CHAPTER V

EXPERIMENTATION, ANALYSIS AND INTERPRETATION OF THE DATA

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5.1 Introduction.

5.2 Try-out study.

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CHAPTER V

EXPERIMENTATION, ANALYSIS AND INTERPRETATION OF THE DATA

5.1 INTRODUCTION

The aim of the present investigation was to study experimentally the effect of an integrated approach to teaching Social studies on the performance of the pupils; hence tools required for the present investigation, were developed. The previous Chapter dealt with them. The experiment was conducted in two stages viz. the tryout stage and the final experimentation. It was followed by an interpretation of the results obtained.

5.2 TRY-OUT STUDY

For the implementation of the new teaching strategy suited to the Integrated Approach to teaching Social studies in actual classroom situation, it was very necessary to consider its feasibility and completeness with respect to,

(a) the time allotted to each activity,

(b) its suitability to pupils understanding level, and

(c) classroom arrangement for each activity.

Hence a tryout study was conducted in two different situations.

2.1. Objectives of the try-out study

The objectives of the tryout study were as follows:- To study the feasibility and completeness of the different activities involved in the new strategy in terms of:

(a) time allotted to each activity;

(b) practicability of each activity in the classroom situation;

(c) suitability of classroom arrangement;

(d) arrangement of the display;

(e) seating arrangement of the group for different activities.

2.2. Sample

For the first tryout the sample under study consisted of pupils from Std. IV of a Marathi Medium School in Baroda. It was conducted in the month of January 1978 in the Baroda Education Society's Primary School. The purpose of the first tryout was administrative. The sample under study for the second tryout consisted of pupils from Std. IV of a Marathi Medium School in Poona. It was conducted in the month of March 1978 in the Adarsha Marathi Shala, Natu Bag Poona. Since the actual experiment was to be conducted in Poona, a school from Poona was selected for the second try-out, so that the suitability of the new strategy to the classroom situation in Poona could be assessed.

2.3 Selection of the Unit

Unit selected for the try-out study was that on "Man's way of Life", and why he has this particular way of life". Content of this topic came under the second unit in the New Integrated syllabus but it was not covered in that class. Content of this unit was at the end of the prescribed

syllabus of Social studies for IV standard in Maharashtra State. For the first try-out, same unit was taught for try-out because first try-out was conducted in Baroda and they have altogether different content i.e. Gujarat State history and Geography.

It was therefore, considered appropriate unit for try-out study.

2.4. First Try-out and Modifications

The First try-out was conducted in the month of January 1978 in the Baroda Education Society's Primary School. After the try-out, the following modifications were made in the teaching strategy.

Orientation Programme:

It was noticed that more time was required to explain the new concept of social studies to the pupils and to give them information about the instructional materials. Hence it was decided that one more period should be allotted to the orientation programme i.e. in all two periods.

The first period should be utilised for :-

i) explaining the new concept of social studies,

ii) making clear the teaching learning process under the new strategy,

iii) giving information about the displays.

The second period should be utilised for :-

i) explaining the procedure of group work and group activity,

ii) explaining the responsibility of the group leader and individual members of the group,

iii) explaining how to prepare work report of the group.

In Step I - Introduction to new topic.
No change is required.

In Step II - Exploratory observation of the displays.

In Step III - Exploratory work with text book.

It was found that it was not possible to conduct three activities within one period. In view of completeness of the work task time allotted to each activity of the steps fell too short. Hence the following modifications were made in the original plan.

Original Plan		Modifications	
Step II	Time	Step II	Time
1. Explanatory observation of the displays.	20 min.	1. Exploratory observation.	25 min.
2. Discussion among the group.	10 min.	2. Feedback.	10 min.
3. Feedback.	10 min.		
Step III		Step III	
1. Exploratory work.	20 min.	1. Exploratory work.	25 min.
2. Discussion among the group.	10 min.	2. Feedback	10 min.
3. Feedback.	10 min.		

Separate period of 35 Mins. should be allotted for the activity 'Discussion among the group'.

In Step IV i.e. activity for the whole class 35 min.

Step V - No change is required.

In Step VI i.e. Writing and Presenting Work Report. It was noticed that one period was not sufficient for these two activities. It was, therefore, decided that writing work report should be done at home as an assignment and only activity of Presenting Work Report should be conducted in the class.

In Step VI - Answering the Unit Test 40 min.

No change is required.

The only important change made after the first try-out was in the number of steps. Originally there were six steps. One more step was added in the teaching strategy and now the total number of steps is seven.

Arrangement of the Displays:

According to the original plan each group of pupils was provided with one display. But it was noticed that this arrangement did not suit to the bright pupils. They finished their job earlier than others and created disturbance in the class. The slow-learners, on the other hand, required more time and so could not complete their observations. Besides, another difficulty was experienced. It was observed that the contents of the maps or charts were not of the same difficulty-level. So some required more time than others. Hence it was decided that instead of exchanging displays from one group to another, all the displays should be put up on the walls and pupils should

move from one display to another according to their needs. This would facilitate the bright pupils and would allow each pupil to work at his own speed.

Seating Arrangement of the Classroom:

According to the original plan there were two vertical rows of duel benches and four groups sat in each row. But this seating arrangement was not convenient for communicating with each other while working in a group as thereby one group sat in a straight line on two duel benches. Hence it was decided to change the arrangement of the group, as under.

Instead of two vertical rows, there would be three vertical rows of benches, consisting of eight duel benches on which three groups would sit, on the side two rows and two groups would sit in the middle row of benches. In first and second vertical row of duel benches on 1st and 2nd bench, 4th and 5th bench, 7th and 8th bench, and in the middle vertical row 3rd and 4th bench, 6th and 7th bench, one group would sit on above mentioned two benches facing each other i.e. Three pupils would sit on each bench.

(Please refer Chart Nos. 11 and 12 in Chapter IV) After this modification the plan was ready for the Second try-out.

2.5. Second Try-out and Modifications:

The second try-out was conducted in the month of March 1978 in 'The Adarsha Marathi Shala, Natu Bag, Poona-2.

The modified teaching strategy was implemented once again and it was noticed that modifications were needed only in the following steps of the Teaching Strategy, and the slight change in the seating arrangement.

Orientation Programme:

It was noticed that two periods were not enough since along with information the pupils required actual demonstration. It was therefore, decided to allot total three periods to the orientation programme.

The first two periods were to be conducted according to the previous plan, while the third period was utilised to demonstrate :-

How to use instructional materials,

How to work in a group, and

working of the group,

How to maintain work reports both individual and group.

Step - II : Exploratory observation of the Displays:

It was found that time allotted for this activity was not sufficient. Pupils could not complete their observation; hence it was decided to give one more period to this activity, and feedback was to be given at the end of the second period.

Seating Arrangement of the groups:

It was not convenient to allow three pupils to sit on one dual bench to write, to read, to work or to move for some work. Hence it was decided to remove four benches from the middle vertical row towards the first row facing to this

vertical row, and four benches towards the third vertical row facing to this vertical row, then each group would sit on three benches, two benches from side row and one bench from the middle row.

Thus after the second try-out necessary modifications were made in the teaching strategy, and it was finalized for the final experiment.

5.3 FINAL EXPERIMENT

The experiment started from the commencement of the academic year and lasted for one full academic term i.e. for four months. In order to avoid novelty effect on the pupils the Investigator who was to teach the experimental group, was introduced as a teacher newly appointed in the school. Before starting the actual experiment, an Achievement Test developed by the Investigator was administered as a pre-test to the pupils from both the groups, the experimental as well as the control group. The actual teaching through the new teaching strategy (hereafter referred as new treatment) was conducted in the experimental group by the Investigator and teaching through the conventional method (hereafter referred as conventional treatment) was conducted in the control group by the school teacher who had ten years' teaching experience. After completing the teaching programme, the same achievement test which was administered before starting the experiment, was administered to the experimental as well as the control group.

3.a. Conduct of the Experiment

It will be very interesting to give the details of the experiment in the actual classroom situation. They would help to give a complete picture of the planned programme in the real classroom situation. Description of each unit conducted under the new treatment is given as per plan and steps of the teaching strategy.

The orientation programme was completed during the first three periods as per plan. Before starting the actual work the class was divided into eight small groups, each consisting of 6 or 7 pupils. Intelligence level of the pupils was considered while formulating the groups. Group Leaders were chosen according to the suggestions of the group members. One file was given to each group to keep the questions/answer sheets. After completing the unit work and checking work, all the question-answer sheets were given back to the pupils for study.

Teaching according to the new treatment commenced from 19th June 1978. The new teaching strategy consisted of seven steps. Hence report of the experiment has been given as per steps. Each step of the new strategy was conducted as per plan of the unit. It is as follows:-

Steps of the new strategy restated :

I Introduction : Brief overview of the unit-explanation of the new concept of social studies and acquaintance with the display.

II Exploratory observation : with key questionnaire.

(A) Observation of Maps, Charts - and collection of information.

(B) Feedback.

III Exploratory work : With text-books and key questionnaire.

(A) Reading and locating the ideas and collection of information.

(B) Feedback.

IV Group Discussion : Pupils discussion among themselves on the collected information.

V Activity for the whole class.

VI Presenting work report.

VII Unit test.

