.3.3. ANALYSIS AND INTERPRETATION OF MEAN GAIN(2) SCORES:

The gain(2) scores i.e. difference between post test II and post test I were obtained and significance of difference of means between different groups tested. The relevant statistics are presented below:
**THE SIGNIFICANCE OF DIFFERENCE AMONG THE MEAN GAIN(2) SCORES OF POST TEST II AND POST TEST I OF GI, GII, GIII AND GIV IN TAB-0**

**TABLE 12**

SHOWING SIGNIFICANT DIFFERENCE OF MEAN GAIN(2) SCORES ON TAB-0

**SAMPLE STATISTICS**

<table>
<thead>
<tr>
<th>GROUPS</th>
<th>MEAN (2) Score</th>
<th>SD</th>
<th>SEM</th>
</tr>
</thead>
<tbody>
<tr>
<td>G-I DIODE (D)</td>
<td>24.17</td>
<td>7.08</td>
<td>2.97</td>
</tr>
<tr>
<td>GII- SUMMATIVE(S)</td>
<td>33.83</td>
<td>9.12</td>
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<tr>
<td>GIII- ADDITIVE (A)</td>
<td>39.17</td>
<td>9.1</td>
<td>3.71</td>
</tr>
<tr>
<td>GIV- CONTROL (C)</td>
<td>-6.5</td>
<td>2.88</td>
<td>1.18</td>
</tr>
</tbody>
</table>

**INFERENTIAL STATISTICS** (for Difference of Means)

<table>
<thead>
<tr>
<th>GROUPS</th>
<th>GI</th>
<th>GII</th>
<th>GIII</th>
<th>GIV</th>
<th>GI</th>
<th>GIV</th>
<th>GI</th>
<th>GIV</th>
<th>GI</th>
<th>GIV</th>
<th>GI</th>
<th>GIV</th>
</tr>
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<tbody>
<tr>
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<td></td>
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<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

| r      | -.23| .85 | -.43 | -.02| -.32| .28 |
| t      | 1.8 | 7.65**| 0.35 | 5.49**| 6.43**| 9.18**|

The 't' ratio to be significant at .05 and .01 level of significance with df (N-1) 5 is 2.57* and 4.03** respectively.

The above table indicates the 't' ratio of difference in mean gain(2) (post test II and post test I) in TAB-0 of two groups taken in different combinations.
DIFFERENCE WITHIN EXPERIMENTAL GROUPS

The 't' ratio for difference of means in gain score(2) of Group I and Group II is 1.8, which is not significant. The null hypothesis, "There is no significant difference between the Summative model and Diode model on the gain in scores between post test II and post test I in respect of TAB-0", therefore, cannot be rejected. The result can be further stated that the difference between mean gain(2) score of Group I (24.17) and that of Group II (33.83) is not statistically significant.

The 't' ratio for difference of means in gain(2) score between Group II and Group III is 0.35, which is not significant. The null hypothesis, "There is no significant difference between the Additive model and Summative model on the gain in scores between post test II and post test I in respect of TAB-0", therefore, cannot be rejected. The result can be further stated that the difference between mean gain(2) score of Group II (33.83) and that of Group III (39.17) is not statistically significant. There is no significant difference between the mean gain(2) scores of Group I and Group II and those of Group II and Group III. The result can be further stated that micro-teaching practice followed by Diode model of integration and micro-teaching practice followed by Summative model have got nearly equal effect in developing teaching efficiency of the student teachers. Micro-teaching practice following by Summative model of integration exercise.
and micro-teaching practice followed by Additive model of integration exercise have got nearly equal effect in developing teaching efficiency of the student teachers.

The above table also highlights the 't' ratio between Group I and Group III is 7.65, which is significant at .01 level. The null hypothesis, "There is no significant difference between the Additive model and Diode model on the gain in scores between post test II and post test I in respect of TAB-0", therefore, stands rejected and the result can be further stated that significance of difference exists between mean gain(2) scores in TAB-0 of Group I and Group III. This shows that Group III mean score (39.17) is significantly higher than Group I mean score (24.17). The results, however, reveal that though there is no significant difference between Diode and Summative model, Summative and Additive model in influencing the teaching efficiency of the student teachers; on the other hand, Additive model has got significantly higher effect than the Diode model in influencing the teaching efficiency of the student teachers.

