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CHAPTER - V

ANALYSIS AND INTERPRETATION OF DATA

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## CHAPTER V

### ANALYSIS AND INTERPRETATION OF DATA

#### Introduction:-

In the chapter IV, research procedure, measurement of reliability and validity, calculation of norms, tools used etc have been explained.

The present chapter belongs to five sections.

Section I Analyses the selection of topics from the syllabus of Educational technology.

Section II is concerned with the returns of evaluation scales i.e questionnaires received from expert teachers.

Section III explains method of item analysis and final fixation of items from pilot study.

Section IV pertains to the testing of reliability of an interest inventory for Educational technology.

Section V is related to hypotheses testing and calculation of norms.

#### Section I

##### Selection of the Units from Syllabus of Educational Technology for B.Ed course

When the syllabus was analysed, the following aspects of the units were observed. (see appendix A-containing syllabus of Educational technology for B.Ed level).

1. The first unit namely Educational Technology is

theoretical. The major activities from this unit are included in other units also.

2. In the unit 'communication', the theoretical part is more and the process of communication can be possible form various media and instructional materials.
3. There is no question about the acquaintance of system approach to newly admitted students.
4. "The Resources of an instructional system" is a very important and useful unit which includes hardwares and softwares. Student teachers are familiar with most of them, so that they can decide what they like and dislike between the hardwares and softwares.
5. The unit 'Use of different media' deals with how to teach by using proper media for proper unit. More effective the use of media, more effective will be the teaching of student teacher.
6. In the unit "Management of physical resources" the student teachers are expected to be familiar about care, maintainance of hardwares, softwares, layout of audio visual room. They are familiar with various audiovisual aids like television, video, videocassette recorder etc.
7. "Innovations in Educational technology" leads the student teachers towards the education in twenty first century. Hence to find out approach towards computer, multimedia packages,

etc. the above unit seems to be essential.

8&9 The unit Programmed learning needs theoretical basis to understand it. So it was neglected. Unit no. 9 is about Educational technology teacher, the activities included in inventory are related to good technology teacher. So these two units were neglected.

After taking all above points into consideration, the another important question was of time. In the limited time it was not possible to construct an inventory covering the whole syllabus. Because it would lead to increase the statements, the testing of statements will be lengthy and the main obstacle is that the student teachers should be available in particular period.

The student teachers which admitted to B.Ed course are graduates from different faculties so item construction should be done with proper language considering most of the familiar concepts. Taking this main thing into account, from the nine topics most useful four topics have been chosen.

So from the total units, The sources of instructional system, Use of different media, Innovation in Educational technology, Management of physical resources were selected for construction of interest inventory for Educational technology.

## Section II

### Returns of Evaluation Scales

Evaluation scale mentioned in previous chapter III, was given to six expert teachers along with tentative interest inventory in Educational Technology containing one hundred sixty items.(see appendix B for questions included in evaluation scale and appendix C for names of expert teachers).

The scales filled by respondent experts were collected and analysed. The percentage of statements according to experts was taken into account and the inventory was specified by taking suggestions of the experts into consideration. The tentative tabulation is given in Table I.

TABLE I  
ANALYSIS OF THE STATEMENTS FROM EVALUATION SCALE BY  
EXPERT TEACHERS

Sr. No.	Statement	Positive Percentage of expert teachers
1)	Fulfillment of statements	83.33
2)	Syllabus oriented statements	100.00
2)	Interest orienting statements	66.66
4)	Language of the statements	50.00
5)	Construction of the statements	66.66
6)	Distribution of activity orienting statement among five specified areas.	66.66
7)	Accommodation of English words and new concepts in inventory	83.33
8)	Validity of the statements (before correction)	66.66
9)	General view about the inventory	66.66 (Good) 33.40 (Satisfactory)

Explanation :-

1) Number of Statements :-

According to expert teachers 83.33% expert teachers said that the number of statements were as per requirement but remaining 16.7% said that number should be increased. So the most of the statements were taken into account by avoiding repetition.

2) Syllabus orienting statements :-

As every expert teacher was given a copy of syllabus and all the activities which were stated in terms of items related to syllabus, there was no question of complexity or doubt. Hence six out of six expert teachers agreed on this issue. (100%)

3) Interest orienting statements :-

As it is interest inventory the activity or items included were based on interest in Educational Technology syllabus. But 33.4% of the expert teachers suggested to rearrange activities of tickmarked statements and to check them.

4) Construction of statements :-

Four out of six expert teachers (66.6%) had no objection about construction but two out of them (33.4%) tick marked ten statements in the inventory containing 160 items. So tick marked statements were reconstructed and shown to expert teachers again.

5) Language of statements :-

The language used was very simple as the student teachers were graduates of various faculties. According to expert teachers 50% of the statements were clear in language but the remaining 50% need rearrangement. So the remaining tick marked statements were reorganised with the help of Marathi and Educational Technology expert teachers.

6) Distribution of statements into selected areas :

Four out of six expert teachers suggested that (66.6%) these were twenty five statements which directed towards more than one field. For example 'To teach with the help of telephone' - from this statement it firstly included under cognitive interest as it is knowledge giving activity. But with this there is also application of instrument telephone and skill of student teacher to teach on telephone so this statement should be included in three respective areas. Like this, the remaining statements having relation to more than one were included in concerned areas. The percentage of statements per particular area is shown in Pie-diagram in chapter IV.

\* Consideration of various new concepts in inventory :-

Expert teachers firstly objected some English words. This objection was overruled by translating some of them into Marathi. But some English words accepted in day to day speech, such as tape recorder, radio, etc. were retained as per expert teacher's instruction. The question of some new concepts from Educational technology was solved by giving proper and correct explanation in short; in inventory booklet as per opinion of expert teachers.

\* Validity of statements :-

According expert teachers majority of the statements were valid. But the tick marked statements



by the expert teachers were reconstructed and ten repeated statements were deleted. thus total one hundred fifty statements remained in the final form. Four out of six i.e. 66.66% expert teachers had given good remarks about inventory remaining were only satisfied.

### Section III

#### TRY OUT (ITEM ANALYSIS)

The tryout was given to thirty student teachers. The cyclostyled tentative interest inventory including one hundred and fifty statements was given to student teachers with answer sheets. The required time limit was found to be about 35 minutes. Answersheets of the student teachers were checked with the help of scoring keys . The list of scores (according to various areas) were prepared separately . The student teachers were arranged according to merit in descending order. Twenty seven percent of upper answersheets (having high score) and twenty seven percent teachers of lowest scoring answer sheets were taken into account. Percentage of correct responses from upper and lower group for each statement were calculated by tabulating no. of responses. Using Flanagan's table validity index for each statement was determined (see appendix D for Flanagan's table).

The views of student teachers on the space provided for suggestion from answersheets were combined together. i.e. about language, understanding of statements, etc. some of them were unofficially interviewed and statements which were difficult in language were improved.

The statements having validity index 0.13 to onwards were taken for final draft with proper

correction and remaining statements having zero and negative validity index were deleted.

The statement numbers, their percentage in upper and lower group and validity index is given in Table II.

TABLE II  
VALIDITY INDICES OF STATEMENTS DURING PILOT STUDY

Statement No.	Percentage of correct answers in upper group (27%)	Percentage of correct ans. in lower group (27%)	Validity index	Rejected or accepted
1	62	38	0.26	A
2	62	38	0.26	A
3	62	25	0.38	A
4	62	13	0.52	A
5	62	25	0.38	A
6	62	38	0.26	A
7	50	13	0.44	A
8	50	13	0.44	A
9	75	25	0.50	A
10	62	25	0.38	A
11	62	62	0	R
12	62	13	0.52	A
13	62	38	0.26	A
14	62	38	0.26	A
15	75	38	0.38	A
16	50	50	0	R
17	62	25	0.38	A
18	62	25	0.38	A
19	62	38	0.26	A
20	75	25	0.50	A
21	75	13	0.64	A

Statement No.	Percentage of correct answers in upper group	Percentage of correct ans. in lower group	Validity index	Rejected or accepted
22	25	62	-0.38	R
23	62	62	0	R
24	62	38	0.26	A
25	62	13	0.52	A
26	62	38	0.26	A
27	38	38	0	R
28	88	38	0.54	A
29	62	13	0.52	A
30	62	38	0.26	A
31	62	13	0.52	A
32	13	13	0	R
33	75	25	0.50	A
34	50	13	0.44	A
35	62	25	6.38	A
36	50	13	0.44	A
37	50	37	0.14	A
38	38	13	0.32	A
39	26	13	0.18	A
40	62	25	0.38	A
41	62	13	0.52	A
42	50	13	0.44	A
43	50	25	0.25	A
44	62	25	0.38	A

Statement No.	Percentage of correct answers in upper group	Percentage of correct ans. in lower group	Validity index	Rejected or accepted
45	50	50	0	R
46	62	38	0.26	A
47	62	13	0.52	A
48	75	25	0.50	A
49	38	13	0.32	A
50	62	13	0.52	A
51	38	13	0.32	A
52	50	13	0.44	A
53	13	13	0	R
54	38	62	-0.26	R
55	75	25	0.50	A
56	62	13	0.52	A
57	62	38	0.26	A
58	50	13	0.44	A
59	50	25	0.25	A
60	88	88	0	R
61	62	38	0.26	A
62	62	38	0.26	A
63	26	13	0.18	A
64	62	13	0.52	A
65	38	13	0.32	A
66	75	13	0.64	A
67	50	25	0.25	A
68	75	38	0.38	A

Statement No.	Percentage of correct answers in upper group	Percentage of correct ans. in lower group	Validity index	Rejected or accepted
69	62	38	0.26	A
70	26	13	0.18	A
71	26	13	0.18	A
72	38	13	0.32	A
73	62	50	0.13	A
74	50	50	0	R
75	62	38	0.26	A
76	26	13	0.18	A
77	62	25	0.38	A
78	62	13	0.52	A
79	25	50	-0.25	R
80	26	13	0.18	A
81	62	38	0.26	A
82	38	26	0.14	A
83	13	13	0	R
84	62	38	0.26	A
85	38	38	0	R
86	62	13	0.52	A
87	50	50	0	R
88	38	13	0.32	A
89	62	62	0	R
90	62	38	0.26	A
91	26	13	0.18	A

Statement No.	Percentage of correct answers in upper group	Percentage of correct ans. in lower group	Validity index	Rejected or accepted
92	50	25	0.25	A
93	50	25	0.25	A
94	26	26	0	R
95	26	13	0.18	A
96	50	25	0.25	A
97	75	38	0.38	A
98	62	62	0	R
99	62	38	0.26	A
100	75	38	0.38	A
101	75	13	0.64	A
102	50	13	0.44	A
103	50	13	0.44	A
104	62	62	0	R
105	75	75	0	R
106	75	13	0.62	A
107	62	38	0.26	A
108	38	26	0.14	A
109	26	13	0.18	A
110	62	13	0.52	A
111	50	13	0.44	A
112	62	25	0.38	A
113	62	13	0.52	A
114	75	25	0.50	A



Statement No.	Percentage of correct answers in upper group	Percentage of correct ans. in lower group	Validity index	Rejected or accepted
115	25	25	0	R
116	62	25	0.38	A
117	62	13	0.52	A
118	75	75	0	R
119	62	25	0.38	A
120	38	13	0.32	A
121	38	13	0.32	A
122	50	25	0.25	A
123	26	13	0.18	A
124	26	13	0.18	A
125	62	50	0.13	A
126	75	38	0.38	A
127	38	38	0	R
128	75	25	0.50	A
129	62	13	0.52	A
130	50	25	0.25	A
131	75	75	0	R
132	26	13	0.18	A
133	38	13	0.32	A
134	75	13	0.64	A
135	75	13	0.64	A
136	50	62	-0.13	R
137	26	13	0.18	A
138	62	62	0	R

Statement No.	Percentage of correct answers in upper group	Percentage of correct ans. in lower group	Validity index	Rejected or accepted
139	62	38	0.26	A
140	38	13	0.32	A
141	13	13	0	R
142	26	26	0	R
143	13	26	-0.18	R
144	62	13	0.52	A
145	26	13	0.18	A
146	62	25	0.38	A
147	62	13	0.52	A
148	13	13	0	R
149	75	25	0.50	A
150	50	13	0.44	A

N.B. R = Indicates rejected statements  
A = Indicates accepted statements

Section IVTesting of Reliability

After selecting the items from tryout and opinions of experts, the inventory was reconstructed and administered to one hundred thirty five student teachers from Azad College of Education twice after the period of forty five days. For each field reliability coefficients were calculated. The coefficients of correlation were calculated by using Pearson's product-moment formula.

$$r = \frac{\sum xy / N - C_x C_y}{\sigma_x \sigma_y}$$

The terms involved in the formula are explained in chapter no. IV.

The tables for calculating correlation coefficients for each field of interest inventory are enclosed in appendix ( E to J ) with score lists of student teachers. The reliability coefficients found in each field are as below -

TABLE III  
RELIABILITY COEFFICIENTS OF FIVE AREAS OF  
INTEREST INVENTORY

Sr.No.	Field of interest inventory	Reliability Coefficient
1.	Cognitive Interest	0.825
2.	Creative Interest	0.807
3.	Applied Interest	1.001
4.	Interest related to Management	0.8408
5.	Skill based Interest	0.928

C.P.Kadam and B.A.Choudhari (1992)

in their book, "Shaikhshanik Mulyamapana" explained that, the related values of meaning of coefficient of correlation for personality inventories should be 0.80 or above. Criterion related validity indicates the effectiveness of test in predicting an individual's behaviour in specified situation. Present inventory indicates the effectiveness in predicting in individual's interest in five different areas namely cognitive, creative, applied, interest related to management and skill based interest area.

So from table III it can be observed that all the reliability coefficient<sup>s</sup> found to be higher. Hence it can be said that the inventory is highly reliable.

Testing of Validity :-

Content and face validity has been tested by the views of experts while constructing the items.

During item analysis the validity index was calculated and the items were selected on the basis of Flanagan's table given in the appendix D.

Section VTESTING OF HYPOTHESES AND CALCULATION OF NORMS

The hypotheses stated by the researcher were tested by calculating means for each sample i.e. for male student teachers, female student teachers, rural student teachers, urban student teachers, and lastly student teachers with E.T. and student teachers without E.T.

Firstly the total scores were taken into account. The means of each sample from above were calculated by the formula.

$$\text{Mean (M)} = \frac{\sum f X_m}{N}$$

One calculation for information is given in appendix 11. Thus the means for total score and means for score each area of inventory were calculated and tabulated in respective tables.

HYPOTHESIS 1 (H<sub>1</sub>)

There is no significant difference between interest of female student teachers and male student teachers in Educational technology.

From Table IV it can be seen that mean for female student teachers is greater than male student teachers. Graphically it is shown in Fig. V.1

The calculation for t value was done by taking following data into account.

TABLE IV  
MEANS AND STANDARD DEVIATIONS FOR MALE AND FEMALE  
STUDENT TEACHERS (TOTAL SCORES)

Group	Number of student teachers	Mean	(Standard) deviations	D=Difference between Means of Female and Male student teachers
Male				
Student	74	122.22	17.24	
Teachers				6.14
Female				
Student	61	128.36	13.174	
Teachers				

One calculation for information (Standard deviation) is given in appendix L.

The  $\sigma_D$  value was calculated by formula

$$\sigma_D = \sqrt{\frac{\sigma_M^2}{N_1} + \frac{\sigma_F^2}{N_2}}$$

Where  $\sigma_M$  = Standard deviation for male student teachers.

$\sigma_F$  = Standard deviation for female student teachers.

$$\sigma_D = \frac{(17.24)^2}{74} + \frac{(13.174)^2}{61}$$

$$\sigma_D = \frac{294.21}{74} + \frac{173.45}{61}$$

$$\sigma_D = 3.9748 + 2.849$$

$$\sigma_D = 6.8238$$

$$\sigma_D = 2.619$$

Calculated value of  $\sigma_D = 2.619$

$$t \text{ value} = \frac{D}{\sigma_D} = \frac{6.14}{2.619} = 2.344$$

The calculated t value is 2.344.

For df 133 [(61-1) (74-1)] and from table D the values of significance at 0.05 and 0.01 levels are

0.05 level - 1.98

0.01 level - 2.62

Calculated value = 2.344

Observation :- The t value seems to be significant at 0.05 level only.



Finding :- It can be said that there was significant difference between the interests of female student teachers and male student teachers in Educational technology. It meant that the hypothesis stated by the researcher was rejected.

With above data the difference between the total scores of both groups can be detected. So it was necessary to test the same hypothesis at each field of interest, so that the difference in each area will be clear.

The Means calculated for each area are given in respective tables.