TABLE 10

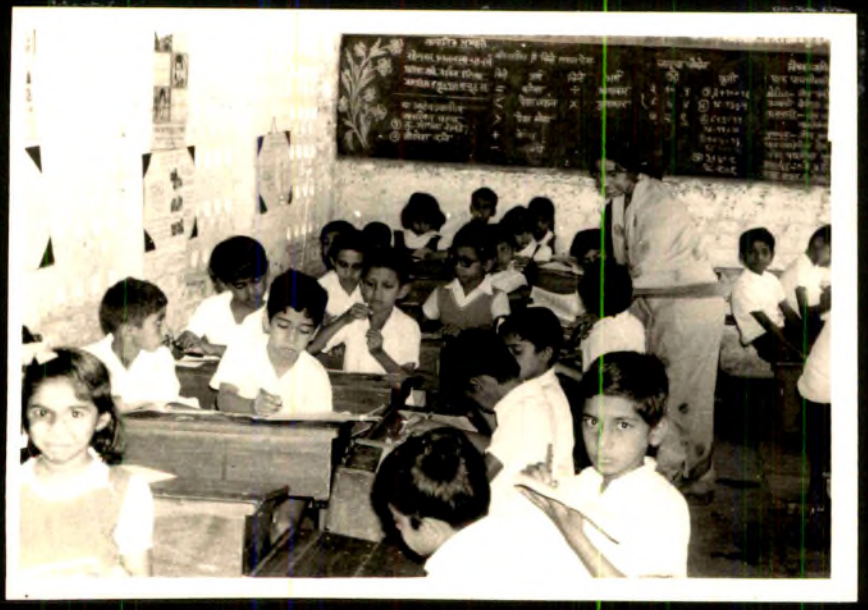
Periods Allotted to each step of new strategy and Periods actually required to Each Step during the Experimentation.

Step / Part	Unit I				Unit II				Unit III				Unit IV			
	I	II	I	II	I	II	I	II	I	II	I	II	I	II	I	II
	A		R		A		R		A		R		A		R	
1. Introduction	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1
2. Exploratory Observation	2	2	3°	2	2	2	2	1°	2	2	1°	1°	2	1	2	1
3. Exploratory work	1	1	1	2°	1	1	1	2°	1	1	2°	2°	1	1	1	1
4. Discussion among groups	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1
5. Activities for whole class	1	1	1	1	1	1	1	1	1	1	1	1	1	1	2	2
6. Presenting work report	1		2°		-		1		1		1		1		1	
Feedback	-		1°	2°	-		(2°) 1+1		-		3° 1+2		-		2° 1+1	
Total	6/7		8/11		6/7		7/8		6/7		7/9		6/6		8/8	

No separate period was kept for the feedback in the modified plan.

NOTE : A = Allotted period - for each unit.
R = Required period for each unit.
Roman Nos = Section of the unit.
(o) = Indicate change in Plan.

EXPLORATORY OBSERVATION OF THE DISPLAY
"ACTIVE INVOLVEMENT OF THE LEARNER"



EXPLORATORY WORK THROUGH PRINTED &
CYCLOSTYLED MATERIALS.
"LEARNING ON THEIR OWN"

According to plan feedback was to be given at the end of the second day's exploratory observation period. But in actual practice one or two separate periods had to be given for feedback.

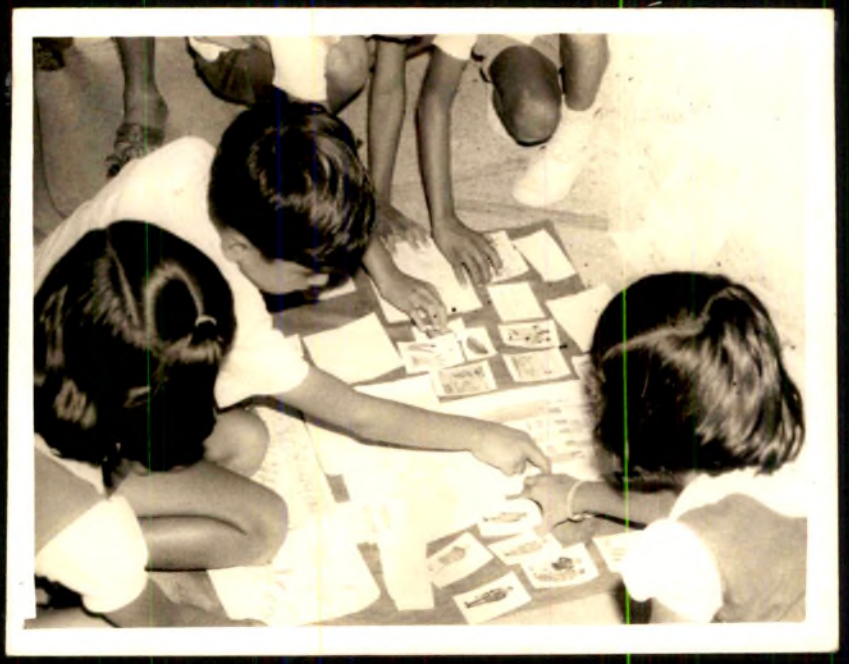
Step II - Exploratory Observation

During this activity, pupils were allowed to move from one chart to another, according to their needs. They were free to approach any chart first. Hence most crucial difficulty was experienced during this period when they were asked to move from one chart to another. Pupils made too much noise at that time. It was difficult to maintain class control. They spoke so loudly that the whole class seemed to be devoid of any discipline. So the Investigator had to use certain devices to keep them quiet. It was announced that one credit would be given to the group which works silently and one minus credit to one which makes noise. This device worked well for the first Unit. There after another device was resorted to. Some sentences were written on the board for enccuraging the pupils to work silently. viz.

- o Good pupils of the Good group always work silently.
- O Good pupils always speak in a low voice.
- o Good pupils always help their group members.
- o Good pupils always complete their work and so on.

This device also worked well and from the second part of the second unit onwards the tendency towards making noise was reduced to a considerable extent.

DISCUSSION AMONG THE GROUP :
COMMUNICATION OF THE ACQUIRED
KNOWLEDGE"



ACTIVITY FOR THE WHOLE CLASS :
" REINFORCEMENT OF ACQUIRED KNOWLEDG

Though the class seemed to be noisy, it was noticed that pupils were immensely interested in doing their assigned job and except two or three pupils all the rest could complete their job. So it can be well inferred that the great noise at the beginning was due to great enthusiasm on the part of the pupils to finish their assigned job. The second step of the new strategy was conducted as per plan and no change was needed.

Step III - Exploratory Work

The seating arrangement for this activity had to be changed. While it was being changed that the pupils made too much noise, in fact it took only five to six minutes to change the arrangement. But the investigator had to face the same difficulty viz. tendency towards making noise. But it continued only for five to six minutes. Hence it was neglected. Afterwards pupils worked as usual i.e. in a slightly noisy atmosphere.

Step IV - Discussion among the group

The nature of the step was slightly changed. According to the original plan the pupils were to discuss among the groups, on the collected information and get insight about the same. But in practice the following procedure was followed. There was little discussion and communication about new thoughts and ideas among the groups but verification and checking of the collected material was conducted. One pupil from each group read out his collected material

and others checked their information accordingly. It was also checked whether each had completed his assigned job.

In regard to the second unit there was some change. According to the original plan steps IV and V viz. group discussion and activity for the whole class were to be conducted separately. And they were so conducted in the first unit. But during the second unit the activities of both the steps were combined as per need of the pupils.

Step V - Activity for the whole class

Nature of this activity varied from unit to unit e.g.

Unit I Part I)
) Question and answer type activity.
Unit II Part II)

Unit I Part II)
) Special activity of arranging exhibition.
Unit II Part I)

Unit III - Part I & II - Academic games.

Unit IV - Part I & II - Academic game of a different type that of last unit.

Thus for Unit I, Part I and for Unit II Part II, there were purely academic activities. Hence special activity of arranging exhibition was arranged for these Parts.

Special Activity - Arranging Exhibition

According to plan pupils had to bring some objects, pictures, photographs for exhibition, and notice was given to them accordingly for three or four times. But most of the students did not bring any objects for exhibition for

ACTIVITY FOR THE WHOLE CLASS :
" REINFORCEMENT OF ACQUIRED KNOWLEDGE "

PRESENTATION OF WORK REPORT :
" SKILL IN SYSTEMATIC PRESENTATION "

the Unit I Part I. Considering the experience of the try-out the Investigator had provided drawing materials and carbon papers to the pupils to draw pictures from the text books or to draw sketches and colour them. Then every student prepared one picture on the given topic. At the end of the period, pupils arranged a small exhibition of these pictures or sketches. Most of the pictures were nicely prepared. They took much interest in this activity. One effect of this was seen in the next unit, where they had to arrange again a small exhibition. This time pupils brought the expected materials for the exhibition.

Academic game: Since childrer are fond of games pupils participated in this activity with joy. They enjoyed more the academic game which was conducted during the fourth unit. It does not mean that they did not enjoy the academic game provided in the third unit but between the two, they liked the second game more because there was ample scope for active movement throughout the game.

Thus these activities proved joyful to the pupils and in addition reinforced the acquired knowledge.

The Feedback Session

In the modified plan after the second try-out there was no separate period for feedback. But during the experimentation certain modification was made. According to modified plan, Feedback was to be conducted at the end of the work session, whenever the work was on new content, but actually the Investigator had to devote an additional

separate period for feedback. During this period the Investigator read out the correct answers and pupils checked their answers accordingly. At the same time, necessary explanation, along with display was given on the demand of the pupils.

Assignment:

Assignments were given after the completion of each new activity.

Nature of Assignment:

1. Writing the answer to some important questions from the key questionnaire.
2. Some short, essay-type questions were given in addition to key questionnaire.
3. Reading : Some portion from their text book, related to the topic they were learning.
4. Preparing paper models or sketches on the given topics.
5. Collecting : Pictures and photographs on given topics.