DIFFERENCE BETWEEN EXPERIMENTAL GROUP AND CONTROL GROUP

The 't' ratio between G-I, G-IV, G-II GIV and GIII G-IV in TAB-0 are 5.49, 6.43 and 9.18 respectively, which are highly significant at .01 level of significance. The null hypothesis, "There is no significant difference between each of the experimental groups and the control group on the gain in scores between post test II and post test I in
respect of TAB-QM, therefore, stands rejected and an alternative hypothesis can be further stated that there is significant difference between the G-I(24.17) mean gain(2) score and G-IV(-6.5) mean gain(2) score. Significant mean difference is found between the mean gain(2) score of G-II(33.83) and G-IV(-6.5) mean score. There exists significant difference between mean gain(2) score of G-III(39.17) and G-IV(-6.5) mean score. In other words, micro-teaching practice followed by Diode model of integration exercise, Summative model of exercise or Additive model of exercise shows significantly higher effect in developing the teaching efficiency of the student teacher than control group which does not have any practice of integration of skills after micro-teaching.

Thus, it can be concluded that micro-teaching practice followed by Diode model and Summative model do not show any significant difference between themselves. Similarly micro-teaching practice followed by Summative model and Additive models do not show any significant difference between themselves in influencing the teaching efficiency of the student teachers. Micro-teaching practice followed by Additive model shows significantly higher effect in influencing teaching efficiency of the student teachers than micro-teaching practice followed by Diode model of integration exercise. The results highlight the fact that micro-teaching practice followed by integration exercise through any of three models - Diode, Summative and Additive model of integration exercise, shows
significantly higher effect in developing the teaching efficiency of the student teachers than micro-teaching practice followed by vicarious integration.

3.3.4. **ANALYSIS AND INTERPRETATION OF MEAN GAIN(2) SCORE RESULTS (NON-PARAMETRIC TEST):**

**THE SUM OF RANK DIFFERENCE AMONG G-I, G-II, G-III AND G-IV IN MEAN GAIN(2) SCORE ON TAB-0.**

**TABLE 13**

**SHOWING SUM OF RANK DIFFERENCE IN MEAN GAIN(2) SCORE ON TAB-0**

<table>
<thead>
<tr>
<th>GROUPS</th>
<th>RANK</th>
<th>Z VALUE</th>
<th>LEVEL OF SIG.</th>
<th>PERCENTAGE OF CASES</th>
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</thead>
<tbody>
<tr>
<td>G-I</td>
<td>25.5</td>
<td>-2.16</td>
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<tr>
<td>G-II</td>
<td>52.5</td>
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<td></td>
<td></td>
</tr>
<tr>
<td>G-I</td>
<td>23.5</td>
<td>-2.48</td>
<td>.05</td>
<td>.66</td>
</tr>
<tr>
<td>G-III</td>
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<td></td>
</tr>
<tr>
<td>G-II</td>
<td>34.0</td>
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<td></td>
</tr>
<tr>
<td>G-III</td>
<td>44.0</td>
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<td>.8</td>
<td>N.S 21.19</td>
</tr>
<tr>
<td>G-I</td>
<td>57.0</td>
<td>2.88</td>
<td>.01</td>
<td>.2</td>
</tr>
<tr>
<td>G-IV</td>
<td>21.0</td>
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<td></td>
<td></td>
</tr>
<tr>
<td>G-II</td>
<td>57.0</td>
<td>2.88</td>
<td>.01</td>
<td>.2</td>
</tr>
<tr>
<td>G-IV</td>
<td>21.0</td>
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<td></td>
<td></td>
</tr>
<tr>
<td>G-III</td>
<td>57.0</td>
<td>2.88</td>
<td>.01</td>
<td>.2</td>
</tr>
<tr>
<td>G-IV</td>
<td>21.0</td>
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</tr>
</tbody>
</table>

( N.S = Not significant )
WITHIN EXPERIMENTAL GROUP RESULT

The above table shows the Z value of the mean gain(2) score of G-I, G-II, G-III and G-IV in TAB-0.