SCALE:

ON X-AXIS, 1 CM = 10 SCORES

ON Y-AXIS, 1 CM = 1 STUDENT TEACHER

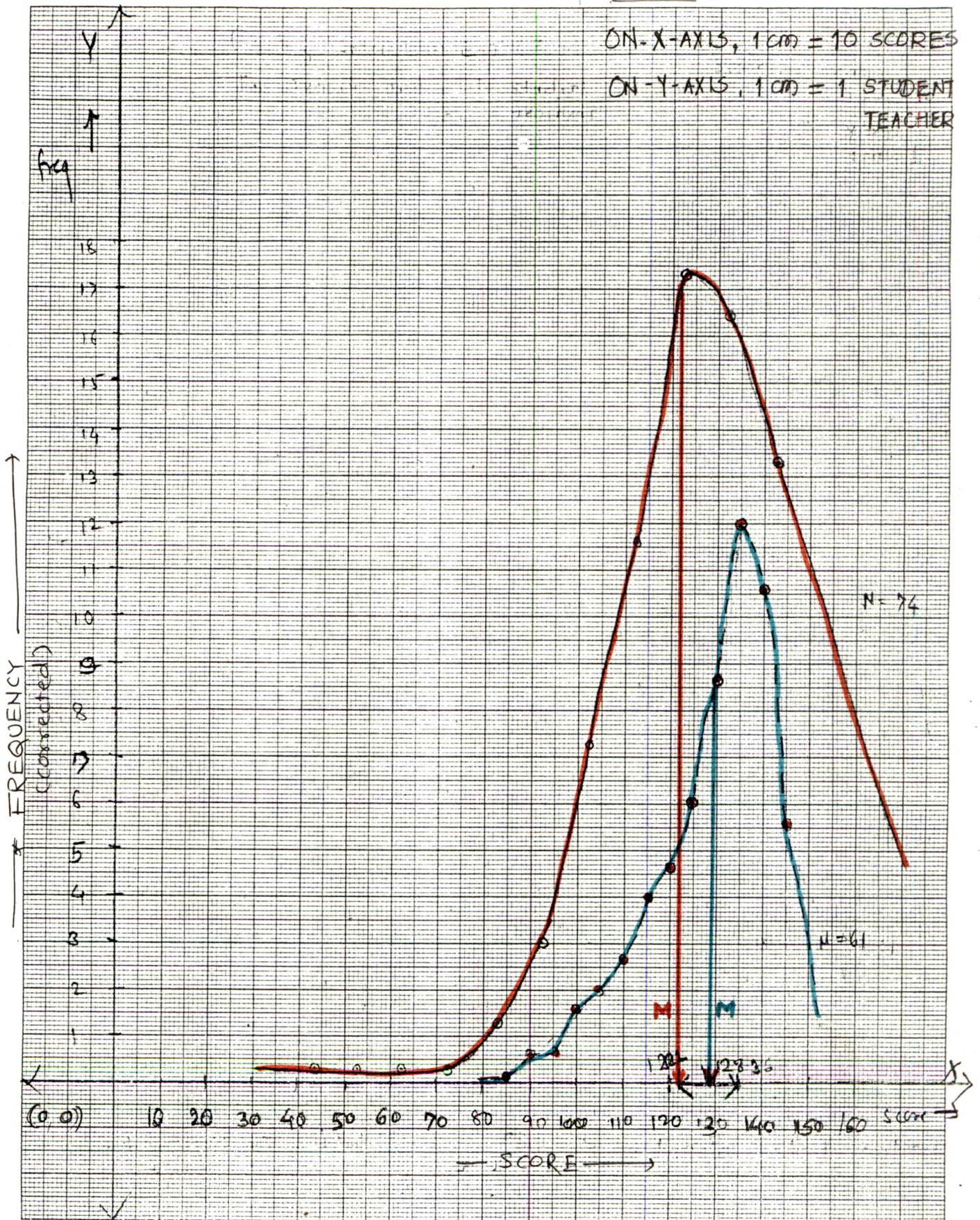


Fig V-1 GRAPH (1): TOTAL SCORES OF MALE AND FEMALE STUDENT TEACHERS

Fig. V.1

GRAPH OF TOTAL SCORES OF MALE AND FEMALE STUDENT  
TEACHERS

OBSERVATIONS AND INTERPRETATION :-

1. Curves for scores of female and male student teachers are normal having slight skewness at the left (for male student teachers).
2. The calculated means for the total scores of female and male student teachers are 128.36 and 122 respectively. (They are shown in graph)
3. The scores of male student teachers are spread from 44 to 143 and that of female student teachers are spread from 85 to 145. The achieved scores of female candidates are closer to mean. Hence curve is peaked. But on the other hand the scores achieved by male student teachers are spread so widely.

Amongst, the groups, the female group seems more homogeneous as compared with the male group.

Hypothesis H<sub>1.1</sub>

There is no significant difference in interest between female student teachers and male student teachers in cognitive interest area.

For calculation for detecting whether there was significant difference between both groups the means were subjected to t value by calculating standard deviation.

TABLE IV  
MEANS AND STANDARD DEVIATIONS IN COGNITIVE INTEREST  
AREA FOR MALE AND FEMALE STUDENT TEACHERS

<u>Group</u>	<u>No. of student teachers</u>	<u>Mean</u>	<u>Standard deviation</u>	<u>Difference between means D</u>
Female Student teachers	61 (N <sub>1</sub> )	31.024	2.779	1.324
Male student teachers	74 (N <sub>2</sub> )	29.70	3.7262	

After calculation; the value of  $\sigma_D$  was found to be 0.55.

$$\therefore t \text{ value} = 1324 / 0.55 = 2.41$$

For df 133 [(61- 1) (74 - 1)] the values at 0.05 and 0.01 levels of significance are

0.05 level = 1.98

0.01 level = 2.62

Calculated value = 2.41

Observation :- The calculated t value seems to be significant at 0.05 level.

Findings :- It can be said that there was significant difference between the interests of female student teachers and male student teachers in cognitive interest area. It meant that hypothesis stated by the researcher was rejected.

The graphical representation of this area showing significant difference between both groups is shown in Fig. V.2

SCALE:

ON X-AXIS, 2 CM = 5 SCORES

ON Y-AXIS, 2 CM = 4 STUDENT TEACHERS

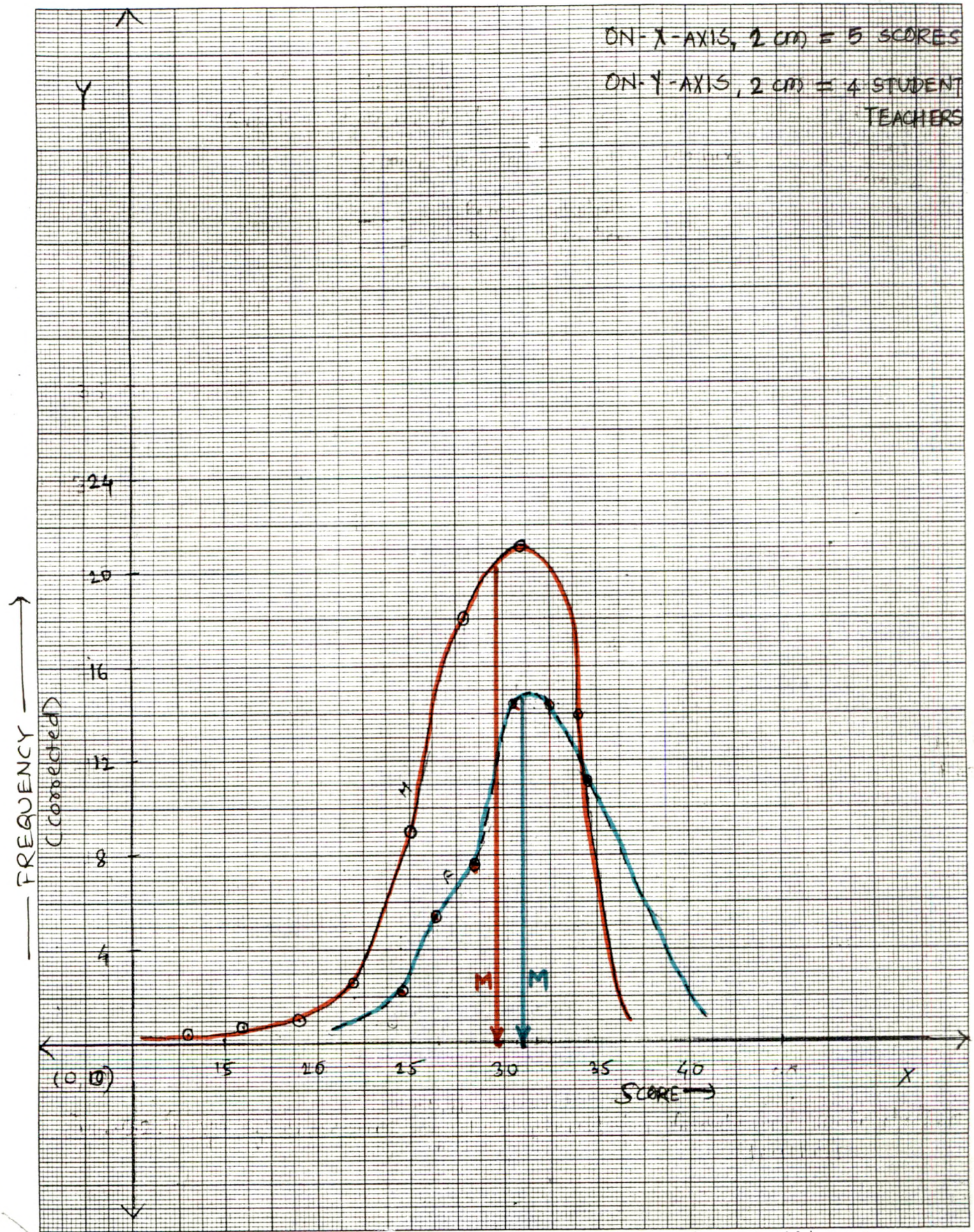


Fig V-2 GRAPH (2): SCORES OF MALE AND FEMALE STUDENT TEACHERS IN COGNITIVE INTEREST AREA

Fig. V.2

GRAPH OF SCORES OF MALE AND FEMALE STUDENT TEACHERS  
IN COGNITIVE INTEREST AREA

OBSERVATIONS AND INTERPRETATION FROM THE GRAPH

1. Both the curves i.e curve of female student teachers and male student teachers at cognitive interest area are peaked.
2. The calculated means of the distribution of male and female student teachers at cognitive interest area are 29.70 and 31.024 respectively.
3. The scores of male student teachers are spread from 12.5 to 34 and that of the female student teachers are from 24 to 35 respectively. Achievement scores of female student teachers (in cognitive interest area) are closer to mean. On the other hand the scores achieved by male student teachers are spread slightly widely than female student teachers. It clearly indicates the difference between two groups.

Amongst the groups the female group seems to be more homogeneous as compared with the male having greater interest (higher scores).

Hypothesis 1.2 [H<sub>1.2</sub>]

There is no significant difference in interest between female student teachers and male student teachers in creative interest area.

The data required for determination of  $\sigma_D$  value is given in table VI.

TABLE VI  
MEANS AND STANDARD DEVIATIONS IN CREATIVE INTEREST AREA  
FOR FEMALE AND MALE STUDENT TEACHERS

Group	No. of student teachers	Mean	Standard deviations	Difference between Means = D
Female student teachers	61 (N <sub>1</sub> )	17.87	2.1741	2.13
Male student teachers	74 (N <sub>2</sub> )	15.74	2.86	

From data given in Table VI the  $\sigma_D$  value calculated was 0.43.

$$\text{Hence } t \text{ value} = \frac{2.13}{0.43} = 4.953$$

For df 133 the values at 0.05 and 0.01 levels of significance, from Table D are



0.05 level = 1.98

Calculated t value = 4.953

0.01 level = 2.62

Observation :- The calculated t value was significant at 0.05 as well as 0.01 levels of significance.

Finding :- It can be concluded that there was significant difference between the interests of the female and male student teachers in creative interest area of inventory. It meant that the hypothesis  $H_{1.2}$  stated by the researcher was rejected.

The graphical representation of for creative interest area is shown in Fig.V.3.

Fig. V.2

GRAPH OF SCORES OF MALE AND FEMALE STUDENT TEACHERS  
IN COGNITIVE INTEREST AREA

OBSERVATIONS AND INTERPRETATION FROM THE GRAPH

1. Both the curves i.e curve of female student teachers and male student teachers at cognitive interest area are peaked.
2. The calculated means of the distribution of male and female student teachers at cognitive interest area are 29.70 and 31.024 respectively.
3. The scores of male student teachers are spread from 12.5 to 34 and that of the female student teachers are from 24 to 35 respectively. Achievement scores of female student teachers (in cognitive interest area) are closer to mean. On the other hand the scores achieved by male student teachers are spread slight widely than female student teachers. It clearly indicates the difference between two groups.

Amongst the groups the female group seems to be more homogeneous as compared with the male having greater interest (higher scores).

Hypothesis 1.2 [ $H_{1.2}$ ]

There is no significant difference in interest between female student teachers and male student teachers in creative interest area.

The data required for determination of  $\sigma_D$  value is given in table VI.

TABLE VI  
MEANS AND STANDARD DEVIATIONS IN CREATIVE INTEREST AREA  
FOR FEMALE AND MALE STUDENT TEACHERS

Group	No. of student teachers	Mean	Standard deviations	Difference between Means = D
Female student teachers	61 ( $N_1$ )	17.87	2.1741	2.13
Male student teachers	74 ( $N_2$ )	15.74	2.86	

From data given in Table VI the  $\sigma_D$  value calculated was 0.43.

$$\text{Hence } t \text{ value} = \frac{2.13}{0.43} = 4.953$$

For df 133 the values at 0.05 and 0.01 levels of significance, from Table D are

0.05 level = 1.98

Calculated t value = 4.953

0.01 level = 2.62

Observation :- The calculated t value was significant at 0.05 as well as 0.01 levels of significance.

Finding :- It can be concluded that there was significant difference between the interests of the female and male student teachers in creative interest area of inventory. It meant that the hypothesis  $H_{1.2}$  stated by the researcher was rejected.

The graphical representation of for creative interest area is shown in Fig.V.3.

SCALE:

ON - X - AXIS, 1 cm = 1 SCORE  
 ON - Y - AXIS, 2 cm = 3 STUDENT TEACHERS

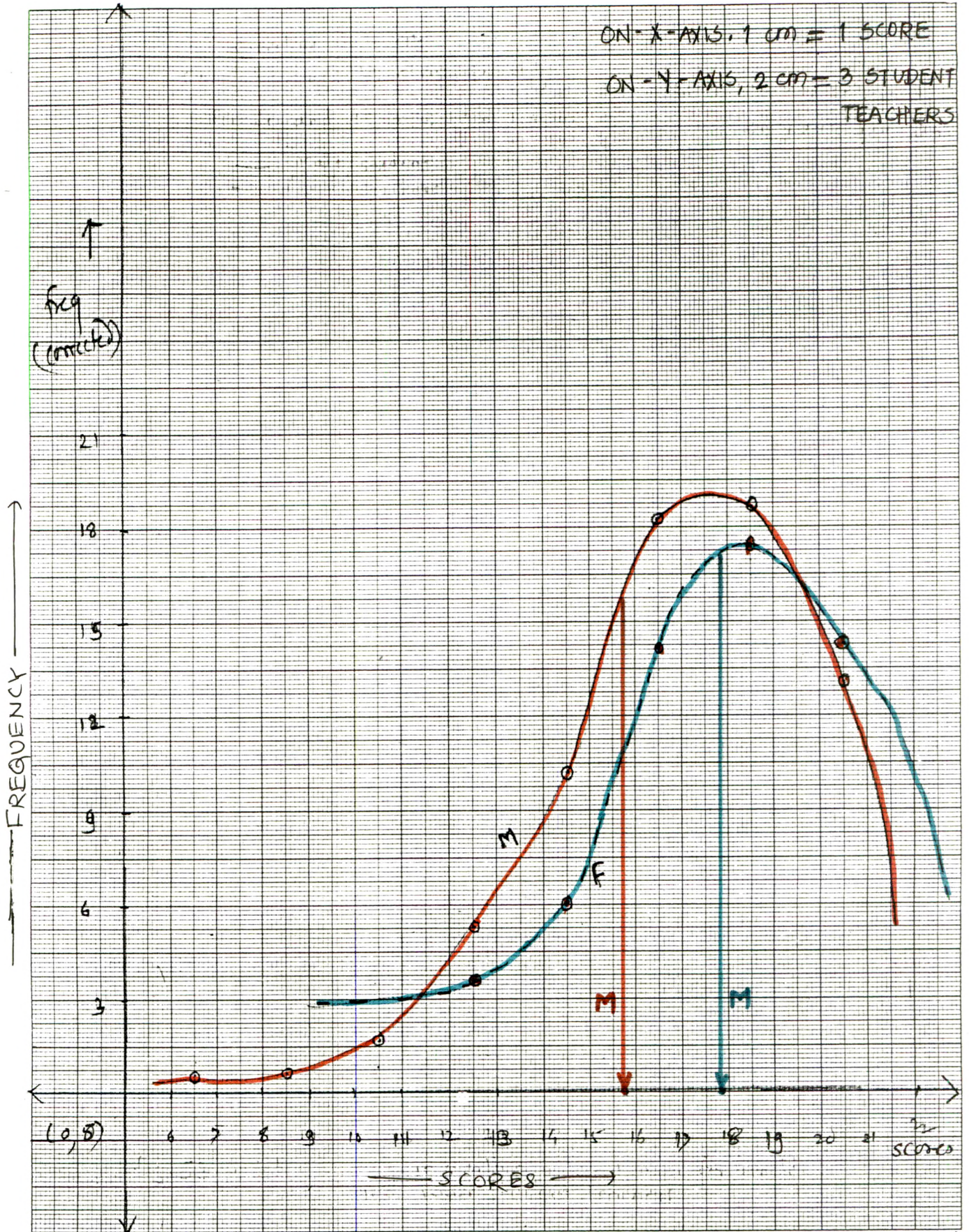


Fig V-3 GRAPH (3): SCORES OF MALE AND FEMALE STUDENT TEACHERS IN CREATIVE INTEREST AREA.