Arrangement for group work observation:

Four pairs of observers from the B.Ed students whose methods were History and Geography were selected. The Investigator gave them orientation and these observers came to class and studied for a week how to rate pupils in particular behaviour. Two groups were allotted to one pair of observers.

Arrangement of the observation was as follows :-

TABLE 11

Arrangement of the observation

Pair of observers	Day	No. of Group
'A' Pair	Monday	Group 1 and 2
'B' Pair	Tuesday	Group 3 and 4
'C' Pair	Wednesday	Group 5 and 6
'D' Pair	Thursday	Group 7 and 8

In this way the whole class was to be rated during the week and every group was to be observed. But though it was planned to observe the behavior of the student while the teaching was going on in practice such observation could not be conducted due to administrative difficulty related to the selected group of observers, the students of the B.Ed. College had so many other pre-occupations related to their training course as a result of their crowdy training programme, they could not attend each and every class of the experimental group expected number of observations amounted ten for each small group (i.e. 1 to 6).

The observers rated the performance not in required pattern. The result was insufficient data related to performance of student in the classroom setting so the investigator felt it proper not to analyse and draw any inference from them.

5.4 THE RESULTS

As mentioned earlier, the experiment has been conducted for one major objective in view, namely, to study the effect of an integrated approach to teaching social studies on the performance of the pupils. At the end of the experiment, the data were collected. The statistical data were analysed and processed further for testing the hypotheses. Data on unit test, pre-test, post-test and intelligence test were processed at 'Physical Research Laboratory, Ahmedabad', whereas data on gain scores for all variables were processed at the statistical section of 'Gokhale Institute of Politics and Economics', Poona. The results of the study are presented and discussed herewith under different heads.

Change in Achievement Performance during Experimentation

During the experiment, unit test was administered to measure the achievement performance of the pupils of the experimental group, after completing the teaching of each unit. The purpose of administering the unit test was to find out the non-understood portion as well as the progress in achievement, so that feedback could be given according to the pupils' need. The results of the unit tests also give a comprehensive picture of the pupils' progress from I unit to IV unit in different variable, as well as in total performance.

FIG-5 FREQUENCY POLYGON REPRESENTING NUMBER OF SCORES FROM INTERVAL TO INTERVAL OF FOUR UNIT-TESTS SCORES IN TOTAL PERFORMANCE

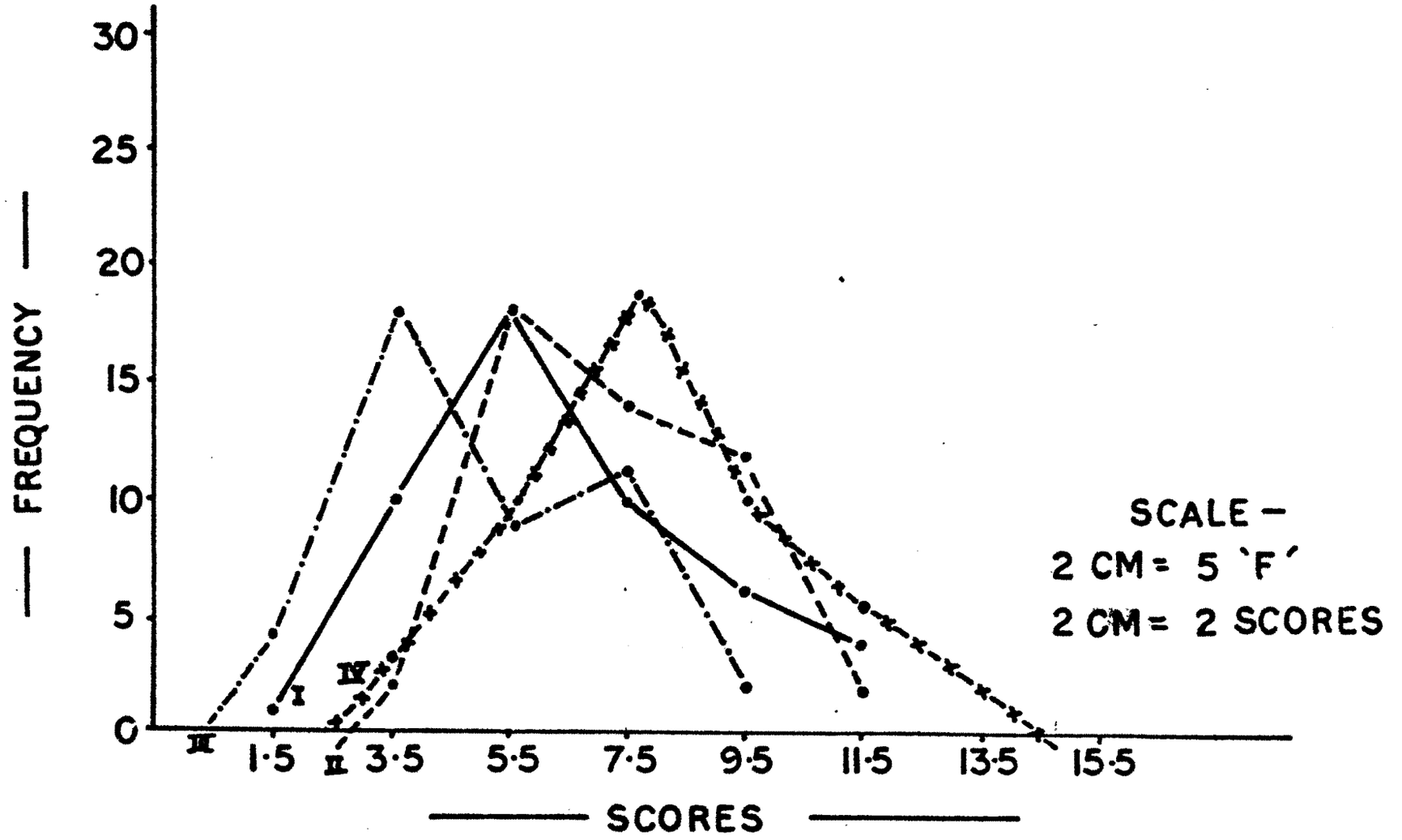


TABLE 12

Mean score of the Achievement of the unit test in the Total Performance

Unit Test No.	Mean	Sd.
I Unit	10.85	5.08
II Unit	12.31	4.29
III Unit	8.15	4.57
IV Unit	11.46	5.54

Results in the Table 12 provide a comprehensive picture of the achievement performance in the unit tests which were administered during the period of experimentation. It was observed that the mean value 8.15 of the unit test III is the lowest and the mean score 12.31 of the Unit II is the highest among the four unit tests. However mean score 10.85 of the first unit and the mean score 11.46 of the fourth, fall between the highest and lowest mean.

Further, for the purpose of giving a clear picture of the progress in Total Performance Frequency Polygon of 48 pupils' achievement score is given in Fig. 5.

It shows in graphic form how the scores in group are distributed and the rise and fall of the line shows the increase or decrease in the number of scores from interval to interval.

FIG. 6 - FREQUENCY POLYGON REPRESENTING NUMBER OF SCORES FROM INTERVAL TO INTERVAL OF FOUR UNIT-TESTS SCORES IN KNOWLEDGE AND COMPREHENSION