(i) From table 13 the result of Diode model and Summative model shows that 1.54% lies to the left and right of -2.16 \( \sigma \) of normal curve. The null hypothesis, "There is no significant difference between the Summative model and Diode model on the gain in scores between post test II and post test I in respect of TAB-0", therefore, stands rejected. With the present evidence we can state that the difference between G-I and G-II in mean gain(2) score is not significant at .01 level but significant at .05 level. Further interpretation of the result shows that micro-teaching practice followed by integration training through Summative model showed significant effect over micro-teaching practice followed by Diode model of integration exercise. This result, however, does not confer with that of 't' ratio. Therefore, we can accept the Z value result and can state that there is significant difference between Summative model and Diode model in developing teaching efficiency of the student teachers as observed by the observer.

(ii) The result of G-I and G-III shows that 66% lies to the left and right of 2.48 \( \sigma \) of normal curve. The null hypothesis, "There is no significant difference
between the Additive model and Diode model on the gain in scores between post test II and post test I in respect of TAB-0", therefore, stands rejected. With the present evidence we can state that there is significant difference in between the mean grain(2) score of Diode and Additive model. Further interpretation of the result, however, reveals that micro-teaching practice followed by Additive model of integration shows significant effect over micro-teaching practice followed by Diode model of integration exercise in developing teaching efficiency of the student teachers. The result using Z value, concurs with the result obtained using 't' ratio; and the result can be further stated that Additive model shows significantly higher effect over Diode model in developing teaching efficiency.

(iii) The result of G-II and G-III mean gain(2) score shows that 21.19% lie to the left and right of .80 of normal curve. The null hypothesis, "There is no significant difference between the Additive model and Summative model on the gain in scores between post test II and post test I in respect of TAB-0", cannot be rejected. On the present evidence we can state that there is no significance of difference between G-II and G-III mean gain score(2). Further interpretation of the result shows that micro-teaching practice followed by Summative model of integration and micro-teaching practice followed by Additive model of integration have got similar effect
in developing teaching efficiency of the student teachers.
The result using Z value also concurs with the result
using 't' ratio.

EXPERIMENTAL AND CONTROL GROUP RESULTS

The results of G-I GIV, G-II G-IV, G-III G-IV in
mean gain(2) scores shows that .25% lies to the left and .
right of 2.88σ of normal curve. The null hypothesis,
"There is no significant difference between each of the
experimental groups and the control group on the gain in
scores between post test II and post test I in respect of
TAB-0", stands rejected. On the present evidence we can
state that there is significance of difference between G-I
and G-IV, between G-II and G-IV and between G-III and G-IV
in mean gain(2) scores. Further interpretation of the result,
however, shows that significant difference in mean achievement
score is there between Diode model of integration and control
group. Significant difference of mean achievement is there
in between Summative model of integration and control group.
Significant difference of mean achievement is there between
Additive model of integration and control group.

The Z results, also concur with the 't' ratio.
Therefore, the results can be further interpreted, that
micro-teaching practice followed by Diode model of integration
exercise shows significant effect in developing teaching
efficiency of the student teachers compared to micro-teaching
practice followed by vicarious integration. Micro-teaching practice followed by Summative model of integration exercise shows significant effect in developing teaching efficiency of the student teachers compared to micro-teaching practice followed by vicarious integration. Micro-teaching practice followed by Additive model of integration shows significant effect in developing teaching efficiency of the student teachers compared to micro-teaching practice followed by vicarious integration. From the results it can be concluded that micro-teaching practice followed by integration exercises show significant effect in developing teaching efficiency of the student teachers compared to micro-teaching practice followed by vicarious integration.

3.3.5. ANALYSIS AND INTERPRETATION OF MEAN GAIN(3) SCORES
RESULTS (PARAMETRIC TEST):

The gain(3) scores, i.e., difference between post test II and pretest scores for different groups were obtained and significance of difference of means tested. The relevant statistics are presented below.

THE SIGNIFICANCE OF DIFFERENCE AMONG THE MEAN GAIN(3) SCORES OF G-I, G-II, G-III AND G-IV IN TEACHING ASSESSMENT BATTERY 0