Fig. V.3

GRAPH OF SCORES OF MALE AND FEMALE STUDENT TEACHERS  
IN CREATIVE INTEREST AREA

OBSERAVATION AND INTERPRETATION :-

1. Both curves are having nearly bell shape showing slight negative skeweness.
2. The calculated means for male and female student teachers for creative interest area are 15.74 and 17.87 respectively.
3. Scores of male student teachers are distributed form 6.5 to 20.5, and that of female student teachers are from 12.5 to 20.5 in creative interest area.
4. The achievement scores of male student teachers are spread widely than female student teachers. The both curves cross each other near highest score (19.5).

H<sub>1.3</sub>

There is no significant difference between the female and male student teachers in applied interest area.

The data collected for calculation of  $\sigma_D$  value is tabulated in Table VII.

TABLE VII  
MEANS AND STANDARD DEVIATIONS IN APPLIED INTEREST AREA  
FOR FEMALE AND MALE STUDENT TEACHERS

Group	No. of student teachers	Mean M	Standard deviations	Difference between Means $  M_1 - M_2  $
Female				
Student teachers	61 (N <sub>1</sub> )	28.32	4.3635	1.45
Male				
Student teachers	74 (N <sub>2</sub> )	26.87	4.9187	

From data given in Table VII the value of  $\sigma_D$  calculated was 0.79.

$$\text{Hence } t \text{ value} = \frac{1.45}{0.79} = 1.8354$$

For df 133 and from Table D the values of significance at 0.05 and 0.01 levels are

0.05 level = 1.98

0.01 level = 2.62

Calculated t value = 1.8354

Observation :- The t value seems to be not significant at 0.05 as well as 0.01 levels.

Findings :- Hence it can be declared that there was no significant difference between female and male student teachers in applied interest area. So it can be said that the hypothesis  $H_{1.3}$  stated by the researcher in respect to applied interest area was accepted. See Fig.V.4 for further information.



SCALE:

ON-X-AXIS, 1 CM = 2 SCORE

ON-Y-AXIS, 1 CM = 1 STUDENT  
TEACHER

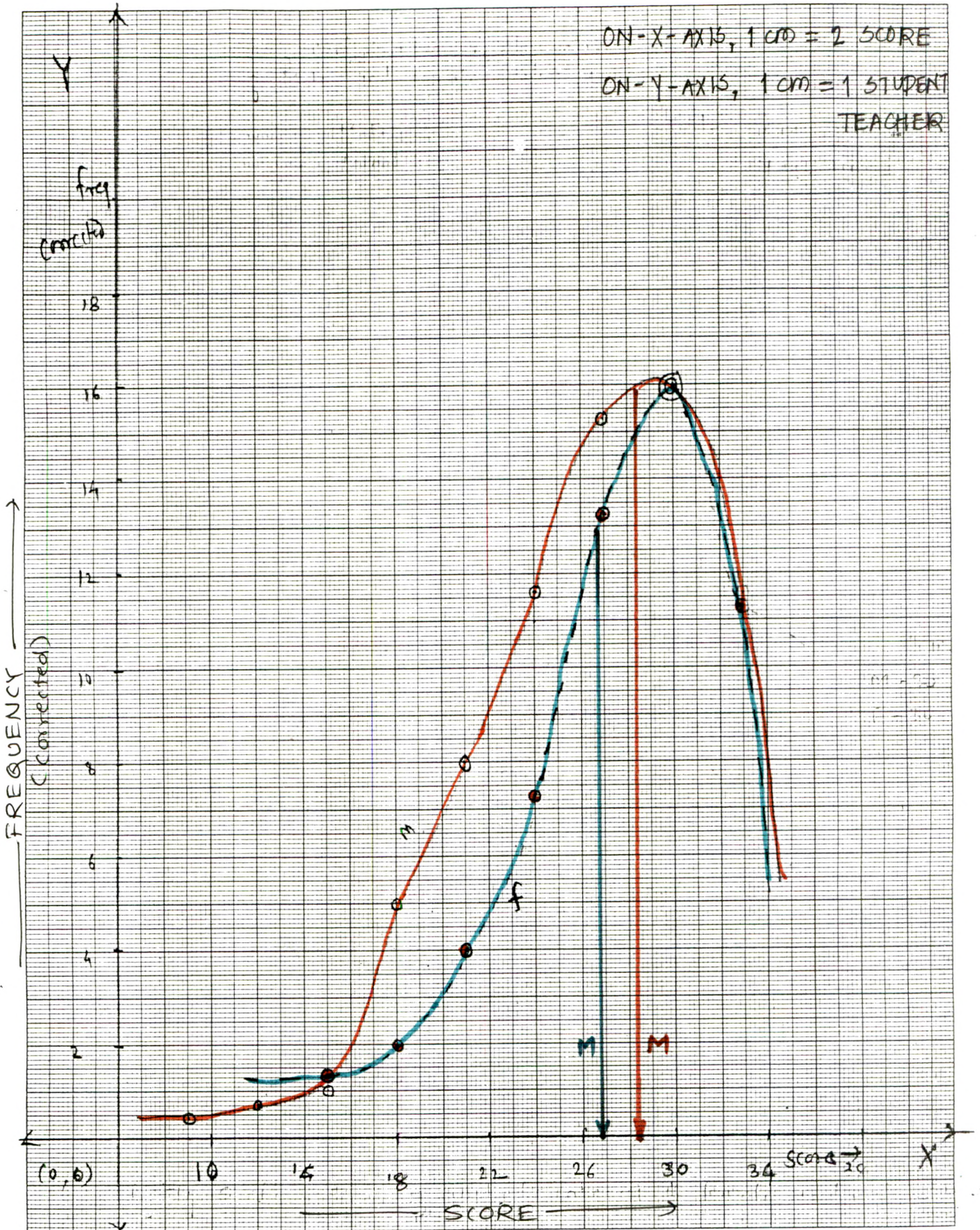


Fig V-4 GRAPH (4): SCORES OF MALE AND FEMALE STUDENT TEACHERS IN APPLIED INTEREST AREA

Fig. V.4

GRAPH OF SCORES OF MALE AND FEMALE STUDENT TEACHERS  
IN APPLIED INTEREST AREA

OBSERVATIONS AND INTERPRETATION :-

1. The curve for female student teachers is peaked while curve for male student teachers is bell shaped, both the curves came near to each other towards the high scores having the common peak point.
2. The calculated means of female and male student teachers are 26.87 and 28.32.
3. The scores for male student teachers are spread from 9 to 34 while for female student teachers are 15 to 34 that means they coincide with each other at the score 34.
4. The achievement scores of male student teachers and female student teachers have a slight difference in distribution.

So they both the groups are homogeneous having same interest.

H<sub>1.4</sub>

There is no significant difference between the female student teachers and male student teachers in interest related to management area.

TABLE VIII  
MEANS AND STANDARD DEVIATION IN INTEREST RELATED TO  
MANAGEMENT AREA BETWEEN  
FEMALE AND MALE STUDENT TEACHERS

Group	No. of student teachers	Mean	Standard	Difference between Means $D =  M_1 - M_2 $
Female student teachers	61	32.13	3.243	1.66
Male student teachers	74	30.47	3.76	

From Table VIII the calculated  $\sigma_D$  value was 0.6009.

$$\text{Hence } t \text{ value} = \frac{1.66}{0.6009} = 2.7625$$

For df 133 and from Table D the values at 0.05 and 0.01 levels of significance were

at 0.05 level = 1.98

at 0.01 level = 2.62

Calculated t value = 2.7625

Observation :- The calculated t value was significant at 0.05 as well as 0.01 levels of significance.

Finding :- From above information it can be concluded that there was much difference between the female and male student teachers in interest related to management area. Hence the hypothesis  $H_{1.4}$  stated by the researcher was rejected.

(The Fig.V.5 for detailed information is enclosed herewith).

SCALE:

ON-X-AXIS, 2 cm = 5 SCORE

ON-Y-AXIS, 2 cm = 3 STUDENT TEACHERS

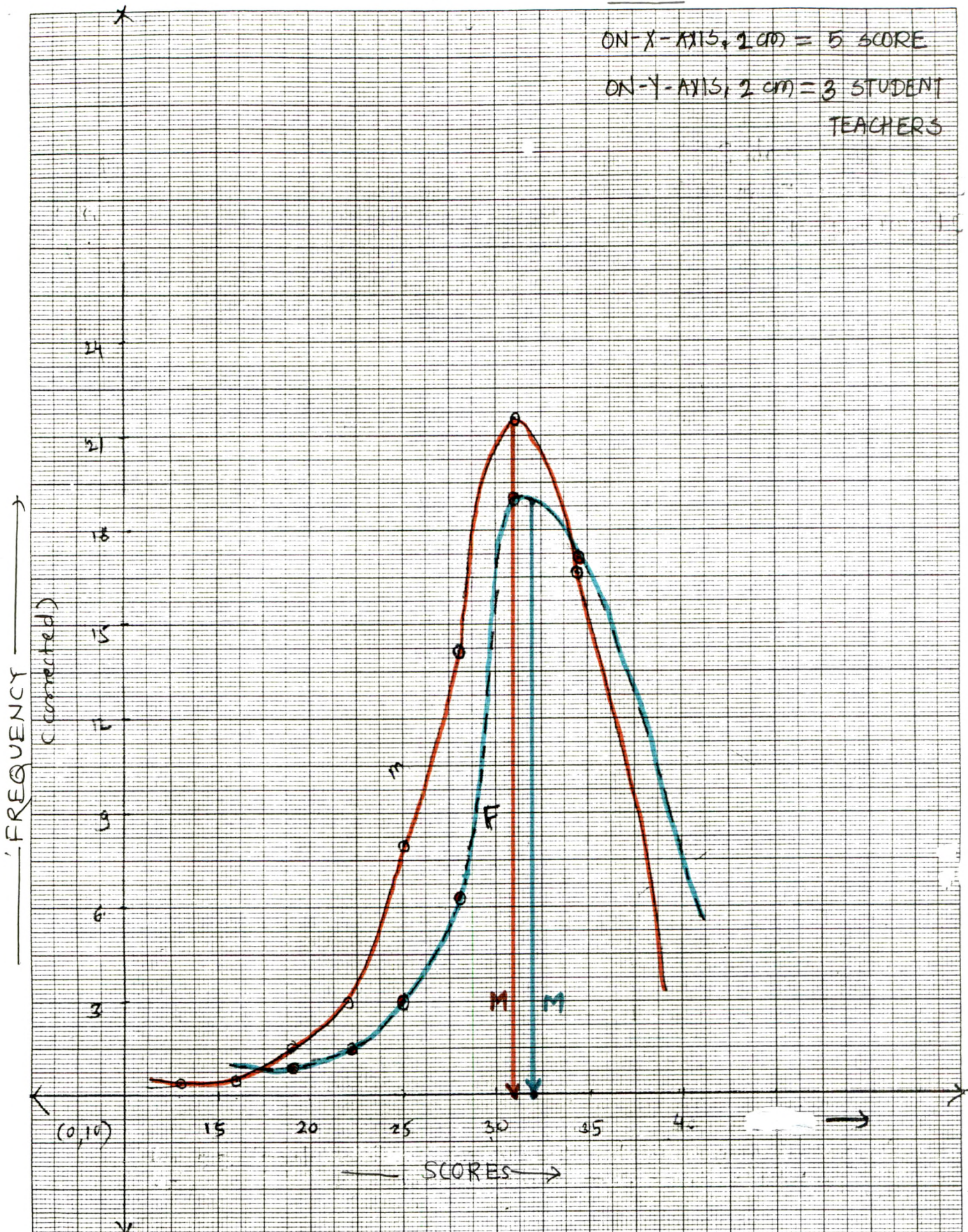


Fig V-5 GRAPH (5): SCORES OF MALE AND FEMALE STUDENT TEACHERS IN INTEREST RELATED TO MANAGEMENT

Fig V .5

GRAPH OF SCORES OF MALE AND FEMALE STUDENT TEACHERS  
IN INTEREST RELATED TO MANAGEMENT

OBSERVATIONS AND INTERPRETATION :-

1. Both the curves are peaked having negative skewness.
2. The calculated means for female and male student teachers are 32.13 and 30.47 respectively.
3. The scores of male student teachers are spread from 13 to 34 and that of female student teachers are spread from 19 to 34 respectively.
4. The peak point of curve for male is at 21.6 and that of female is at 19.4.

The scores are spread more towards the left side of the peak point for both male and female student teachers.

H<sub>1.5</sub>

There is no significant difference between the female student teachers and male student teachers in skill based interest area.

Means and standard deviations calculated are given in Table IX.

TABLE IX  
MEANS AND STANDARD DEVIATIONS IN SKILL BASED INTEREST  
AREA FOR FEMALE AND MALE STUDENT TEACHERS

Group	No. of student teachers	Mean	Standard deviation	Difference between Means D
Female student teachers	61	19.32	2.67	0.899
Male student teachers	74	18.42	3.35	

From the above data value of  $\sigma_D$  calculated was 0.5182.

Hence t value =  $0.899 / 0.5182 = 1.7288$

For df 133 and from Table D, the values of 0.05 and 0.01 levels of significance are

0.05 level = 1.98  
0.01 level = 2.62      Calculated t value = 1.7288

Observation :- The calculated t value seem to be not significant at 0.05 as well as 0.01 levels.

Findings :- So it can be said that there was no significant difference found in male and female student teachers in skill based interest area. So it meant that the hypothesis stated by the researcher was accepted.

The graphically it is represented in Fig.V.6.

Calculation of Norms :-

As from Table IV the significant difference was found in female and male student teachers, the norms were calculated separately for both groups by calculating percentiles. rank one calculation for information is given in appendix (M)

The norms for total score as well as for each area of interest inventory are enclosed in norm table  $N_I$  to  $N_{VI}$ .