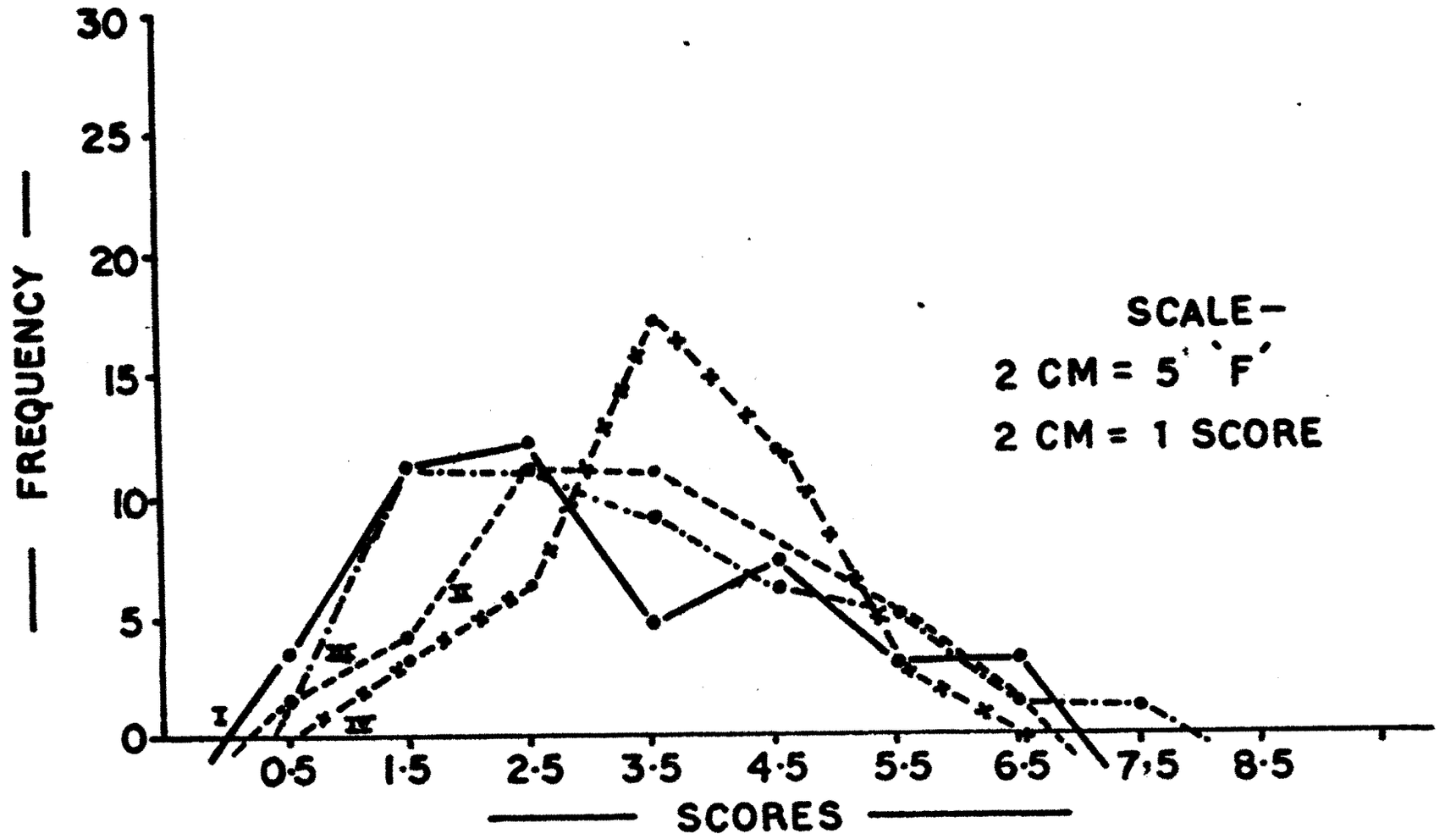


TABLE 13

Mean score of the Achievement of the Unit Test in Knowledge and Comprehension.

Unit test No.	Mean	Sd.
Unit I	5.33	3.30
Unit II	6.63	2.45
Unit III	5.56	3.28
Unit IV	5.98	3.06

Above Table No. 13 gives a comprehensive picture of the achievement in knowledge and comprehension in the unit tests. It indicates the lowest mean (5.33) of the first unit and the highest mean score (6.63) of the second unit, and mean score (5.56) of the third unit and the mean score 5.98 of the fourth unit fall the lowest and highest mean score.

Further, for the purpose of giving clear picture of the progress in knowledge and comprehension, Frequency Polygon of 48 pupils' achievement score is given in Fig.6.

It shows in graphic form how the scores in group are distributed and the rise and fall of the line shows the increase or decrease in the number of scores from interval to interval.

FIG-7 FREQUENCY POLYGON REPRESENTING NUMBER OF SCORES FROM INTERVAL TO INTERVAL OF FOUR UNIT TESTS IN SKILL

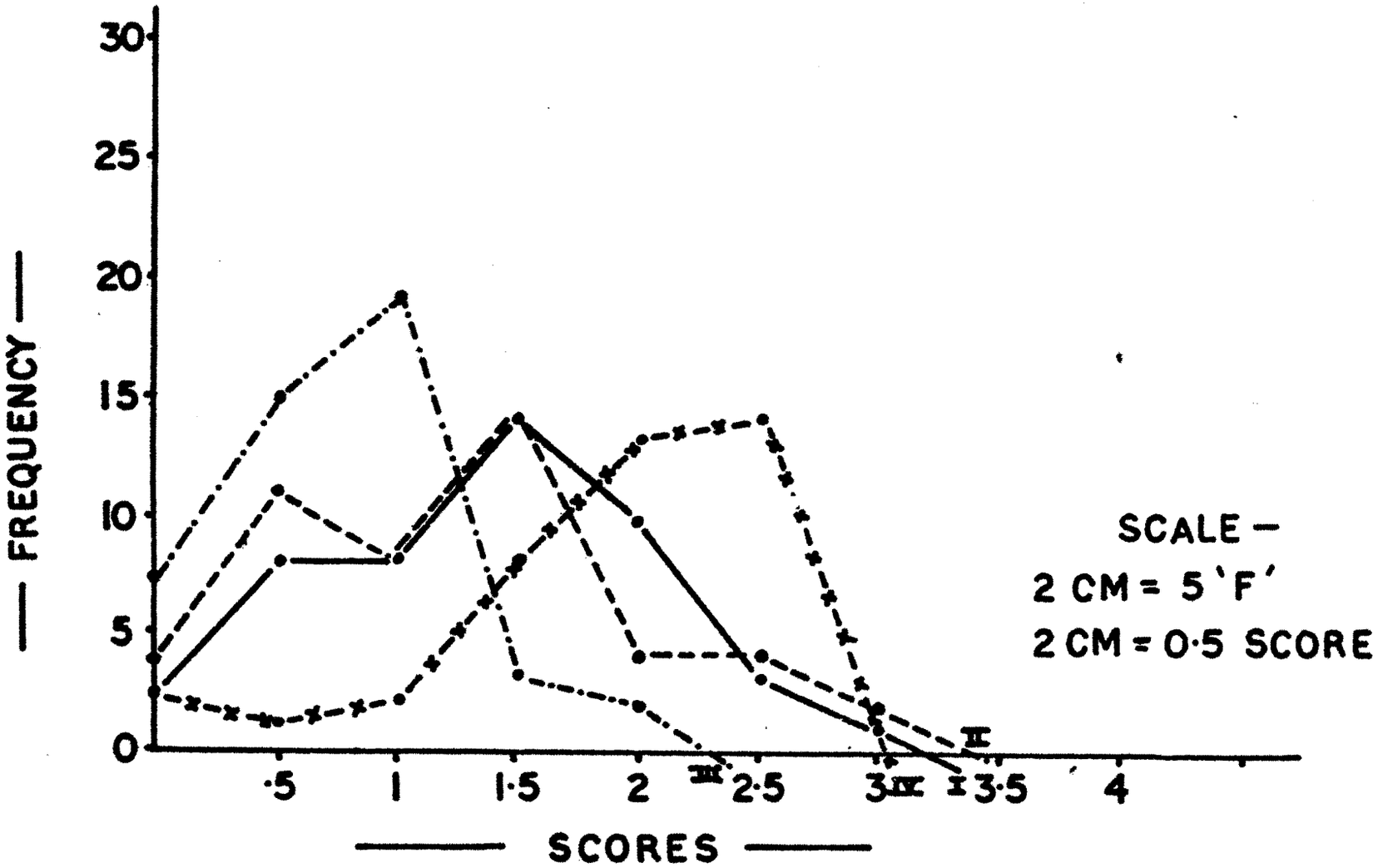


TABLE 14

Mean score of the Achievement of the Unit Test in Skill.

Unit Test No.	Mean	Sd.
Unit I	2.65	1.47
Unit II	2.44	1.60
Unit III	1.48	1.03
Unit IV	3.40	1.83

The Table No. 14 gives the comprehensive picture of attainments in the four unit tests in the objective - 'Skill'. It can be seen that mean score of the achievement in the skills for Unit Test III is (1.48) the lowest and the mean score (3.40) of the achievement for the test IV is the highest. And Mean score (2.64) of the first unit and the mean score (2.44) for the second unit fall between the highest and lowest mean score.

Further for the purpose of giving a clear picture of the progress in skill Frequency Polygon of the 48 pupils' achievement scores is given in Fig.7.

It shows in graphic form how the scores in group are distributed, and rise and fall of line shows the increase or decrease in the number of scores from interval to interval.