TABLE 14
SHOWING THE SIGNIFICANT DIFFERENCE IN MEAN GAIN(3) SCORES OF TEACHING ASSESSMENT BATTERY 0
SAMPLE STATISTICS

<table>
<thead>
<tr>
<th>GROUP</th>
<th>MEAN GAIN(3) SCORE</th>
<th>SD</th>
<th>SE</th>
</tr>
</thead>
<tbody>
<tr>
<td>G-I DIODE (D)</td>
<td>75.33</td>
<td>11.99</td>
<td>4.9</td>
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<tr>
<td>G-II SUMMATIVE(S)</td>
<td>78.83</td>
<td>14.15</td>
<td>5.78</td>
</tr>
<tr>
<td>G-III ADDITIVE(A)</td>
<td>80.5</td>
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<td>G-IV CONTROL (C)</td>
<td>33.83</td>
<td>15.17</td>
<td>6.19</td>
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INFERENTIAL STATISTICS (for difference of Means)

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<th>GI</th>
<th>GIII</th>
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<th>GIV</th>
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<th>GI</th>
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</thead>
<tbody>
<tr>
<td>DG</td>
<td>9.5</td>
<td>6.29</td>
<td>6.91</td>
<td>8.49</td>
<td>5.43</td>
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</tr>
<tr>
<td>r</td>
<td>.58</td>
<td>-.05</td>
<td>.16</td>
<td>-.16</td>
<td>.59</td>
<td>.51</td>
<td></td>
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<td></td>
<td></td>
</tr>
<tr>
<td>t</td>
<td>.37</td>
<td>.82</td>
<td>.24</td>
<td>4.89**</td>
<td>8.29**</td>
<td>7.58**</td>
<td></td>
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</tr>
</tbody>
</table>

The 't' ratio to be significant at .05 and .01 level of significance with df (N-1) 5 is 2.57 and 4.03 respectively.

WITHIN EXPERIMENTAL GROUPS RESULT

The above table shows the TAB-0 mean gain(3) score results. The 't' value for groups GIGII, GIGIII, GIIGIII are .37, .82 and .24 respectively, which are not significant. The null hypothesis, "There is no significant difference between each of the experimental group and control group on the gain in scores between post test II and pretest in respect of TAB-0", therefore, cannot be rejected. This shows
that there does not exist significant difference between
the mean gain(3) score of GI (75.33) and GII (78.83), GI(75.33)
and GIII(80.5) and between GII(78.83) and GII(80.5). The
above analysis of results indicates that there does not exist
significant difference among the mean gain(3) scores of
experimental groups among themselves. Further interpretation
of results shows that micro-teaching practice followed by
Diode model and the micro-teaching practice followed by
Summative model and that following by Additive model have
got similar effect in developing teaching efficiency.

The overall analysis within the experimental groups
result shows that micro-teaching practice followed by integra-
tion exercises do not show any significant difference among
themselves and all these models have got similar effect in
developing teaching efficiency among the student teachers.

BETWEEN EXPERIMENTAL GROUPS AND CONTROL GROUP RESULT

The 't' ratio between GI, GIV, GII, GIV, GIIIGIV of
TAB-0 mean gain(3) scores are 4.89, 8.29 and 7.58 respectively,
which are significant at .01 level of significance. The null
hypothesis,"There is no significant difference between each
of the experimental group and control group on the gain in
scores between post test II and pretest in respect of TAB-0",
therefore, stand rejected. The result can be further stated
that true mean differences exist between the mean
The above analysis reveals that true significant differences exist between experimental groups and the control group as viewed by TAB-0 by the observer. Further analysis indicates that micro-teaching practice followed by integration through Diode, Summative and Additive model show significantly higher effect in developing the teaching efficiency among the student teachers compared to micro-teaching practice followed by vicarious integration. Finally, the result can be stated that micro-teaching followed by integration exercises have provided a broader theoretical base to the experimental subjects which, in turn, might have caused efficiency in teaching.

3.3.6. ANALYSIS AND INTERPRETATION OF MEAN GAIN(3) SCORE

RESULTS (NON-PARAMETRIC TEST):

THE SUM OF RANK DIFFERENCES AMONG G-I, G-II, G-III AND G-IV IN MEAN GAIN(3) SCORE ON TEACHING ASSESSMENT BATTERY-0

<table>
<thead>
<tr>
<th>TABLE 15</th>
</tr>
</thead>
<tbody>
<tr>
<td>SHOWING SUM OF RANK DIFFERENCE IN MEAN GAIN(3) SCORE ON TAB-0</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>GROUPS</th>
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<td>57</td>
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<td>57</td>
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<tr>
<td>( z )</td>
<td>(-.8)</td>
<td>(-1.44)</td>
<td>(-.18)</td>
<td>(2.88)</td>
<td>(2.88)</td>
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<td>LEVEL OF SIG.</td>
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<td>N.S</td>
<td>N.S</td>
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<td>.01</td>
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</tr>
</tbody>
</table>