SCALE:

ON-X-AXIS, 1 CM = 2 SCORE

ON-Y-AXIS, 1 CM = 1 STUDENT  
TEACHER

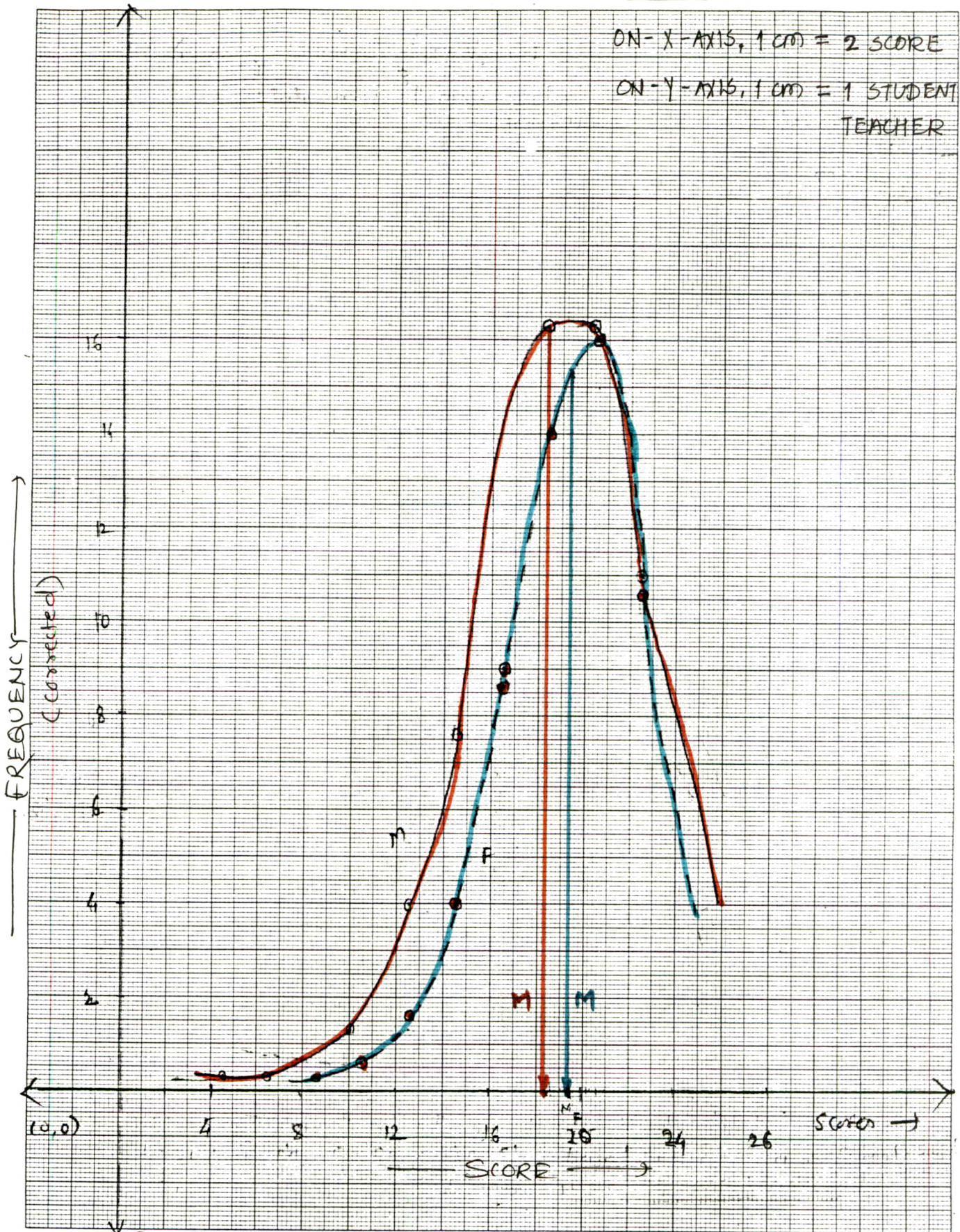


fig V-6 GRAPH (6): SCORES OF MALE AND FEMALE STUDENT TEACHERS IN SKILL BASED INTEREST AREA

Fig. V.6

GRAPH OF SCORES OF MALE AND FEMALE STUDENT TEACHERS  
IN SKILL BASED INTEREST AREA

OBSERVATIONS FORM THE GRAPH :-

1. Both the curves in the graph are having slight skewness at left side. The curve of male student teachers is having two peak points while that of female student teachers has one. After passing from the peak points both the curves are intermixed, with each other.
2. The calculated means for female student teachers and male student teachers are 18.42 and 19.32 i.e have a very slight difference.
3. The distribution of the scores for female student teachers is from 8 to 23 and for male student teachers is from 4 to 23.

FINDING :-

It can be seen from the graph that the both curves are coinciding each other having very slight difference. Hence calculated means are also not having significant difference. Hence, both the groups have similar interest.

NORM TABLE (N<sub>I</sub>)

NORMS : CALCULATED FOR MALE AND FEMALE STUDENT TEACHERS  
(TOTAL SCORE)

Stanine	Percentile	Scores	
		Male Student teachers	Female Student teachers
1	P <sub>4</sub>	91	100
2	P <sub>10</sub>	102	108
	P <sub>11</sub>	103	109
3	P <sub>20</sub>	110	118
	P <sub>23</sub>	112	120
4	P <sub>25</sub>	113	121
	P <sub>30</sub>	116	123
	P <sub>40</sub>	121	129
5	P <sub>50</sub>	126	133
	P <sub>60</sub>	129	135
6	P <sub>70</sub>	133	137
	P <sub>75</sub>	134	138
	P <sub>77</sub>	135	139
7	P <sub>80</sub>	136	139
	P <sub>89</sub>	140	141
8	P <sub>90</sub>	141	141
	P <sub>95</sub>	144	142
	P <sub>96</sub>	145	143
9	P <sub>99</sub>	147	147

NORM TABLE (N<sub>II</sub>)  
COGNITIVE INTEREST AREA  
(MALE AND FEMALE STUDENT TEACHERS)

Stanine	Percentile	Score	
		Male Student teachers	Female Student teachers
1	P <sub>4</sub>	22	25
2	P <sub>10</sub>	26	27
	P <sub>11</sub>	26	27
3	P <sub>20</sub>	27	29
	P <sub>23</sub>	28	29
4	P <sub>25</sub>	28	29
	P <sub>30</sub>	28	30
	P <sub>40</sub>	29	31
5	P <sub>50</sub>	30	32
	P <sub>60</sub>	31	32
6	P <sub>70</sub>	32	33
	P <sub>75</sub>	32	33
	P <sub>77</sub>	32	33
7	P <sub>80</sub>	33	33
	P <sub>89</sub>	34	34
8	P <sub>90</sub>	34	34
	P <sub>95</sub>	35	35
	P <sub>96</sub>	35	35
9	P <sub>99</sub>	35	35

NORM TABLE (N<sub>III</sub>)CREATIVE INTEREST AREA

Stanine	Percentile	Score	
		Male student teachers	Female student teachers
1	P <sub>4</sub>	12	13
2	P <sub>10</sub>	13	14
	P <sub>11</sub>	13	14
3	P <sub>20</sub>	15	16
	P <sub>23</sub>	15	17
4	P <sub>25</sub>	16	17
	P <sub>30</sub>	16	17
	P <sub>40</sub>	17	18
5	P <sub>50</sub>	18	19
	P <sub>60</sub>	18	19
6	P <sub>70</sub>	19	19
	P <sub>75</sub>	19	20
	P <sub>77</sub>	19	20
7	P <sub>80</sub>	19	20
	P <sub>89</sub>	20	20
8	P <sub>90</sub>	20	20
	P <sub>95</sub>	20	20
	P <sub>96</sub>	20	20
9	P <sub>99</sub>	20	20

NORM TABLE ( $N_{IV}$ )NORM TABLE FOR APPLIED INTEREST AREA

Stanine	Percentile	Score	
		Male Student Teachers	Female Student Teachers
1	P <sub>4</sub>	18	18
2	P <sub>10</sub>	20	23
	P <sub>11</sub>	21	23
3	P <sub>20</sub>	22	25
	P <sub>23</sub>	23	26
4	P <sub>25</sub>	23	26
	P <sub>30</sub>	24	27
	P <sub>40</sub>	26	28
5	P <sub>50</sub>	28	29
	P <sub>60</sub>	29	30
6	P <sub>70</sub>	30	31
	P <sub>75</sub>	31	32
	P <sub>77</sub>	31	32
7	P <sub>80</sub>	31	32
	P <sub>89</sub>	32	33
8	P <sub>90</sub>	33	33
	P <sub>95</sub>	34	34
	P <sub>96</sub>	34	34
9	P <sub>99</sub>	34	34

NORM TABLE (N<sub>v</sub>)NORMS FOR INTEREST RELATED TO MANAGEMENT

Stanine	Percentile	Score	
		Male Student Teachers	Female Student Teachers
1	P <sub>4</sub>	22	25
2	P <sub>10</sub>	25	28
	P <sub>11</sub>	26	28
3	P <sub>20</sub>	27	30
	P <sub>23</sub>	28	31
4	P <sub>25</sub>	28	31
	P <sub>30</sub>	29	32
	P <sub>40</sub>	30	33
5	P <sub>50</sub>	31	33
	P <sub>60</sub>	32	34
6	P <sub>70</sub>	33	34
	P <sub>75</sub>	34	34
	P <sub>77</sub>	34	34
7	P <sub>80</sub>	34	35
	P <sub>89</sub>	35	35
8	P <sub>90</sub>	35	35
	P <sub>95</sub>	35	35
	P <sub>96</sub>	35	35
9	P <sub>99</sub>	35	35

NORM TABLE (N<sub>VI</sub>)NORMS FOR SKILL BASED INTEREST AREA

Stanine	Percentile	Score	
		Male Student Teachers	Female Student Teachers
1	P <sub>4</sub>	12	13
2	P <sub>10</sub>	15	15
	P <sub>11</sub>	15	16
3	P <sub>20</sub>	16	17
	P <sub>23</sub>	16	17
4	P <sub>25</sub>	16	18
	P <sub>30</sub>	17	18
	P <sub>40</sub>	18	19
5	P <sub>50</sub>	19	20
	P <sub>60</sub>	20	20
6	P <sub>70</sub>	20	21
	P <sub>75</sub>	21	21
	P <sub>77</sub>	21	21
7	P <sub>80</sub>	22	21
	P <sub>89</sub>	22	22
8	P <sub>90</sub>	22	22
	P <sub>95</sub>	22	22
	P <sub>96</sub>	22	22
9	P <sub>99</sub>	22	22



HYPOTHESIS NO. 2 ( $H_2$ )

There is no significant difference between the interest of urban student teachers and rural student teachers in Educational technology.

For testing of above hypothesis the frequency distribution tables from scores of rural and urban student teachers were prepared and standard deviations for each group were calculated for means of total score of the inventory, which are tabulated in Table X.

TABLE X  
MEANS AND STANDARD DEVIATIONS (TOTAL SCORE) OF  
RURAL AND URBAN STUDENT TEACHERS IN  
EDUCATIONAL TECHNOLOGY

Group	No. of student teachers	Mean	Standard deviation	$D =  M_1 - M_2 $
Urban student teachers	63	128.83	14.599	6.636
Rural student teachers	72	122.194	16.628	

From the data of Table X the value of  $\phi_D$  calculated was 2.68.

$$\text{Hence } t \text{ value} = \frac{D}{\sigma_D} = \frac{6.636}{2.68} = 2.476$$

Calculated t value = 2.476.

For df 133, from Table D the values of 0.05 and 0.01 levels of significance are

0.05 level	=	1.98	Calculated t value = 2.476
0.01 level	=	2.62	

Observation :- The calculated t value seems to be significant at 0.05 level.

Finding :- There was significant difference found between the urban and rural student teachers in interest in Educational technology. So hypothesis stated by the researcher was rejected. (Fig V.7).

Only hypothesis testing for total score was not sufficient as the inventory was divided into five areas. Hence the hypothesis was tested for each area and the norms were calculated separately for urban and rural student teachers.

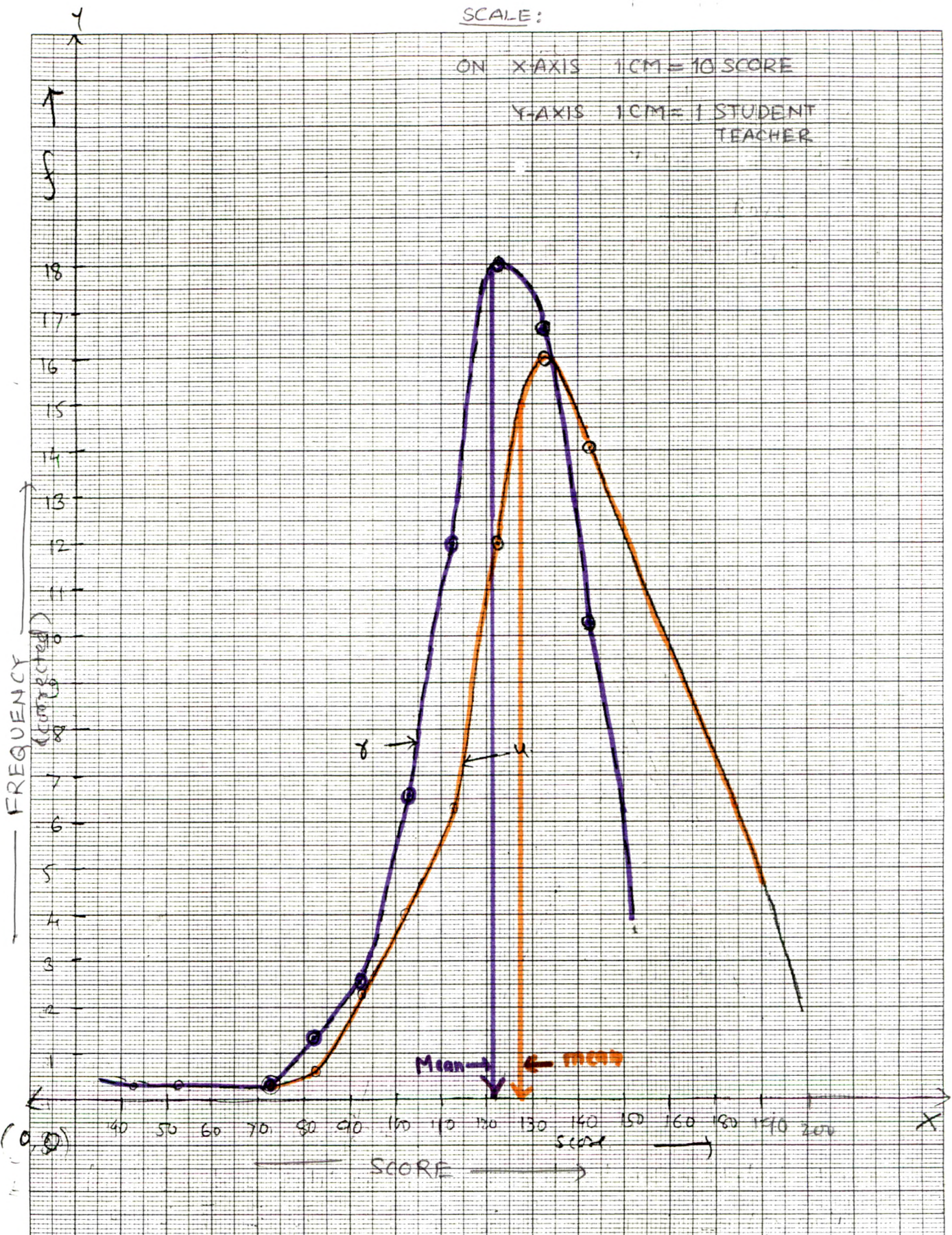


Fig I-9 GRAPH (7): TOTAL SCORES OF URBAN AND RURAL STUDENT TEACHERS

Fig. V.7

GRAPH OF TOTAL SCORES OF URBAN AND RURAL  
STUDENT TEACHERS

OBSERVATIONS AND INTERPRETATION :-

1. Both curves i.e curve for urban student teachers and rural student teachers are having slight negative skewness and the curve for rural student teacher is having higher peak point at score 121 and for urban student teacher the peak point is at 133.
2. The calculated means for both rural and urban student teachers are 122.94 and 128.83 respectively.
3. the distribution of scores for rural student teachers is from 43 to 143 and for urban student teachers is from 73 to 145 respectively. So it can be clearly seen tht rural student teachers are spread more widely than urban student teachers.

Hence, it can be said that amongst the groups the urban group is more compact than rural group.

H<sub>2.1</sub>

There is no significance difference between the interest of urban and rural student teachers in cognitive interest area.

The data collected for calculation of  $\sigma_D$  is tabulated in Table No. XI.

TABLE XI  
MEANS AND STANDARD DEVIATIONS IN RURAL AND URBAN  
STUDENT TEACHERS FOR COGNITIVE INTEREST AREA

Group	No. of student teachers	Mean	Standard deviation	D = $ M_1 - M_2 $
Urban student teachers	63	30.76	3.3652	0.885
Rural student teachers	72	29.876	3.5155	

$\sigma_D$  value calculated from table XI = 0.5927

$$\text{Hence } t \text{ value} = \frac{0.885}{0.5927} = 1.5$$

For df 133, from Table D, the values of significance at 0.05 and 0.01 levels are

0.05 level = 1.98	Calculated t value = 1.5
0.01 level = 2.62	

Observation :- It seems from the t value that it is not significant at 0.05 as well as 0.01 levels of significance.

Finding :- It can be stated that there was no significant difference between the urban and rural student teachers in cognitive interest area so the hypothesis  $H_{2.1}$  stated by the researcher was accepted. See Fig. V.8 for detailed information.