FIG-8 FREQUENCY POLYGON REPRESENTING NUMBER OF SCORES FROM INTERVAL TO INTERVAL OF FOUR UNIT-TESTS SCORES IN ATTITUDES

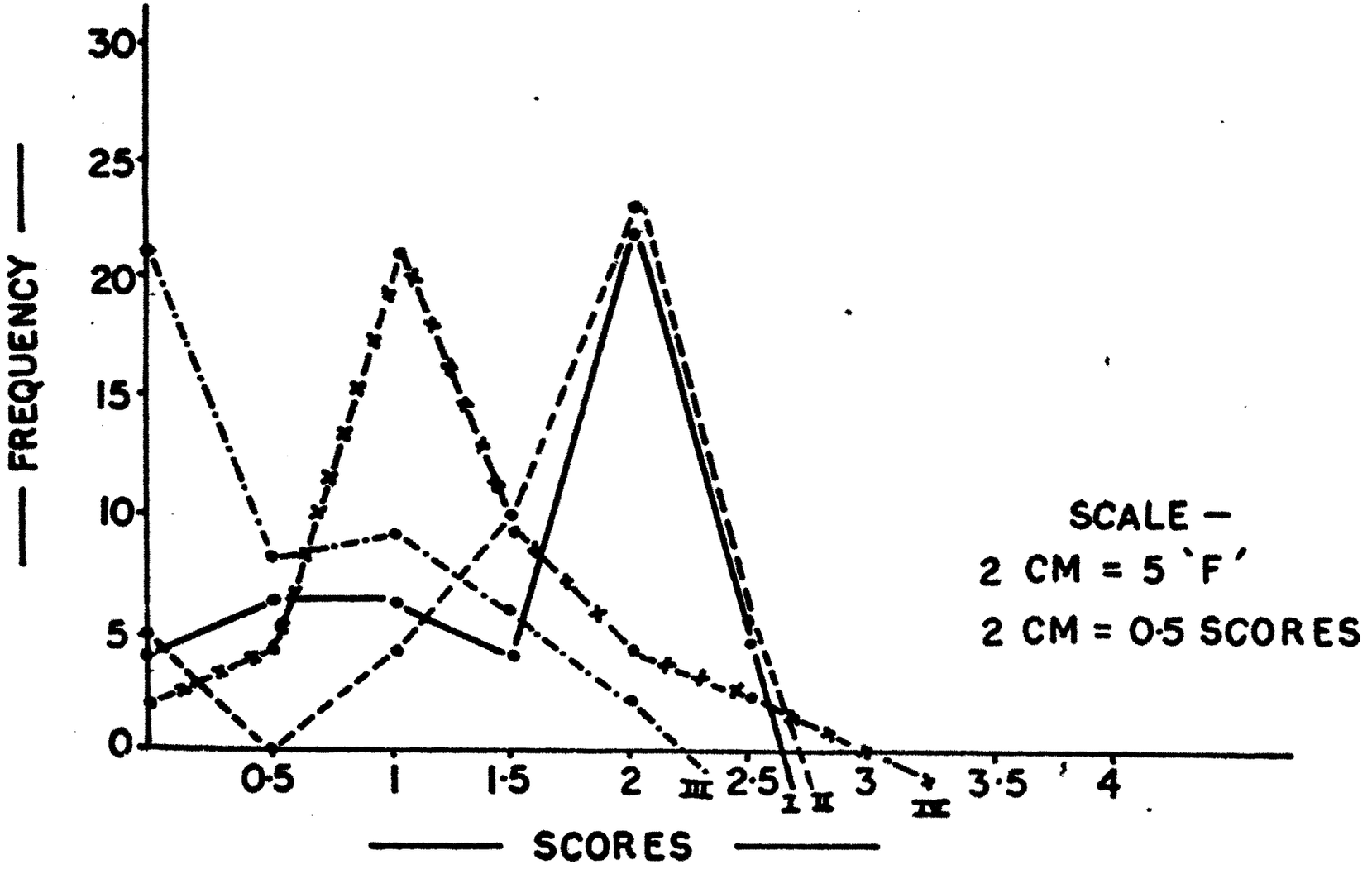


TABLE 15

Mean score of the Achievement of the Unit Test in Attitude.

Unit Test No.	Mean	Sd.
Unit I	2.86	1.61
Unit II	3.23	1.45
Unit III	1.08	1.25
Unit IV	2.06	1.30

The above Table No. 15 gives a comprehensive picture of the achievement in the Attitudes for the unit tests. The mean score 1.08 of the unit test III is lowest and the mean score 3.23 of the unit test II is the highest. And mean score 2.86 of the first unit and the mean score 2.06 of the fourth unit fall between the highest and the lowest mean scores.

Further for the purpose of giving a clear picture of the progress in Attitudes Frequency Polygon of the 48 pupils' achievement scores was given in Fig.8.

It shows in graphic form how the scores in group are distributed and rise and fall of the line shows the increase or decrease in the number of scores from interval to interval.

Interpretation and Conclusion:

Comprehensive picture of the pupils' achievement during the period of experiment indicates that pupils' achievement score increased in the second unit as well as in the fourth unit and pupils' achievement was less in the first unit and very less in the third unit in all the experimental variables, i.e. total performance, knowledge and comprehension, skill and attitude.

According to theory of learning, at the beginning of any new treatment progress is slow, as learners are new to the treatment. As they get acquainted with the new treatment, novelty of the new treatment increased their interest in learning. In the same way, achievement performance of the pupils was increased in all variables in the second unit. But immediately after the top most achievement learners got fatigue and their achievement performance decreased in all variables. Nature of the third unit indicates that the number of new concepts* is comparatively less than the number of concepts of the second. Still the achievement performance has decreased, hence it can be stated that this period was the plateau of learning. Pupils got fatigue and therefore, their performance decreased.

New Concept : First Unit (7) Second Unit (9)

Third Unit (5) Fourth Unit (5)

* No. in brackets denote the no. of new concepts.

Thereafter achievement performance again increased as compared to the scores of the third unit. It indicates that as pupils came to know that they have come to the end their enthusiasm increased and they recorded better achievement. Hence it can be emphatically said that learning has taken place naturally.

Changes in Achievement Performance:

Effect of the Integrated Approach to teaching social studies on achievement performance has been assessed by comparing the mean of the gain scores of the group taught through the integrated approach and the group taught through conventional approach on the Achievement test. Achievement test, which administered as pre-test i.e. before staring the experiment, was administered as post-test i.e. after completing the experiment.

Results of the pre-test scores:

Before reporting the results of the above aspect, it is essential to report the result of the pre-test which was treated as entering behaviour performance of the pupils. This pre-testing of the pupils achievement performance was the base of the further testing.

Mean scores on pre-test of different components of the achievement performance which were under present investigation have been presented and discussed under different heads in Table No. 16.

TABLE 16

Mean score of the Achievement on Pre-test.

Variables	Experimental		Control		't'values
	Mean	Sd.	Mean	Sd.	
Total Performance	13.50	8.47	13.49	8.38	.007
Knowledge & Comprehension	5.91	3.80	5.76	3.86	0.20
Skills	1.69	1.81	1.94	1.50	0.76
Attitudes	5.90	4.51	5.82	4.71	.078

't' values .007, 0.20, 0.76, .078 of all above mentioned variables are not significant.

The Hypotheses:

Before starting the experiment it was hypothesised that there was no significant difference between the achievement mean scores, of total performance, of knowledge and comprehension, of skill, of attitude, on pre-test of social studies of the experimental group and control group.

As the groups consisted of the number of 48 and 51 (99) the required value to be significant at .05 level of significance was 1.98. The computed critical ratio of two groups was .007 for the total performance, 0.20 for the knowledge and comprehension, 0.76 for the skill, .078 for the attitude. The obtained values for each variable are

are lesser than the required value 1.98 to be significant at .05 level of significance. Therefore, the null hypothesis of no difference between the mean achievement of total performance, of knowledge and comprehension, of skill, of attitude, of these two groups is not rejected.

On the basis of analysed data, it can be stated that the mean score of the total performance, of knowledge and comprehension, of skill, of attitude of the group taught through integrated approach is approximately, equal to the group taught through the conventional approach at the beginning of the experimentation.

As it is observed that there is no significant difference between the achievement of two groups on pre-test it can be mentioned that both the groups were having the same achievement level in all the variables at the beginning of the experimentation. Therefore, it can be very emphatically stated that both groups have equal level of knowledge of the subject 'social studies'.

Result of the Post-Test score:

Data collected on post-test scores is represented in Table No. 17 which gives a comprehensive picture of achievement performance on post-test of both the experimental and control groups.

TABLE 17

Comprehensive Picture of the Mean score of the Achievement on Post-Test.

Variables	Experimental		Control		't' values
	Mean	Sd.	Mean	Sd.	
1. Total Performance	31.13	8.51	26.92	7.63	2.59
2. Knowledge & Comprehension	15.40	4.57	14.04	4.08	1.56
3. Skill	5.31	1.98	3.71	1.85	4.17
4. Attitude	10.58	3.45	9.03	3.56	2.21

Total performance 't' values 2.59 is significant at 0.05 level.

Knowledge & Comprehension 't' value 1.56 is not significant.

Skill 't' value 4.17 is significant at .01 level.

Attitude 't' value 2.21 is significant at .05 level.

It was hypothesized that "there was no significant difference between the mean achievement of the post-test scores in total performance, knowledge and comprehension, skill and attitude of the group taught through integrated approach and the group taught through

conventional approach.

As the groups consisted of the numbers 48 and 51 respectively the required values to be significant at .01 level and .05 level of significant were 2.63 and 1.98. The computed critical ratios for four variables of the two groups were (1) 2.59, (2) 1.56, (3) 4.17, (4) 2.21. The obtained values for the variable 1, 3 and 4 are larger than the required value to be significant at .05, .01 and .05 level of significance successively. And obtained value for the variable 2 is less than the required value to be significant at .05 level of significance. Therefore, the null hypotheses of no difference between the mean achievement of the three variables i.e. (1) Total Performance, (3) Skill, and (4) Attitude, of those groups is rejected and for the variable 2 i.e. knowledge and comprehension is not rejected.

On the basis of analysed data it can be stated that the mean scores of the variables 1, 2, 3 and 4 of the group taught through the integrated approach are larger than that of the group taught through conventional approach.

As it is observed that there is significant difference between the achievement of two groups on the post-test in the variables 1, 3 and 4, it can be mentioned that the integrated approach group was having better performance in the variables, (1) Total Performance (3) Skill (4) Attitude than the conventional approach group.

But as it is observed that there is no significant difference between the achievement of two groups on the post test in the variable No.2 viz. knowledge & comprehension, it cannot be mentioned that the integrated approach group was having better performance than the conventional approach group. It was noticed that conventional approach gives more emphasis on developing competency kn knowledge and comprehension and this might be the reason of having no significant difference between the achievement of the two groups.

Result of the Gain Scores of the Achievement Performance:

As the present investigation aimed at studying the comparative effect on achievement performance of group taught through the Integrated Approach and the group taught through the Conventional Approach, mean, sd, and 't' values of the gain score of the different variable, which were under investigation were obtained. They are given in Table Nos. 18, 19, 20, 21.

The results of the obtained scores and their interpretations are as follows.

THE HYPOTHESIS NO. 1

TABLE 18

Mean of Gain score of the Achievement in Total Performance.

Group	Mean	Sd	't' value
Experimental group	17.65	6.99	3.35
Controlled group	13.43	5.68	

't' value 3.35 is significant at .01 level of significance.

The hypothesis for objective No. 3 was that, "there was no significant difference between mean score of achievement in total performance of the group taught through the integrated approach and the group taught through the conventional approach."

As the groups consisted of the numbers 48 and 51 the required value to be significant at .01 level of significance was (2.63). The computed critical ratio of two groups was (3.35). The obtained value is larger than the required value to be significant at (.01) level of significance. Therefore, the null hypothesis of no difference between the mean achievement of total performance of those groups is rejected.