( N.S = Not Significant)
WITHIN EXPERIMENTAL GROUPS RESULTS

The Z value for difference of mean gain(3) scores of Diode (D) and Summative (S) groups by Sum of Ranks Differences is -.8c. This is not significant even at .05 level, so the null hypothesis, "There is no significant difference between each of the experimental group and control group on the gain in scores between post test II and pretest in respect of TAB-0", cannot be rejected. This reveals that there is no significant difference between Diode model and Summative model. The Z value for mean gain(3) scores of Additive model (A) and Diode model (D) is -1.44c. This is not significant at .05 level. The null hypothesis, "There is no significant difference between each of the experimental group and control group on the gain in scores between post test II and pretest in respect of TAB-0", therefore, cannot be rejected. This reveals that there is no significant difference between Additive model and Diode model. The Z value for mean gain(3) scores of Summative and Additive models is .08c which is not significant. The null hypothesis, "There is no significant difference between each of the experimental group and control group on the gain in scores between post test II and pretest in respect of TAB-0", cannot be rejected.

Further interpretation of result reveals that micro-teaching practice followed by Diode and micro-teaching practice followed by Summative model do not show significant difference in developing teaching efficiency. Micro-teaching practice
followed by Diode model does not show any significant difference over Additive model of integration in developing teaching efficiency. Micro-teaching practice followed by Summative model of integration exercise does not show any significant difference over Additive model rather they show similar effect in developing teaching efficiency among the student teachers.

The 't' test results are confirmed by Z test. Therefore, it is evident that the experimental groups do not vary among themselves in developing teaching efficiency.

BETWEEN EXPERIMENTAL GROUPS AND CONTROL GROUP RESULT

The result between Diode model and control group, Summative model and control group, Additive model and control group show that .2% of the normal curve lies to the left and right of 2.88%. In all the cases, the P is less than .01 and the null hypothesis "There is no significant difference between each of the experimental group and control group on the gain in scores between post test II and pretest in respect of TAB-O", therefore, must be rejected. On the present evidence we can state that there is significant difference between Diode model and control group, Summative model and control group, Additive model and control group. The result can be further stated that all the experimental variation, i.e., integration exercise through Diode, Summative and Additive model, have shown significant effect in developing teaching efficiency against control group.
FIGURE 2
SHOWING MEAN SCORES IN PRETEST, POST-TEST I POST-TEST II

GROUP I
GROUP II
GROUP III
GROUP IV

PRETEST
POST-TEST I
POST-TEST II
Figure 3: Showing mean gain (1) mean gain (2) and mean gain (3) scores in Tab-0 of all the groups.
The result, however, confirms with the 't' test results. Therefore, the stated result may be concluded that the micro-teaching practice followed by integration exercises through Diode, Summative and Additive model show significant effect over control group who underwent vicarious integration.

3.4. GRAPHICAL REPRESENTATION OF SCORES ON TAB-0:

The mean scores on TAB-0 for the four groups are graphically shown in Fig.2. It is seen from the graph that there is marked increase in mean score on post test I over pretest for all the groups. There is marked increase in mean score on post test II over post test I for the three experimental groups but no such increase for the control group (Group IV).

The mean gain score are illustrated graphically in Fig.3. It is seen that mean gain(1) scores are almost equally high for all groups including control group. This is natural, for upto post test I, all the groups undergo similar treatment of micro-teaching.

The mean gain(2) scores of the three experimental groups are high but that of control group low. This showed that the integration of skills treatment given to all the three experimental group yielded better results in teaching efficiency than control group. Further the Additive group (G-III) appears to have obtained highest gain(2) score and is apparently the most effective treatment in integration.
of skills and Diode group (G-I) the least effective.

In case of gain(3) score which is the difference between post test II and pretest, the gain is almost equally high in case of the three experimental groups and much lower in case of control group. This further shows that all the three modes of integration of skills have yielded good results.

The findings of the present study that micro-teaching enhances the teaching efficiency of the student teachers is supported by study conducted by Jangira, Singh and Matto (1979).

The Summative model of integration affects significantly the teaching efficiency of the student teachers is supported by the study conducted by Gita Singh (1982).