SCALE:

ON X-AXIS 2CM = 4 SCORES

Y-AXIS 2CM = 3 STUDENT TEACHERS

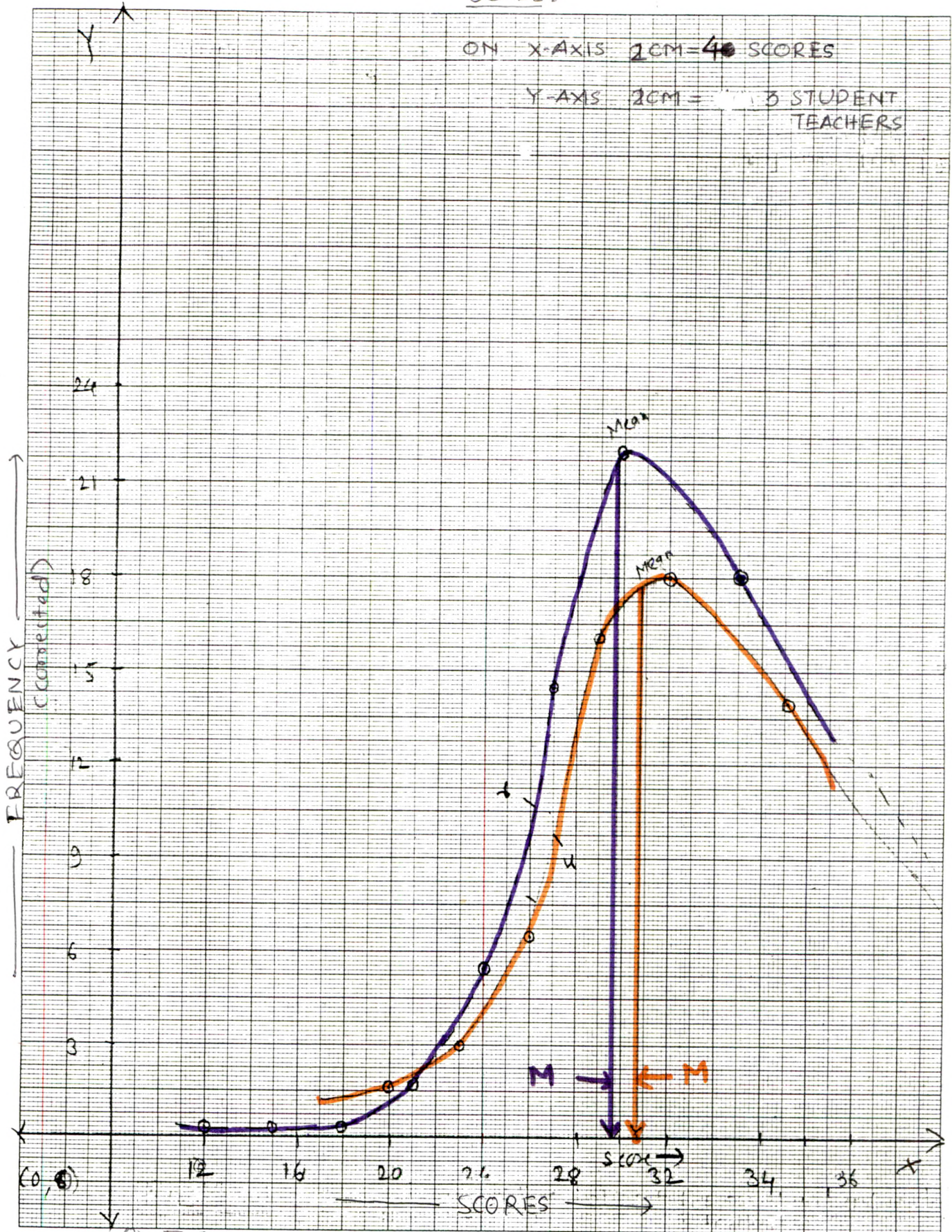


Fig V-8 GRAPH (8): SCORES OF URBAN AND RURAL STUDENT TEACHERS IN COGNITIVE INTEREST AREA.

Fig. V.8

GRAPH OF SCORES OF URBAN AND RURAL STUDENT TEACHERS  
IN COGNITIVE INTEREST AREA

OBSERVATIONS FROM THE GRAPH :-

1. The shape of the curve of the urban student teachers in bell shape like, but having more negative skewness, so the calculated means are shifted slightly towards left of the peak point.
2. The calculated means for urban and rural student teachers for cognitive interest area are 30.76 and 29.87 and the peak points are at 32 and 30 respectively.
3. The distribution of scores is lifted towards left. The curves are coinciding each other to the left of the peak points.

The calculated means are nearer to each other. Hence both the groups are approximately similar in interest.



H<sub>2.2</sub>

There is no significant difference between interest of the urban student teachers and rural student teachers in creative interest area.

For calculation of  $\sigma_D$  the means and standard deviations with number of student teachers in both groups are tabulated in Table No. XII.

TABLE XII  
MEANS AND STANDARD DEVIATIONS FOR RURAL AND URBAN  
STUDENT TEACHERS IN CREATIVE INTEREST AREA.

Group	No. of student teachers	Mean	Standard deviation	D = $ M_1 - M_2 $
Urban student teachers	63	17.769	2.6738	0.609
Rural student teachers	72	17.16	2.4153	

The calculated  $\sigma_D$  value is 0.4409

$$t \text{ value} = \frac{0.609}{0.4409} = 1.384$$

For df 133 and from Table D the values for 0.05 and 0.01 levels of significance are

0.05 level = 1.98  
0.05 level = 2.62      Calculated t value = 1.384

Observation :- It can be seen that the t value is not significant at 0.05 and 0.01 levels of significance.

Finding :- It can be concluded that there was no significant difference between the interest of urban and rural student teachers in creative interest area of inventory. So hypothesis stated by the researcher was accepted.

See Fig.V.9 for more information.

SCALE:

ON X-AXIS: 1CM = 1 SCORE

Y-AXIS: 2CM = 3 STUDENT TEACHERS

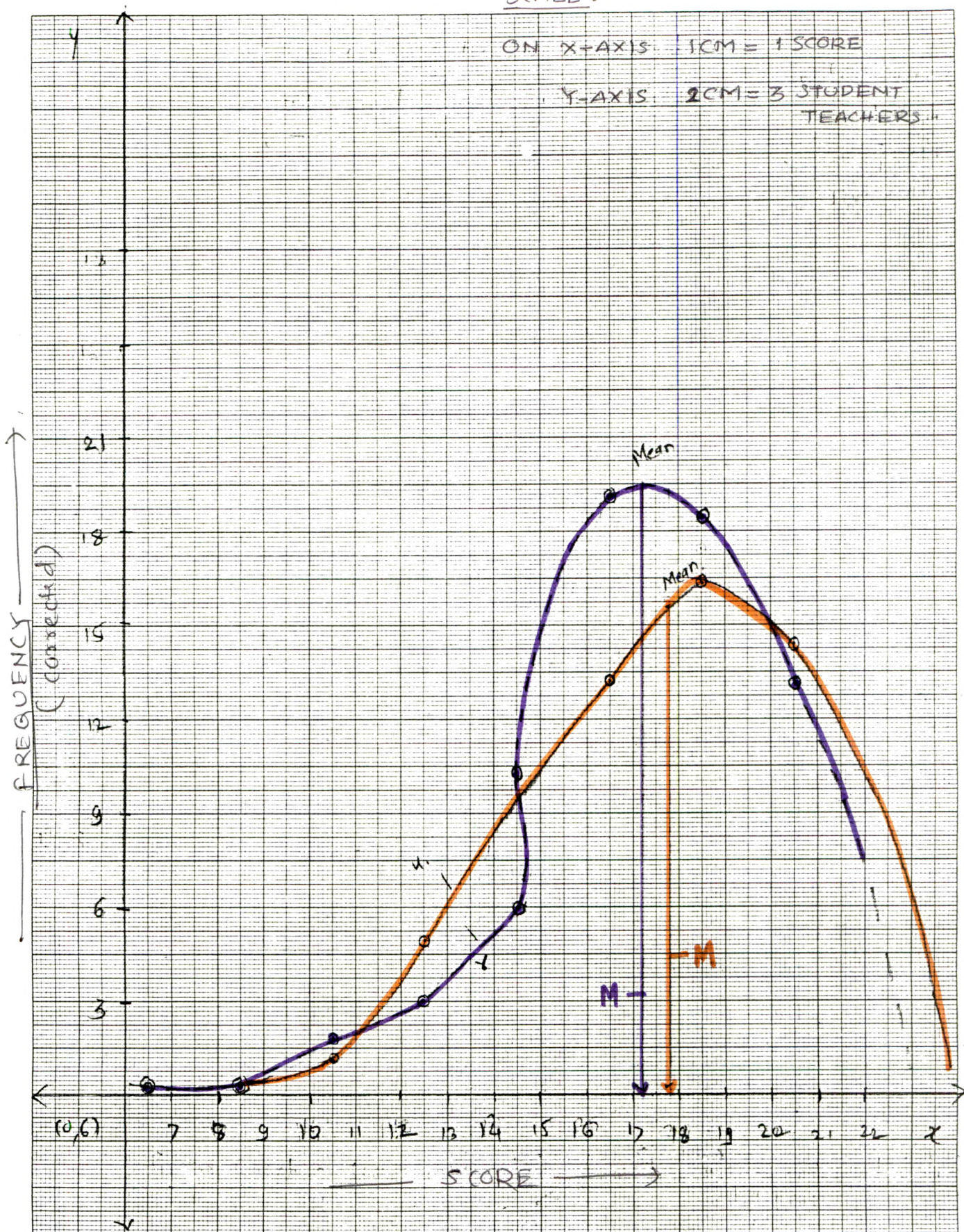


Fig V-9 GRAPH (9): SCORES OF URBAN AND RURAL STUDENT TEACHERS IN CREATIVE INTEREST AREA.

Fig. V.9

GRAPH OF SCORES OF URBAN AND RURAL STUDENT TEACHERS  
IN CREATIVE INTEREST AREA

OBSERVATIONS :-

1. The curve for rural student teachers is nearly bell shape but slightly moving inside at one point. The curve for the urban student teachers is clearly bell shaped. Both the groups have negative skewness.
2. The mean of the rural student teachers as per calculations is 17.2 and the mean of urban student teacher is 17.8. There is very slight difference of 0.6 between them.

FINDING :-

As the both curves are normal, and because of the means having slight difference (non significant) the both group are homogeneous from within.

H<sub>2.3</sub>

There is no significant difference between the interest of urban student teachers and rural student teachers in applied interest area.

For calculation of  $\sigma_D$  value the means and standard deviation for student teachers in rural and urban groups are tabulated below. (Table XIII).

TABLE XIII  
MEANS AND STANDARD DEVIATIONS FOR RURAL AND URBAN  
STUDENT TEACHERS IN CREATIVE INTEREST AREA

Group	No. of student teachers	Mean	Standard deviation	D = $ M_1 - M_2 $
Urban student teachers	63	28.38	4.195	1.63
Rural student teachers	72	26.75	4.763	

The  $\sigma_D$  value calculated from above data was 0.771.

$$t \text{ value} = \frac{D}{\sigma_D} = \frac{1.63}{0.771} = 2.114$$

The calculated t value is 2.114 for df 133 and

from Table D the values at 0.05 and 0.01 levels of significance are

0.05 level = 1.98	Calculated t value = 2.114
0.01 level = 2.62	

Observation :- It can be seen that the calculated t value is significant at 0.05 level of significance.

Finding :- It can be concluded that there was significant difference between the interest of urban and rural student teachers in applied interest area of inventory. So hypothesis stated by the researcher was rejected. See Fig.V.10.

SCALE :

ON X-AXIS 1CM = 5 SCORE

Y-AXIS 1CM = 1 STUDENT TEACHER

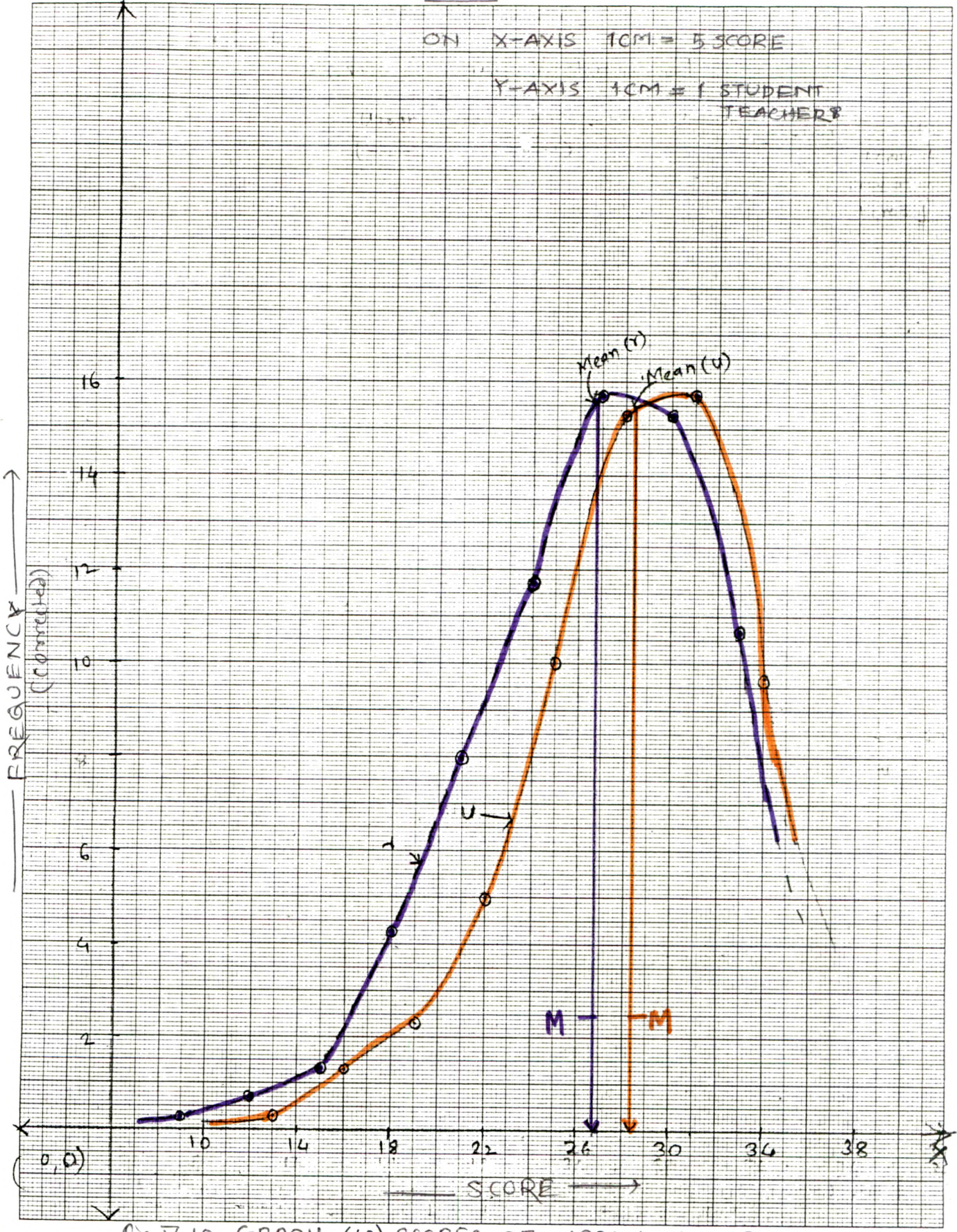


Fig V-10 GRAPH (10) SCORES OF URBAN AND RURAL STUDENT TEACHERS IN APPLIED INTEREST AREA

Fig. V.10

GRAPH OF SCORES OF URBAN AND RURAL STUDENT TEACHERS  
IN APPLIED INTEREST AREA

OBSERVATIONS :-

1. The curves for urban and rural student teachers are slightly bell shaped and cross each other at crests.
2. The calculated means for urban and rural student teachers are 28.38 and 26.75 respectively.

The calculated means for urban and rural student teachers are shifted slightly towards left of the peak point.

FINDING :-

The remarkable difference between two graphs is seen from the graph and also from calculation. So it can be said that there is significant difference between the scores amongst the group. They significantly differ from each other as applied interest is concerned.



H<sub>2.4</sub>

There is no significant difference in interest of urban student teachers and rural student teachers in interest related to management.

The required data for calculation of  $\sigma_D$  is tabulated below in table XIV.

TABLE XIV  
MEANS AND STANDARD DEVIATIONS FOR URBAN AND RURAL  
STUDENT TEACHERS IN INTEREST RELATED TO MANAGEMENT

Group	No. of student teachers	Mean	Standard deviation	D = $ M_1 - M_2 $
Urban student teachers	63	31.87	3.176	1.37
Rural student teachers	72	30.5	4.00	

The calculated  $\sigma_D$  value = 0.6181

∴ t value =  $D / \sigma_D = 1.37 / 0.6181$

For df 133 and from Table D, the values of significance at 0.05 and 0.01 levels are

0.05 level = 1.98

0.01 level = 2.62

Calculated t value = 2.2164

Observation :- The calculated t value is significant at 0.05 level of significance.