Interpretation:

On the basis of analysed data it can be stated that the mean of gain score of the performance of the group taught through the integrated approach is greater than that of the group taught through the conventional approach.

As it is observed that there is significant difference between the achievement of two groups on achievement test, it can be mentioned that the integrated approach group was having better performance than the conventional approach group.

FIG. 3 - OGIVE REPRESENTING SCORES MADE BY
EXPERIMENTAL GROUP & CONTROL GROUP
ON ... SCORES OF TOTAL PERFORMANCE
IN ARITHMETIC TEST

Further an over-all comparison of experimental and control group is provided by two Ogives of the two groups gain scores on achievement test in Fig. 9.

From the Ogives, representing scores made by experimental and control group on gain scores of Total Performance in Achievement Test several interesting conclusions can be drawn. Experimental group Ogive lies to the right of control group over the entire range, showing that Experimental group score is consistently higher than that of the Control group. Differences in achievement of the two groups are shown by the distances separating the two curves at various levels. It is clear that difference at the extremes, between the very high scoring of experimental and control groups is great, and between the very low scoring of experimental and control is not so great as are differences over the middle range. This is brought out in comparison of certain points in the distributions. The median of experimental group is approximately 17.1 and the median of control group is 11.1. And the difference between these measures is represented in Figure 9 by the line AB. The difference between experimental group Q.1(11.5) and control group's Q.1 (7.1) is represented by the line CD, and difference between the Experimental group's Q.3 (20.7) and Control group's Q.3 (15.5) is shown by the line EF. It is clear that the groups differ more at the median than at either quartile, and are further separated at Q.3 than Q.1.. One more interpretation can be made, by extending

the vertical line through B (Experimental median) upto the Ogive of the control group scores, it is clear that approximately 87% of the pupils of control group fall below the median of the experimental group. This means that only 13% pupils of the control group exceeded the median of the experimental group in achievement test. The vertical line through 'A' (Control group Median) cuts the experimental group ogive at approximately the 24th percentile. Therefore, 24% of the pupils of the experimental group fall below the control group's median and 76% are above this point.

As it is observed on two group's ogives that experimental group ogive lies consistently to the right of control group over the entire range and there is constant great difference between two groups at various levels, it can be mentioned emphatically that integrated approach group was having better achievement in Total Performance than the conventional approach group.

HYPOTHESIS NO. 2

TABLE 19

Mean of Gain scores of the Achievement in Knowledge and Comprehension.

Group	Mean	Sd.	't' value
Experimental group	9.48	3.97	1.18
Controlled group	8.59	3.55	

't' value 1.18 is not significant.

The second hypothesis for objective No.4, was that there was no significant difference between gain mean score of achievement of knowledge and comprehension of group taught through integrated approach and the group taught through the conventional approach.

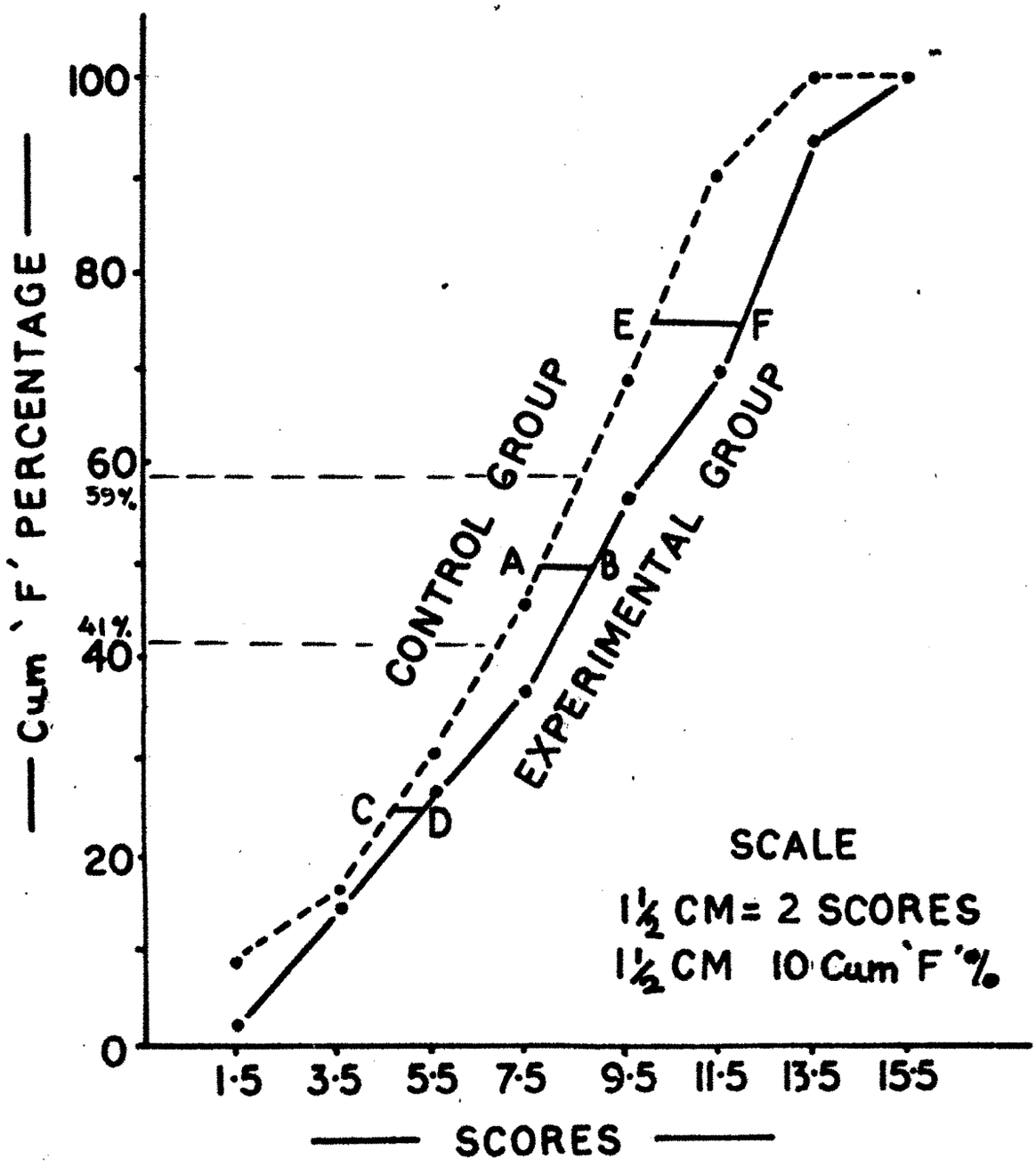
As the groups consisted of the numbers 48 and 51, the required value to be significant at .05 level of significance was 1.98. The computed critical ratio of two groups was 1.18. The obtained value is less than the required value to be significant at .05 level of significance. Therefore, null hypothesis of no difference between the mean achievement of knowledge and comprehension of these two groups is not rejected.

Interpretation:

On the basis of the analysed data it can be stated that the gain mean score of the achievement of knowledge and comprehension of the group taught through the integrated approach is greater than that of the group taught through the conventional approach.

As it is observed that there is no significant difference between achievement of two groups on achievement test it cannot be mentioned very emphatically that the integrated approach group was having better achievement in knowledge and comprehension than the conventional approach group. Interpretation can be made that, it was noticed, that conventional approach gives more emphasis on developing

FIG-10 OGIVES REPRESENTING SCORES MADE BY EXPERIMENTAL GROUP & CONTROL GROUP ON ACHIEVEMENT GAIN SCORES OF KNOWLEDGE & COMPREHENSION IN ACHIEVEMENT TEST



competency in knowledge and comprehension and this might be the reason of having no significant difference between the achievement of the two groups.

Further an overall comparison of experimental and control group is provided by two Ogives of the experimental and control groups gain scores on achievement test in Figure No. 10.

From the Ogives, representing scores made by experimental and control group on the gain scores of knowledge and comprehension in Achievement test, several interesting conclusions can be drawn.

Experimental group ogive lies to the right of control group over the entire range, showing that experimental group score is consistently higher than control group. Differences in the achievement of the two groups are shown by the distances separating two curves at various levels. It is clear that differences at the extremes between the very high scoring of the experimental group and control group is more and between very low scoring of experimental and control group is less as are differences over the middle range. This is brought out in comparison with certain points in the distributions. The median of the experimental group is approximately 8.9 and median of control group is 7.7 and difference between these measures is represented in Fig. 10 by the line AB. The difference between experimental group Q.1 (5.3) and control group's Q.1 (4.7) is represented by

the line CD, and difference between the experimental group's Q.3 (12.3) and control group's Q.3 (10.1) is shown by the line EF. It is clear that the groups differ more at the median than at the quartile and differ less at Q.3. One more interpretation can be made by extending the vertical line through B (Experimental median) upto the ogive of control groups score. It is clear that approximately 59% of the pupils of control group fall below the median of experimental group. This means 41% pupils of the control group exceed the median of the experimental group in achievement test. The vertical line A (Control group Median) cuts the experimental group ogive at approximately the 41 perentile. Therefore, 41% of the pupils of the experimental group fall below the control group median. 59% are above this point.

As it is observed on two groups ogive, that experimental group ogive lies to the right of control group ogive over the entire range, but there is very less difference between two groups at various levels all over the range at designated points. Hence it cannot be stated emphatically that the integrated approach group is having better achievement in knowledge and comprehension than the conventional approach group.

HYPOTHESIS NO. 3

TABLE 20

Mean of Gain score of the Achievement of the Skill.