Finding :- There was significant difference in interest of rural and urban student teachers in interest related to management. So the hypothesis H<sub>2.4</sub> stated by the researcher was rejected. (See Fig. V.11)

SCALE:

ON X-AXIS 2CM = 5 SCORE

Y-AXIS 2CM = 3 STUDENT TEACHERS

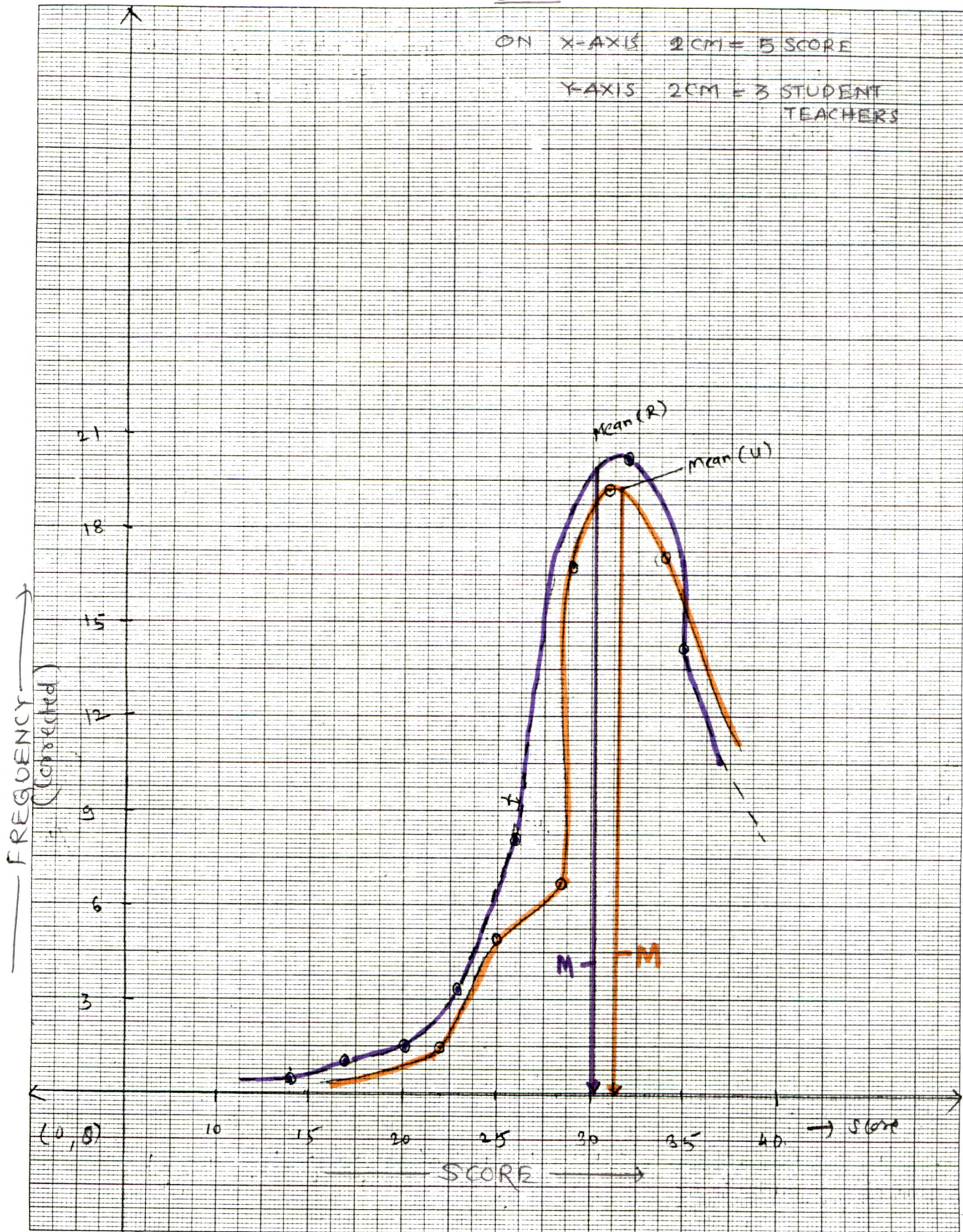


Fig V-1) GRAPH (11) SCORES OF RURAL AND URBAN STUDENT TEACHERS IN INTEREST RELATED TO MANAGEMENT

Fig. V.11

GRAPH OF SCORES OF URBAN AND RURAL STUDENT TEACHERS  
IN INTEREST RELATED TO MANAGEMENT

OBSERVATIONS :-

1. The both curves are peaked and have slight negative skewness. The mean (calculated) for rural group is shifted slightly towards left side of peak point and for urban groups it is shifted slightly at right side of the peak points.
2. The calculated means are 31.87 for urban student teachers and 30.5 for rural student teachers.
3. The curve of urban student teacher is moved inside.

FINDINGS :-

The remarkable difference in between the means can be seen between urban and rural student teachers form graph and from calculations also.

H<sub>2.5</sub>

There is no significant difference between interest of urban student teachers and rural student teachers in skill based interest area.

For necessary calculations the required data is tabulated in table no. XV.

TABLE XV  
MEANS AND STANDARD DEVIATIONS FOR URBAN AND RURAL  
STUDENT TEACHERS IN SKILL BASED INTEREST AREA

Group	No. of student teachers	Mean	Standard deviation	D = $ M_1 - M_2 $
Urban student teachers	63	19.198	2.909	0.588
Rural student teachers	72	18.61	3.195	

$$\sigma_D \text{ value calculated} = 0.5254$$

$$t \text{ value} = \frac{0.588}{0.5254} = 1.1191$$

For df 133 the values at 0.05 and 0.01 levels of significance from table D are,

At 0.05 level = 1.98

Calculated t value = 1.1191

At 0.01 level = 2.62

Observation :- The calculated t value is not significant at 0.05 level and 0.01 level.

Finding :- It can be inferred that there was no significant difference in interest of rural and urban student teachers in skill based interest area. Hence the hypothesis stated by the researcher was accepted. (See Fig. V.12)

Calculation of Norms :-

As the significant difference was found in total scores of urban and rural student teachers. Separate norms were calculated for total scores as well as scores for each respective area which were tabulated in tables. See norm tables N<sub>VII</sub> to N<sub>XII</sub>.

SCALE:

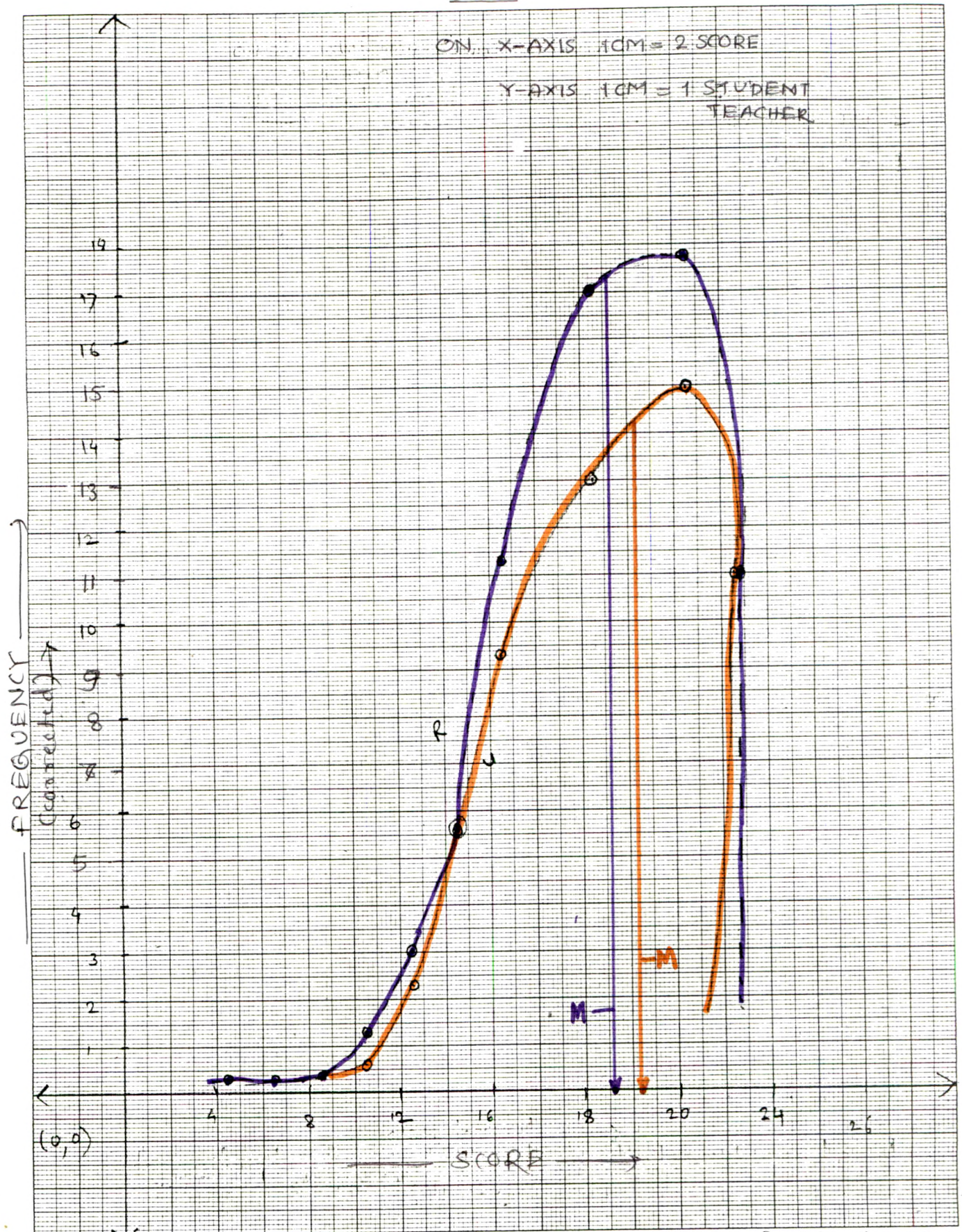


Fig V-12 GRAPH (12) SCORES OF URBAN AND RURAL STUDENT TEACHERS IN SKILL BASED INTEREST AREA.

Fig. V.12

GRAPH OF SCORES OF URBAN AND RURAL STUDENT TEACHERS  
IN SKILL BASED INTERST AREA

OBSERVATIONS AND INTERPRETATIONS :-

1. Both curves are peaked and lifted towards right because of peak points at higher score.
2. The calculated means for rural student teacher and urban student teachers are 18.61 and 19.198 i.e having very small difference about 0.6.
3. The distribution of scores for rural is from 4 to 22 and for urban it is 8.3 to 22. So both the groups are similar in skill based interest area.



NORM TABLE (N<sub>VII</sub>)  
NORMS FOR URBAN AND RURAL STUDENT TEACHERS  
(TOTAL SCORES)

Stanine	Percentile	Score	
		urban	Rural
1	P <sub>4</sub>	98	90
2	P <sub>10</sub>	105	103
	P <sub>11</sub>	106	105
3	P <sub>20</sub>	117	112
	P <sub>23</sub>	119	113
4	P <sub>25</sub>	121	114
	P <sub>30</sub>	125	117
	P <sub>40</sub>	129	121
5	P <sub>50</sub>	132	125
	P <sub>60</sub>	135	129
6	P <sub>70</sub>	138	125
	P <sub>75</sub>	139	133
	P <sub>77</sub>	140	134
7	P <sub>80</sub>	141	135
	P <sub>89</sub>	144	139
8	P <sub>90</sub>	144	140
	P <sub>95</sub>	146	144
	P <sub>96</sub>	146	144
9	P <sub>99</sub>	147	147

NORM TABLE (N<sub>VIII</sub>)NORMS FOR COGNITIVE INTEREST AREA

Srtanine	Percentile	Score	
		Urban	Rural
1	P <sub>4</sub>	24	23
2	P <sub>10</sub>	27	26
	P <sub>11</sub>	27	26
3	P <sub>20</sub>	28	28
	P <sub>23</sub>	29	28
4	P <sub>25</sub>	29	29
	P <sub>30</sub>	30	29
	P <sub>40</sub>	31	30
5	P <sub>50</sub>	31	30
	P <sub>60</sub>	32	31
6	P <sub>70</sub>	33	32
	P <sub>75</sub>	34	32
	P <sub>77</sub>	34	33
7	P <sub>80</sub>	34	33
	P <sub>89</sub>	35	34
8	P <sub>90</sub>	35	34
	P <sub>95</sub>	35	34
	P <sub>96</sub>	35	34
9	P <sub>99</sub>	35	34

NORM TABLE ( $N_{IX}$ )NORMS FOR CREATIVE INTEREST AREA

Stanine	Percentile	Score	
		Urban	Rural
1	P <sub>4</sub>	12	12
2	P <sub>10</sub>	13	13
	P <sub>11</sub>	13	14
3	P <sub>20</sub>	15	15
	P <sub>23</sub>	16	15
4	P <sub>25</sub>	16	16
	P <sub>30</sub>	17	16
	P <sub>40</sub>	18	17
5	P <sub>50</sub>	18	18
	P <sub>60</sub>	19	18
6	P <sub>70</sub>	19	19
	P <sub>75</sub>	19	19
	P <sub>77</sub>	20	19
7	P <sub>80</sub>	20	19
	P <sub>89</sub>	20	20
8	P <sub>90</sub>	20	20
	P <sub>95</sub>	20	20
	P <sub>96</sub>	20	20
9	P <sub>99</sub>	20	20

NORM TABLE ( $N_X$ )NORMS FOR APPLIED INTEREST AREA

Stanine	Percentile	Score	
		Urban	Rural
1	P <sub>4</sub>	19	17
2	P <sub>10</sub>	21	20
	P <sub>11</sub>	22	20
3	P <sub>20</sub>	25	23
	P <sub>23</sub>	26	23
4	P <sub>25</sub>	26	23
	P <sub>30</sub>	27	24
	P <sub>40</sub>	29	26
5	P <sub>50</sub>	29	28
	P <sub>60</sub>	30	29
6	P <sub>70</sub>	31	30
	P <sub>75</sub>	32	31
	P <sub>77</sub>	32	31
7	P <sub>80</sub>	32	31
	P <sub>89</sub>	33	32
8	P <sub>90</sub>	33	33
	P <sub>95</sub>	34	34
	P <sub>96</sub>	34	34
9	P <sub>99</sub>	34	34

NORM TABLE (N<sub>XI</sub>)NORMS FOR INTEREST RELATED TO MANAGEMENT

Stanine	Percentile	Score	
		Urban	Rural
1	P <sub>4</sub>	24	22
2	P <sub>10</sub>	27	25
	P <sub>11</sub>	27	26
3	P <sub>20</sub>	30	28
	P <sub>23</sub>	30	28
4	P <sub>25</sub>	31	28
	P <sub>30</sub>	32	29
	P <sub>40</sub>	33	30
5	P <sub>50</sub>	33	31
	P <sub>60</sub>	34	32
6	P <sub>70</sub>	34	33
	P <sub>75</sub>	34	33
	P <sub>77</sub>	34	34
7	P <sub>80</sub>	35	34
	P <sub>85</sub>	35	35
8	P <sub>90</sub>	35	35
	P <sub>95</sub>	35	35
	P <sub>96</sub>	35	35
9	P <sub>99</sub>	35	35

NORM TABLE (N<sub>XII</sub>)NORMS FOR SKILL BASED INTEREST AREA

Stanine	Percentile	Score	
		Urban	Rural
1	P <sub>4</sub>	14	12
2	P <sub>10</sub>	15	14
	P <sub>11</sub>	15	15
3	P <sub>20</sub>	17	16
	P <sub>23</sub>	17	17
4	P <sub>25</sub>	17	17
	P <sub>30</sub>	18	18
	P <sub>40</sub>	19	18
5	P <sub>50</sub>	20	19
	P <sub>60</sub>	20	20
6	P <sub>70</sub>	21	20
	P <sub>75</sub>	22	21
	P <sub>77</sub>	22	21
7	P <sub>80</sub>	22	21
	P <sub>89</sub>	23	22
8	P <sub>90</sub>	23	22
	P <sub>95</sub>	23	23
	P <sub>96</sub>	23	23
9	P <sub>99</sub>	23	23

HYPOTHESIS NO. 3 ( $H_3$ )

There is no significant difference between interest of the student teachers offering E.T. and student teachers not offering E.T. in Educational technology.

The means and standard deviations with number of student teachers are tabulated in table no. XVI.

TABLE XVI  
MEANS AND STANDARD DEVIATIONS OF TOTAL SCORES OF  
STUDENT TEACHERS OFFERING ET AND NOT OFFERING ET

Group	No. of student teachers	Mean	Standard deviation	$D =  M_1 - M_2 $
ET student teachers	51	126.11	15.11	1.75
Non ET student teachers	84	124.36	14.70	

The value of  $\sigma_D$  calculated = 2.6372

$$t \text{ value} = D / \sigma_D = 1.75 / 2.6372 = 0.6636$$

For df 133 the values of level of significance at 0.05 and 0.01 level from table D are,

0.05 level = 1.98

0.01 level = 2.62

Calculated t value = 0.6636

Observation :- The calculated t value is not significant at 0.05 and 0.01 levels.

Finding :- There was no significant difference between the student teachers offering E.T. and student teachers not offering E.T. in Educational technology. Hence hypothesis 3 stated by the researcher was accepted.