Group	Mean	Sd.	't' value
Experimental group	3.63	1.82	5.07
Controlled group	1.75	1.87	

't' value 5.07 is significant at .01 level of significance.

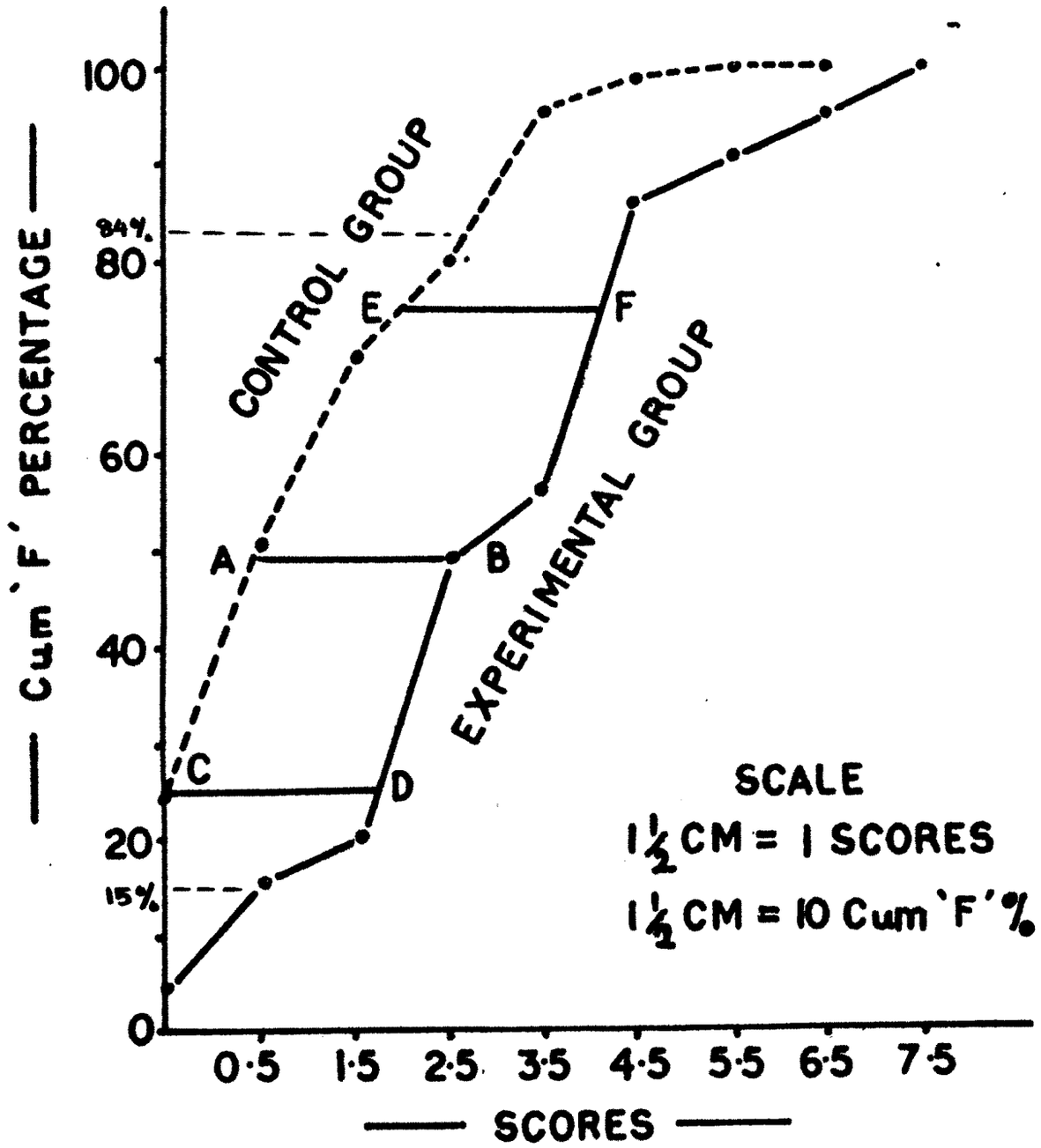
The third hypothesis for objective No.4, was that, there was no significant difference between the gain mean score of achievement in 'skill' of a group taught through integrated approach and a group taught through the conventional approach.

As the groups consisted of the numbers 48 and 51, the required value to be significant at .01 level of significance was 2.63. The computed critical ratio of two groups was 5.07. The obtained value is larger than the required value to be significant at (.01) level of significance. Therefore, the null hypothesis of no difference between the mean achievement of skill of these groups is rejected.

Interpretation:

On the basis of the analysed data it can be stated that the gain mean score in skill of the group taught through the integrated approach is larger than the group taught

FIG-II OGIVES REPRESENTING SCORES MADE BY EXPERIMENTAL GROUP & CONTROL GROUP ON ACHIEVEMENT GAIN SCORES OF SKILLS IN ACHIEVEMENT TEST



through the conventional approach.

As it is observed that there is significant difference between the achievement of two groups on achievement test it can be mentioned that the integrated approach group was having better achievement in skill than that of the conventional approach group.

Further overall comparison of the experimental and control group is provided by two ogives of the said two groups gain scores on achievement test in Figure 11.

From the Ogives, representing scores made by experimental and control group on the gain scores of skill in achievement test, several interesting conclusions can be drawn.

Experimental group ogives lie to the right of control group over the entire range, showing that experimental group score is consistently higher than the control group. Difference in achievement between the two groups are shown by the distances separating two curves at various levels. It is clear that differences at the extremes between the very high scoring and very low scoring of the experimental and control groups are not so great as are differences over the middle range. This is brought out in comparison of certain points in the distributions. The median of the experimental group is approximately 2.7 and median of control group is 0.4 and the difference between these measures is represented in Fig. 11 by the line AB. The

The difference between the experimental group Q.1 (1.7) and the control group Q.1 (.01) is represented by the line CD and difference between the experimental group's Q.3 (4.1) and control group's Q.3 (1.7) is shown by the line EF. It is clear that groups differ more at the median and equally at the Q.3 than ~~the~~ at Q.1.

One more interpretation can be made by extending the vertical line through B (experimental median) upto the ogive of control group's score. It is clear that approximately 84% of the pupils of the control group fall below the median of the experimental group. This means 16% pupils of the control group exceed the median of the experimental group in achievement test. The vertical line A (control group median) cuts the experimental ogive at approximately the 15th percentile. Therefore 15% of the pupils of the experimental group fall below the control group median and 85% are above this point.

It is observed on groups ogives that the experimental group ogive lies to the right of the control group over the entire range and there is constant great difference between two groups at various levels. Hence it can be mentioned that integrated approach group was having better achievement performance in 'skill' than conventional approach group.

HYPOTHESIS NO. 4

TABLE 21

Mean of Gain score in the Achievement in 'Attitude'.

Group	Mean	Sd.	't' value
Experimental group	4.69	4.13	1.99
Controlled group	3.21	3.66	

't' value 1.99 is significant at .05 level of significance.

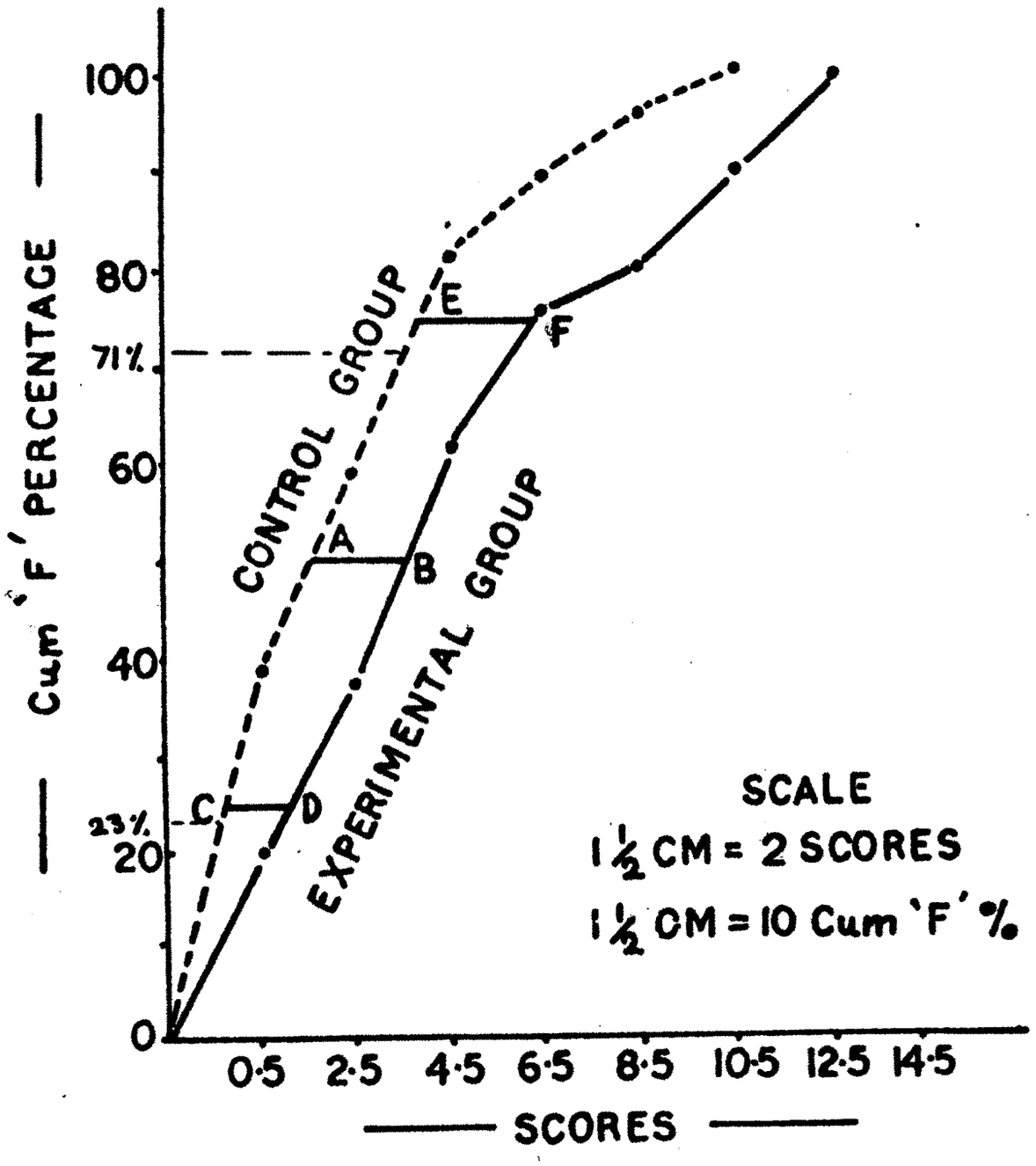
The fourth hypothesis for objective No.4, was that, there was no significant difference between gain mean achievement of attitude of a group taught through integrated approach and the group taught through the conventional approach.

As the groups consisted of the numbers 48 and 51, the required value to be significant at .05 level of significance was 1.98. The computed critical ratio of two groups was 1.99. The obtained value is larger than the required value to be significant at .05 of significance, therefore the null hypothesis of no difference between the mean achievement of attitudes of these groups is rejected.

Interpretation:

On the basis of the analysed data it can be stated that mean score of the performance of the group taught through the integrated approach is greater than the group through conventional approach.

FIG-12 OGIVES REPRESENTING SCORES MADE BY EXPERIMENTAL GROUP & CONTROL GROUP ON ACHIEVEMENT GAIN SCORES OF ATTITUDE IN ACHIEVEMENT TEST



As it is observed that there is significant difference between the achievement of two groups on achievement test it can be mentioned that the integrated approach group was having better achievement in Attitudes than the conventional approach group.

Further overall comparison of experimental and control group is provided by two ogives of the said two groups gain scores on achievement test in Figure 12.

From the Ogives, representing scores made by experimental and control group on the gain scores of Attitudes in achievement test, several interesting conclusions can be drawn.

Experimental group ogive lies to the right of control group over the entire range, showing that experimental group score is consistently higher than control group. Differences in achievement as between the two groups are shown by the distances separating the two curves at various levels. It is clear that differences at the extremes between the very high scoring experimental and control groups are great and differences between the very low scoring experimental and control groups are not so great. This is brought out in a comparison of certain points in the distributions. The median of the experimental group is approximately 3.5 and median of control group is 1.7 and difference between these measures is represented in Fig. 12 by the line AB. The difference between experimental Q.1 (1.9) and control group

Q.1 (.07) is represented by the line CD and difference between the experimental group's Q.3 (6.3) and control group's Q.3 (3.7) is shown by the line EF. It is clear that groups differ more at Q.3 than at the median and equally at Q.1.

One more interpretation can be made by extending the vertical line through B (Experimental median) upto the ogive of control group's score. It is clear that approximately 71% of the pupils of the control group fall below the median of the experimental group. This means 29% pupils of the control group exceed the median of the experimental group in achievement test. The vertical line A (Control group median) cuts the experimental ogive at approximately the 23rd percentile. Therefore, 23% of the pupils of the experimental group fall below the control group median and 77% are above this point.

It is observed on two groups' ogives that experimental group ogive lies to the right of the control group over the entire range and there is constant great difference between two groups at various levels. Hence it can be stated that integrated approach group was having better achievement performance in 'Attitude' than the conventional approach group.

Please refer Table No.22. It will give, at a glance consolidated statistical picture of Four ogives representing scores made by experimental and control group on gain scores of different variable in achievement test.

Further, though it was not the aim of the present study, data was analysed to study the relative effectiveness between achievement performance and intelligence level taught by the integrated approach and the conventional approach. Hence, it is discussed in the next section.

5.5 SOME OBSERVATIONS ABOUT EXPERIMENTATION

One observation was made during the experimentation that one pupil, whose I.Q (126) is above average, was performing activity not so efficiently and her performance of the class work and unit test was also not good. Another case was just the reverse. One pupil whose I.Q. was (89) i.e. below average, was good in performing the activity and his performance was very good. Following Table 24 will prove the above statement.

TABLE 23

Raw Scores of the pupils whose I.Q. 126 is above average

Variables	Pre-test	Unit test				Post test
		1	2	3	4	
Total Performance.	15/56	8/25	16/25	6/25	4/25	27/56
Knowledge & Comprehension	8/30	2/14	8/14	3/14	7/14	12/30
Skill	1/11	2/6	4/6	2/6	5/6	6/11
Attitude	6/15	4/5	4/5	1/5	2/5	9/15

Raw Scores of the pupil whose I.Q.89 is below average

Total Performance.	26/56	21/25	20/25	15/25	19/25	48/56
Knowledge & Comprehension.	9/30	12/14	11/14	9/14	8/14	24/30
Skill	9/11	5/6	5/6	3/6	6/6	8/11
Attitude	13/15	4/5	4/5	3/5	5/5	15/15

These observations encourage the investigator to study relative effectiveness between the achievement performance and intelligence level, taught by the integrated approach and the conventional approach; though it was not objectives of the present study.

As the numbers of pupils in above average group was too small (i.e. 3-4) relative effectiveness between the achievement performance and intelligence level of Average and Below Average intelligence group was considered and inference was drawn.

TABLE 24

Relative effectiveness of the Gain Mean Score of Achievement Performance and the Intelligence level.

AVERAGE INTELLIGENCE GROUP

Variables		Experimental Group	Control Group	't' value
Total Performance	Mean	15.29	12.41	1.31
	Sd.	7.01	6.61	
Knowledge & Comprehension	Mean	8.71	8.47	0.17
	Sd.	4.33	3.39	
Skill	Mean	3.71	1.29	4.24
	Sd.	1.49	1.96	
Attitude	Mean	2.86	2.65	0.14
	Sd.	4.69	3.39	

BELOW AVERAGE INTELLIGENCE GROUP

Variables		Experimental Group	Control Group	't' value
Total Performance	Mean	18.81	14.4	2.87
	Sd.	7.00	4.95	
Knowledge & Comprehension	Mean	8.87	8.87	1.07
	Sd.	3.88	3.51	
Skill	Mean	3.45	2.03	2.85
	Sd.	2.00	1.88	
Attitude	Mean	5.71	3.7	2.15
	Sd.	3.72	3.58	

* 't' value of 'skill' of Average Intelligence Group is significant at .01 level of significance.

* 't' value of Total Performance and skill of Below Average intelligence group is significant at .01 level of significance and 't' value of Attitude of the same group is significant at .05 level of significance.

Above Table No.24 indicates relative effectiveness of the gain mean score of achievement performance and the intelligence level of the experimental group as well as the control group.

As the average intelligence group consisted of numbers 14 and 17 the required value to be significant at .05 level of significance was 2.05. The computed critical ratios of two groups in Total performance and specific objectives, namely, Knowledge and Comprehension, Skill and Attitude were respectively 1.31, 0.17, 4.24 and 0.14. The obtained value of 'skill' is larger than the required value 2.05 to be significant at .05 level of significance. Hence it can be mentioned that achievement performance in 'skill' of the pupils of the experimental group is better than the achievement performance of the pupils of the control group.

As the below average intelligence group consisted of numbers 31 and 30 the required values to be significant at .05 and .01 level of significance were 2.00 and 2.66 respectively. The computed critical ratios of the two groups were in Total Performance and specific objectives, namely, Knowledge and Comprehension, Skill and Attitude were respectively 2.87, 1.07, 2.85 and 2.15. The obtained values of Total Performance and Skill are larger than the required value 2.66 to be significant at .01 level of significance. The obtained values of 'Attitude' is larger than the required value 2.00 to be significant at .05 level of significance. Hence it can be mentioned that achievement performance in Total Performance and specific objectives, namely, 'skill' and 'attitude' of the pupils of the experimental group is better than the achievement performance of the pupils of the control group.

To conclude it is emphatically stated that Integrated Approach is superior to the Conventional Approach for Average Intelligence group only for developing competency in the 'skill' and for Below Average Intelligence group for developing competencies in Total Performance, Skill and Attitude.

5.6 CONCLUSION

The specially developed tools of the present study, were modified after conducting the two try-out studies as per requirement of the present investigation. Then the final experiment was conducted during one full academic term in Std. IV of the Abhinav Primary School, Poona 4. Obtained data was analysed on computer and results were obtained. Results of the experimentation indicate that teaching strategy was influencing the experimental group and learning was taking place naturally. Results of the pre achievement test scores indicate that both the groups experimental and control, have equal level of knowledge of subject social studies. Post achievement test scores indicate that integrated approach was influencing more the experimental group in the achievement of Total Performance of skills and attitudes than the control group

Available gain scores data from pre-test and post-test indicates that pupils of the experimental groups showed better performance than pupils of the control group.

To conclude, it is emphatically stated that the Integrated Approach is superior to the Conventional Approach in achieving the goal.

Above mentioned conclusion regarding the present study was also supported by the studies of Write Stone (1936), Observolter (1937), Alexandar (1939), Farthing (1940), Hadgson (1954) and Khushdi (1960).

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