(See Fig. V.13 )



SCALE: 1 CM = 10 SCORES

ON X AXIS 1 CM = 10 SCORES

Y AXIS 2 CM = 3 STUDENT TEACHERS

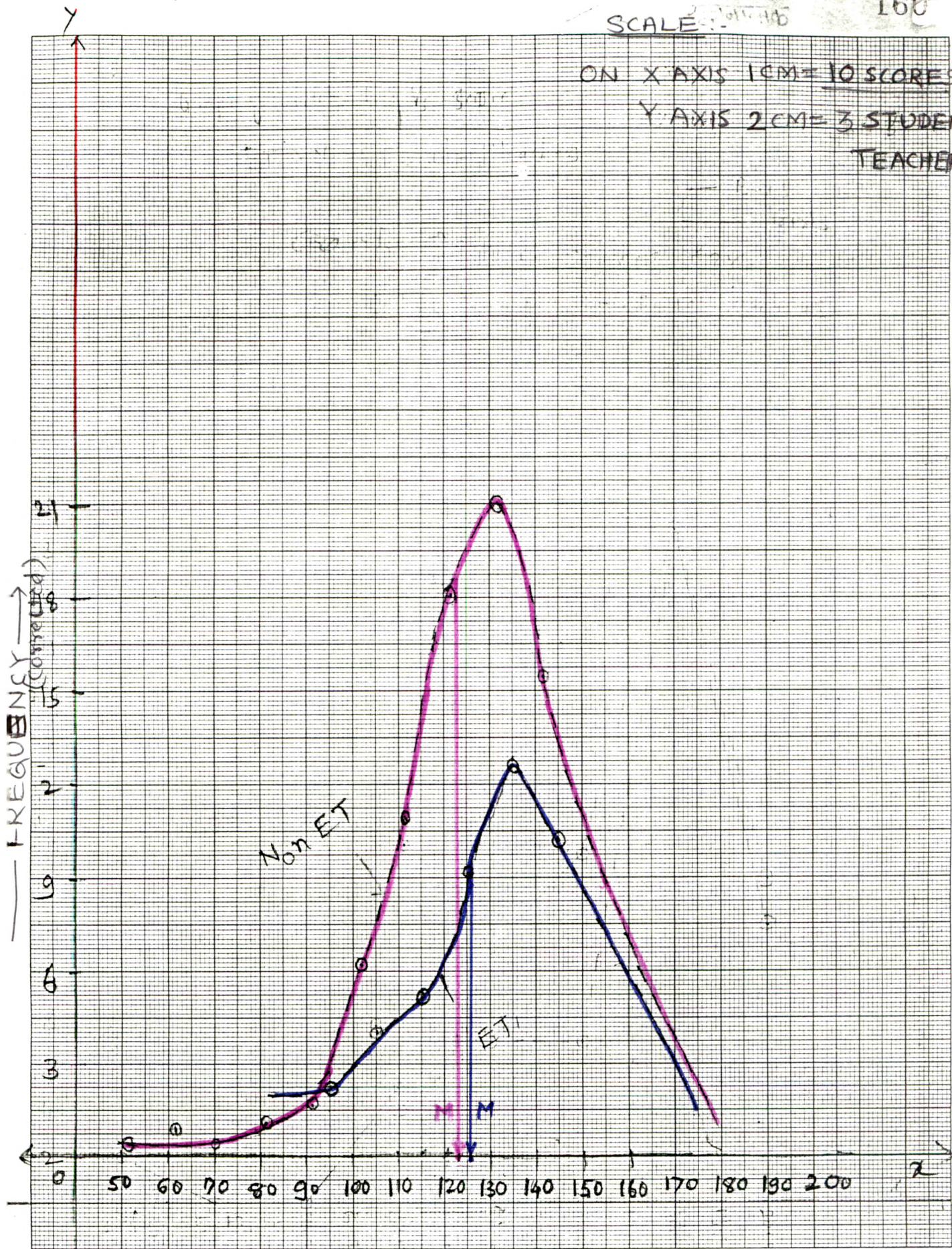


Fig V-13 GRAPH (13) SCORES (TOTAL) OF ET AND NON ET STUDENT TEACHERS

Fig. V.13

GRAPH OF TOTAL SCORES OF ET AND NON ET  
STUDENT TEACHERS

OBSERVATIONS AND INTERPRETATIONS :-

1. Both curves are peaked. Amongst the curves for Non Et student teachers and ET student teachers the curve for Non ET student teachers is having slight negative skewness.
2. The scores are spread from 50 to 142 for Non ET and from 95 to 145 for ET student teachers.
3. The calculated means for ET and Non ET student teachers are 126.11 and 124.36 respectively having very low difference of 1.75.

The distribution of scores of both groups is spread nearly towards mean. Hence there is negligible difference between two groups.

$H_{3.1}$

There is no significant difference in interest between the student teachers offering E.T. and student teachers not offering E.T. in cognitive interest area.

The required data for calculation of  $\sigma_D$  value and t value is tabulated below in table XVII.

TABLE NO XVII  
MEANS AND STANDARD SCORES OF ET AND NON ET STUDENT  
TEACHERS IN COGNITIVE INTEREST AREA

Group	No. of student teachers	Mean	Standard deviation	D = $ M_1 - M_2 $
ET student teachers	51	30.76	2.901	0.69
Non ET student teachers	84	30.07	3.644	

The value of  $\sigma_D$  calculated = 0.568

$$t \text{ value} = \frac{0.69}{0.568} = 1.2148$$

For df 133 the values of 0.05 and 0.01 levels of significance from table D are,

0.05 level = 1.98  
0.01 level = 2.62      Calculated t value = 1.2148

Observation :- The calculated t value is not significant at 0.05 and 0.01 levels.

Finding :- There was no significant difference in interest between the ET and Non ET student teachers in cognitive interest area. Hence hypothesis  $H_{3.1}$  stated by researcher was accepted. (see Fig.V.14)

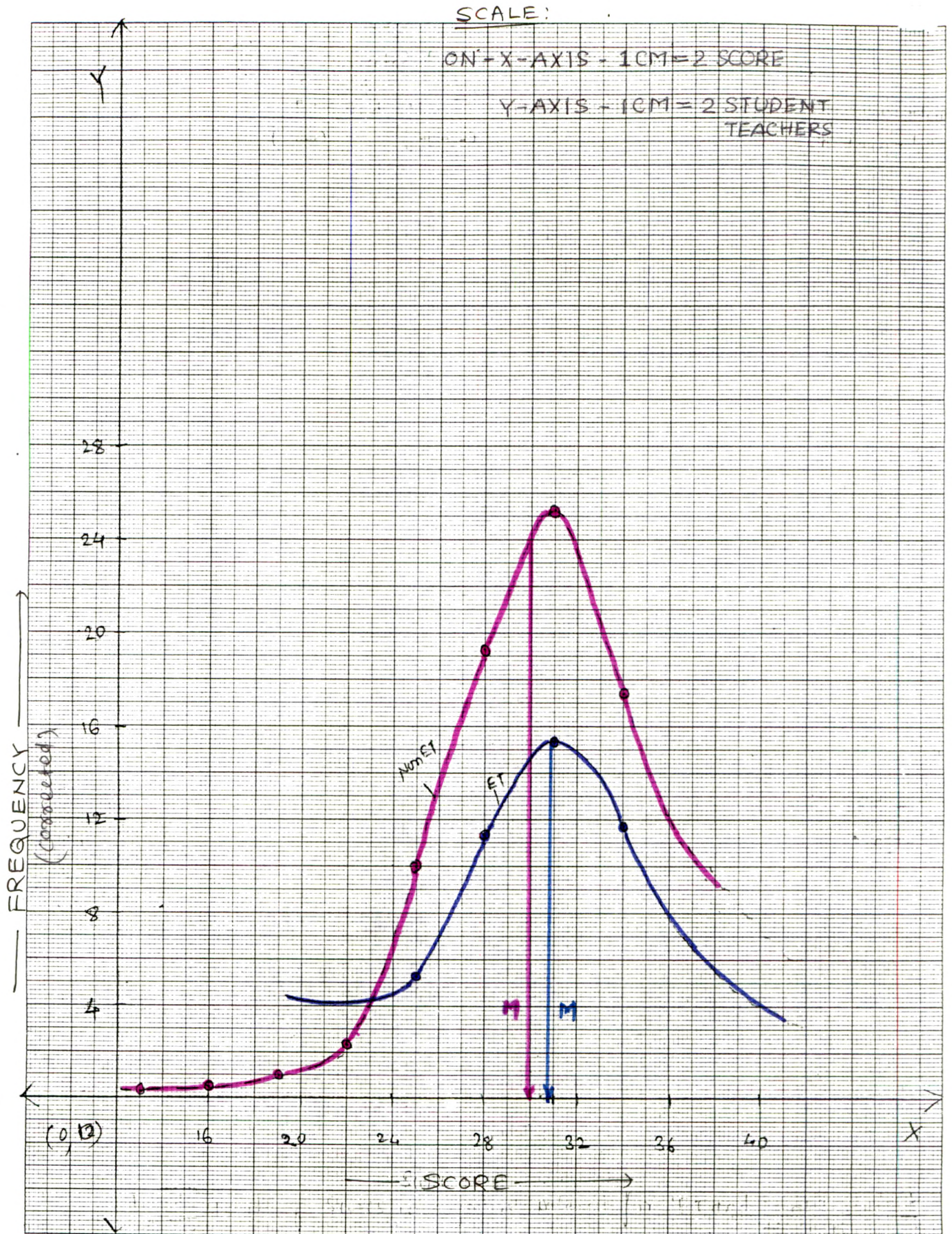


Fig. V-14 GRAPH (14): SCORES OF ET AND NON-ET STUDENT TEACHERS IN COGNITIVE INTEREST AREA

Fig. V.14

GRAPH OF SCORES OF ET AND NON ET STUDENT TEACHERS  
IN COGNITIVE INTEREST AREA

OBSERVATIONS AND INTERPRETATION :-

1. The curve for ET student teachers is bell shaped. The curve for Non ET student teacher is peaked having slight negative skewness.
2. The calculated means for ET and Non ET student teachers are 30.76 and 30.07 respectively having negligible difference of 0.69 resulting into non-significant difference between the both group. So it can be said that they are compact.
3. The distribution of score is from 13 to 35 for Non ET and from 25 to 35 for ET student teachers.

H<sub>3.2</sub>

There is no significant difference between the interest of ET and Non ET student teachers in creative interest area.

Required data is tabulated in table XVIII.

TABLE XVIII  
MEANS AND STANDARD DEVIATIONS FOR SCORES OF ET AND  
NON ET STUDENT TEACHERS IN CREATIVE INTEREST AREA

Group	No. of student teachers	Mean	Standard deviation	D = $ M_1 - M_2 $
ET student teachers	51	17.63	2.543	1.273
Non ET student teachers	84	16.35	1.5717	

By using the data from Table XVIII the value of  $\sigma_D$  calculated = 0.461.

∴ t value = 2.76739

For df 133, from table D, the values for 0.05 and 0.01 levels of significance are

0.05 level = 1.98

0.01 level = 2.62

Calculated t value = 2.7673

Observation :- The calculated t value is significant at 0.05 as well as 0.01 levels of significance.

Finding :- There was significant difference between the interest of ET and Non ET student teachers in creative interest area. So the hypothesis  $H_{3.2}$  was rejected.  
(See Fig.V.15)



SCALE:

ON X-AXIS 1CM = 4 SCORE

Y-AXIS 1CM = 2 STUDENT TEACHERS

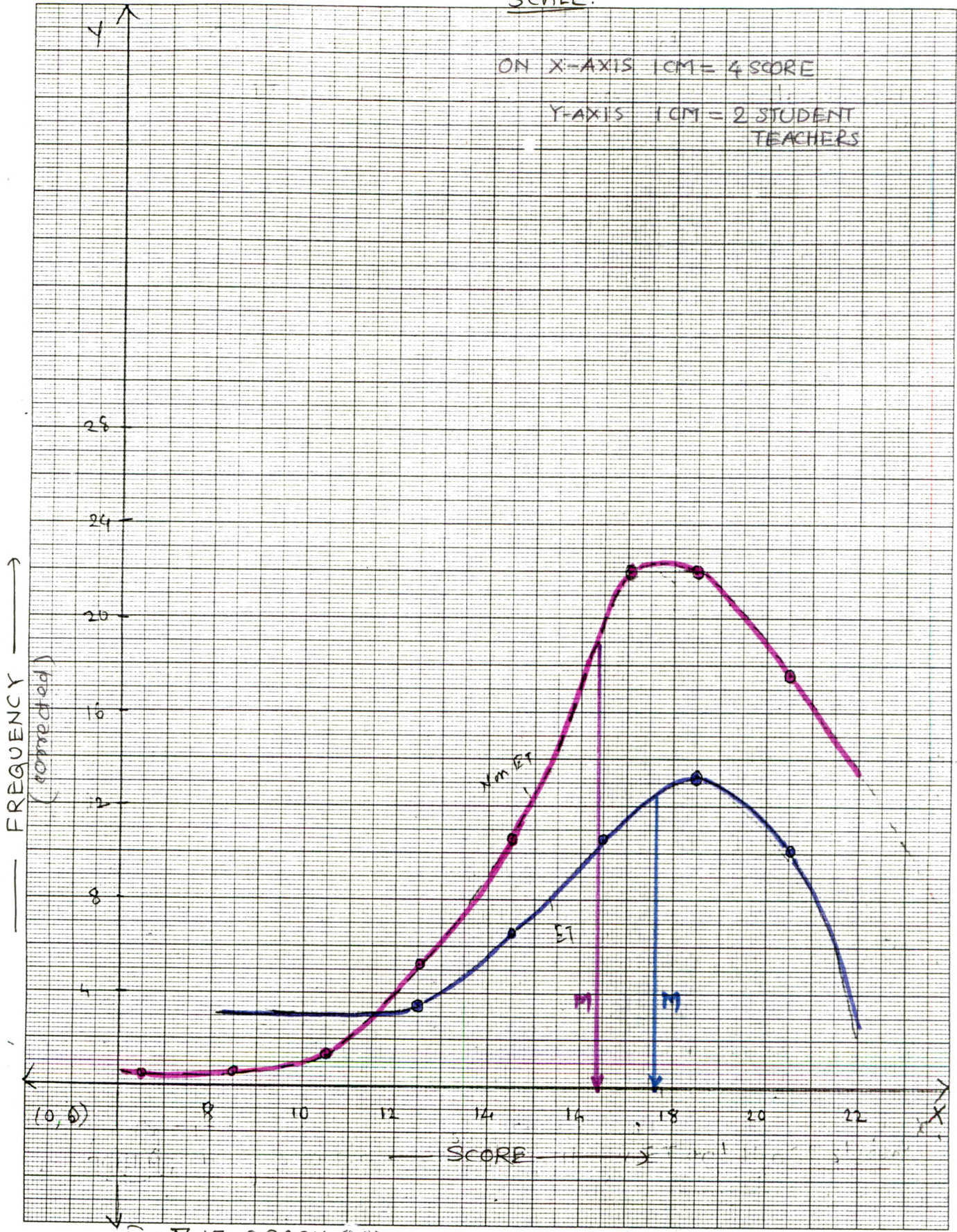


Fig V-15 GRAPH (15) SCORES OF ET AND NON-ET STUDENT TEACHERS IN CREATIVE INTEREST AREA.

Fig. V.15

GRAPH OF SCORES OF ET AND NON ET STUDENT TEACHERS  
IN CREATIVE INTEREST AREA

OBSERVATIONS AND INTERPRETATION :-

1. Both curves are having negative skewness. Amongst them curve for Non ET student has more negative skewness than that of ET student teachers.
2. The calculated means for Non ET and ET student teachers are 16.35 and 17.63 having remarkable difference of 1.273 for creative interest area.
3. The scores are spread from 6.5 to 20.5 for Non ET and 12.5 to 20.5 for ET student teachers. The scores of Non ET student teachers are spread widely than that of ET student teachers. So amongst the group the ET group is more homogeneous than Non ET student teachers resulting into significant difference between means.

H<sub>3.3</sub>

There is no significant difference between interest of ET and Non ET student teachers in applied interest area.

For further analysis i.e. for calculation of  $\sigma_D$  and t values the collected data is tabulated in table no. XIX.

TALBE XIX  
MEANS AND STANDARD DEVIATIONS OF SCORES OF  
ET AND NON ET STUDENT TEACHERS IN APPLIED INTEREST AREA

Group	No. of student teachers	Mean	Standard deviations	D = $ M_1 - M_2 $
Et student teachers	51	27.64	4.013	
Non ET student teachers	84	27.21	4.947	0.437

$$\sigma_D \text{ value by calculation} = 0.561$$

$$t \text{ value} = 0.437/0.561 = 0.561$$

The values of significance at 0.05 and 0.01 levels are from Table D, for df 133 are,

0.05 level = 1.98

0.01 level = 2.62

Calculated t value = 0.561

Observation :- The calculated t value is not significance at 0.05 and 0.01 levels of significance.

Finding :- There was no significant difference in interest between the ET and Non ET student teachers in applied interest area.

It can be said that hypothesis H<sub>3.3</sub> stated by the researcher was accepted. (See Fig. V.16)

SCALE:  
ON X-AXIS, 1CM=4 SCORE  
Y-AXIS 1CM=2 STUDENT TEACHERS

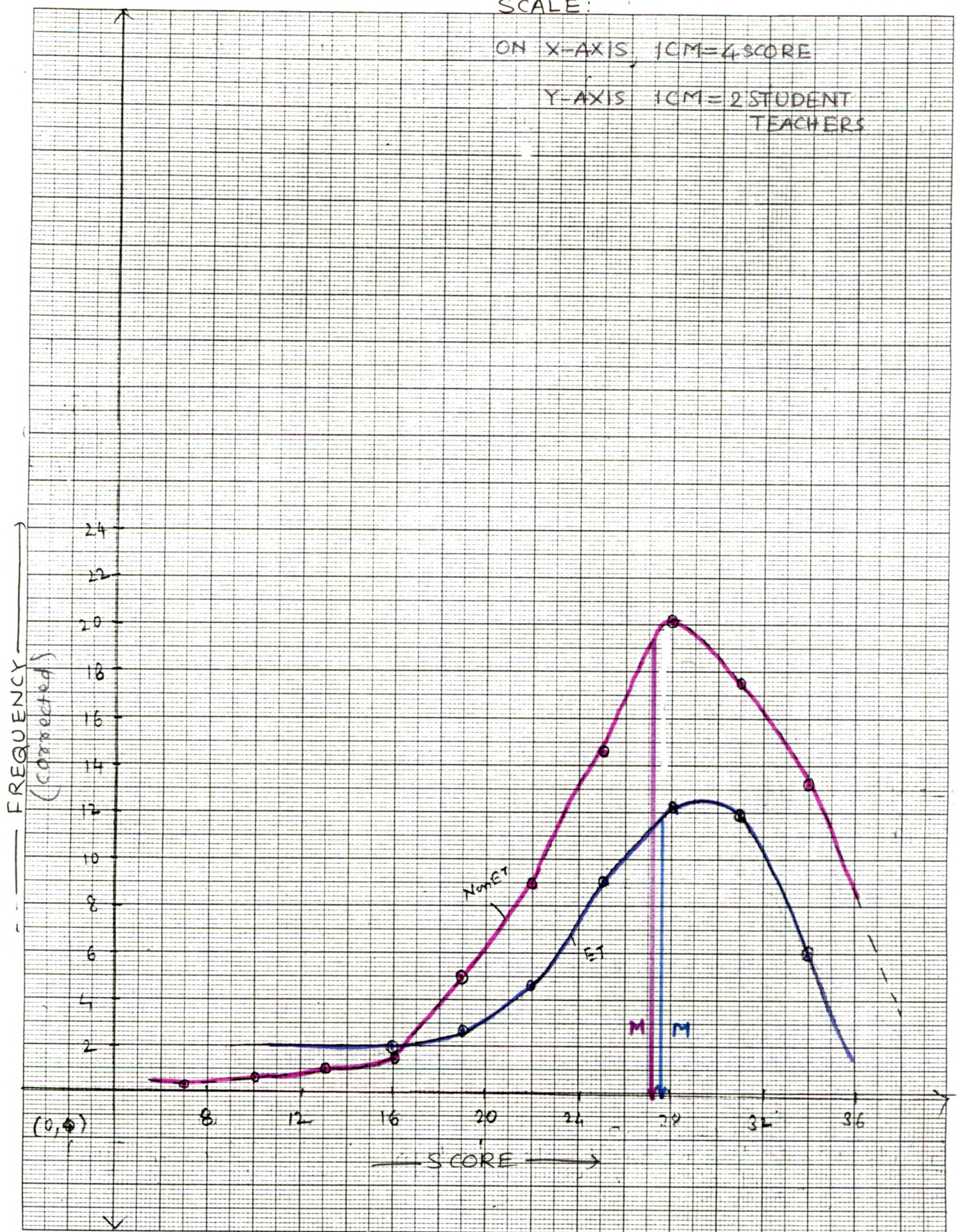


Fig V-16 GRAPH (16) SCORES OF ET AND NON ET STUDENT TEACHERS IN APPLIED INTEREST AREA

Fig. V.16

GRAPH OF SCORES OF ET AND NON ET STUDENT TEACHERS  
IN APPLIED INTEREST AREA

OBSERVATIONS AND INTERPRETATION :-

1. The curve for ET student teachers is bell shaped and negative skewness for the curve of Non ET is more than that of ET.
2. The calculated means for both groups are 27.64 for ET and 27.21 for Non ET having very small difference of 0.437, resulting the non significant difference between both means.
3. The scores of Non ET student teachers are spread from 7 to 34 and for ET it is from 16 to 34. Both the groups show compactness.

H<sub>3.4</sub>

There is no significant difference between the interest of ET and Non ET student teachers in interest related to management.

For testing of above hypothesis stated by the researcher, the data collected is given in table XX.

TABLE XX  
MEANS AND STANDARD DEVIATIONS OF SCORES IN  
INTEREST RELATED TO MANAGEMENT

Group	No. of student teachers	Mean	Standard deviation	D = $ M_1 - M_2 $
ET student teachers	51	31.47	3.8367	0.40
Non ET student teachers	84	31.07	3.585	

The calculated  $\sigma_D$  value = 0.664

t value =  $0.4/0.664$

t value = 0.6024

For df 133, from Table D, the values of levels of significance at 0.05 and 0.01 levels are,

At 0.05 level = 1.98      Calculated t value = 0.6024

At 0.01 level = 2.62

Observation :- The calculated t value is not significant at 0.05 and 0.01 levels of significance.

Finding :- There was no significant difference between the interest of ET student teachers and Non ET student teachers in interest related to management.

It can be concluded that the hypothesis H<sub>3.4</sub> was accepted. (See Fig. V.17)



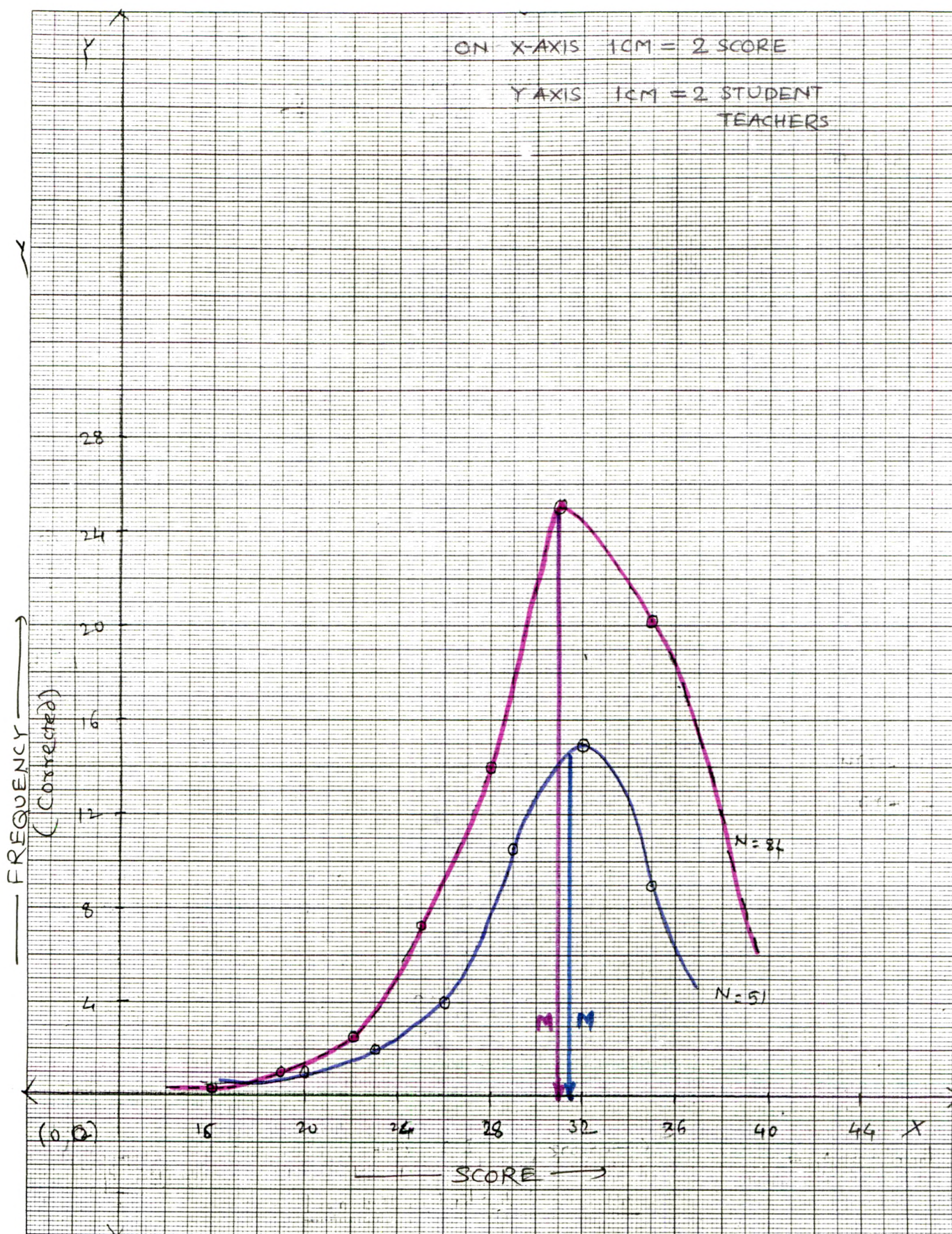


Fig. V-17 GRAPH (17): SCORES OF ET AND NON-ET STUDENT TEACHERS IN INTEREST RELATED TO MANAGEMENT

Fig. v.17

GRAPH OF SCORES OF ET AND NON ET STUDENT TEACHERS IN  
INTEREST RELATED TO MANAGEMENT

1. The curve for ET student teachers is bell shaped and that of Non ET student teachers is peaked having equal negative skewness and near about peak points.
2. The calculated means for both groups are 31.47 and 31.07 for ET and Non ET student teachers having very negligible difference of 0.4 resulting both the groups into equal interest related to management.
3. The scores are spread from 16 to 35 for Non ET and from 19 to 35 for ET student teachers.

H<sub>3.5</sub>

There is no significant difference in interest between the ET student teachers and Non ET student teachers in skill based interest area.

The data collected for testing of above hypothesis is given in table XXI.

TABLE XXI  
MEANS AND STANDARD DEVIATIONS OF SCORES IN  
SKILL BASED INTEREST AREA FOR  
ET AND NON ET STUDENT TEACHERS

Group	No. of student teachers	Mean	Standard deviation	D = $ M_1 - M_2 $
ET student teachers	51	18.06	3.25	2.95
Non ET student teachers	84	21.01	2.82	

The calculated  $\sigma_D$  value = 0.55

Hence t value =  $2.9/0.55 = 5.36$

For df 133, from Table D, the values of 0.05 and 0.01 levels of significance are

0.05 level = 1.98  
0.01 level = 2.62      Calculated t value = 5.36

Observation :- The calculated t value is significant at 0.05 and 0.01 levels of significance.

Finding :- There was significant difference between the interest of ET student teachers and Non ET student teachers in skill based interest area. Hence the hypothesis  $H_{3.5}$  stated by the researcher was rejected.

(See Fig. V.18)

\* Hypothesis accepted and rejected can clearly visualised from following table No.XXII.

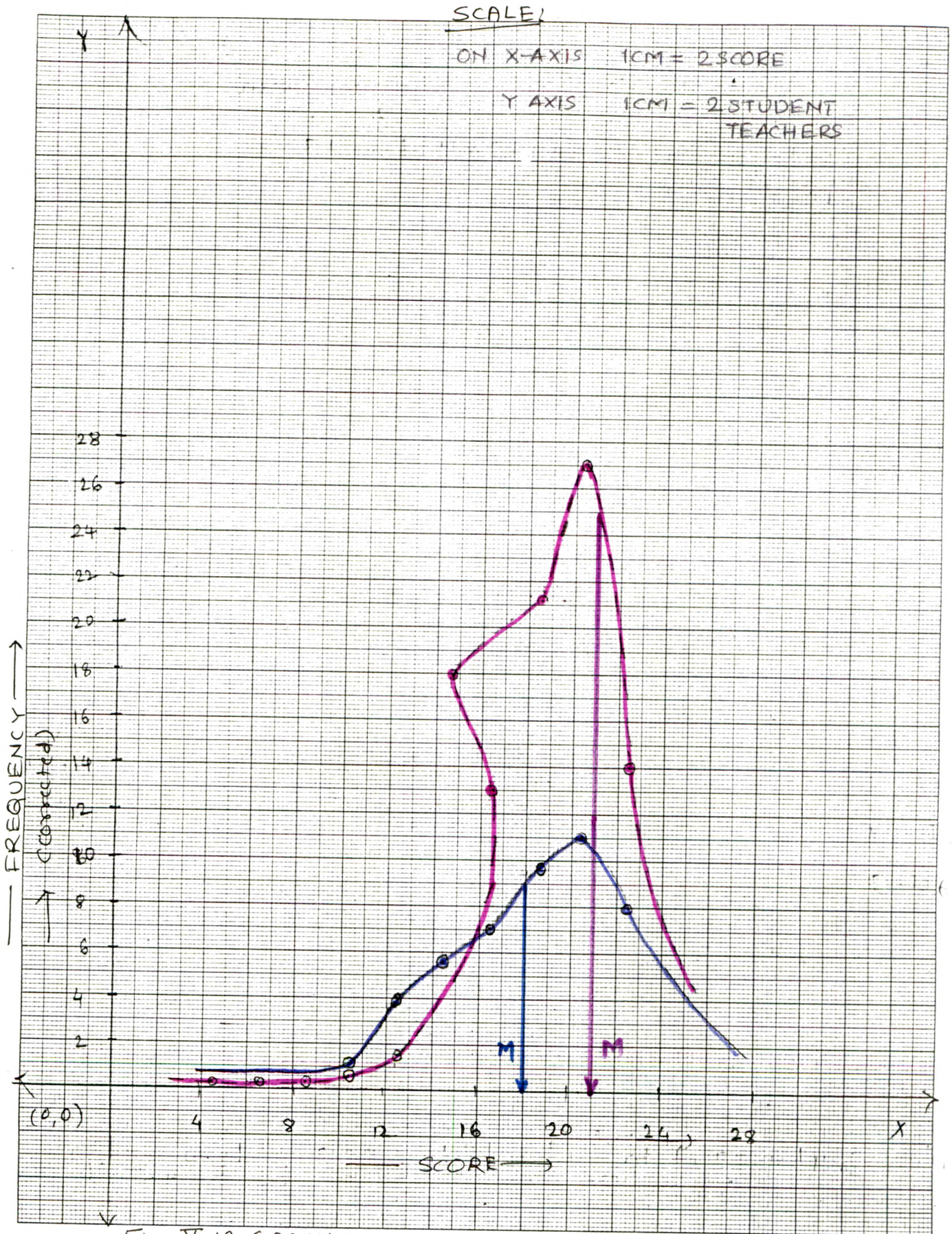


Fig. V-18. GRAPH (18): SCORES OF ET AND NON-ET STUDENT TEACHERS IN SKILL BASED INTEREST AREA

Fig. V.18

GRAPH OF SCORES OF ET AND NON ET STUDENT TEACHERS  
IN SKILL BASED INTEREST AREA

OBSERVATIONS AND INTERPRETATION :-

1. The curve for Non ET student teachers is bimodal, Peaked showing negative skewness. The curve for ET student teacher is bell shaped.
2. The calculated means for both the groups are 18.06 for ET and 21.01 for Non ET student teachers having remarkable difference of 2.6. Hence the difference between the means is statistically significant.
3. The distribution of scores for Non ET student teacher is more widely than the ET student teachers. The scores for the ET student teachers are spread close to mean.

TABLE XXII  
SUMMARY TABLE OF HYPOTHESES AND THEIR SIGNIFICANCE AT 0.05 AND 0.01 LEVELS

Hypothesis	Sub Hypothesis	Group of student teachers	t value	Significant or Non significant	Level of Significance
H <sub>1</sub>	-	Male and Female	2.344	S	0.05
	H <sub>1.1</sub>	-----	2.4072	S	0.05
	H <sub>1.2</sub>	-----	4.953	S	0.05, 0.01
	H <sub>1.3</sub>	-----	1.835	NS	---
	H <sub>1.4</sub>	-----	2.7625	S	0.05, 0.01
	H <sub>1.5</sub>	-----	1.7288	NS	---
H <sub>2</sub>	-	Urban and Rural	2.476	S	0.05
	H <sub>2.1</sub>	-----	1.50	NS	---
	H <sub>2.2</sub>	-----	1.384	NS	---
	H <sub>2.3</sub>	-----	2.114	S	0.05
	H <sub>2.4</sub>	-----	2.216	S	0.05
	H <sub>2.5</sub>	-----	1.1191	NS	---
H <sub>3</sub>	-	ET and Non ET	0.6636	NS	---
	H <sub>3.1</sub>	-----	1.215	NS	---
	H <sub>3.2</sub>	-----	2.7674	S	0.05, 0.01
	H <sub>3.3</sub>	-----	0.561	NS	---
	H <sub>3.4</sub>	-----	0.6024	NS	---
	H <sub>3.5</sub>	-----	5.36	S	0.05, 0.01

From Table XXII clear idea of significance of each hypothesis and subhypothesis can be understood.

**N.B.**

- 1) \* Indicates the hypothesis for which the separate norms have been calculated.
- 2) S indicates significant
- 3) NS means Not significant.