

CHAPTER FOUR

Presentation, Analysis and Interpretation of Data

- 4.1 Introduction
- 4.2 Data Presentation, Analysis and Interpretation
- 4.3 Descriptive Analysis
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4.1 Introduction:

Statistics is a body of mathematical techniques or process of analyzing and interpreting numerical data. Since research yields quantitative data, statistics is a basic tool of measurement, evaluation and research. The fundamental purpose of statistical method is description and analysis. By statistics we can analyze and interpret data and can draw conclusion.

Interpretation of data refers to that important part of the investigation which is associated with the drawing of inference from the collected facts after an analytical study. It is extremely useful and important part of the study because it makes possible the use of collected data. The usefulness of the collected data lies in its proper interpretation. It provides certain conclusion about the problem under study.

4.2 Data Presentation, Analysis and Interpretation:

This part of the study deals with the presentation, analysis and interpretation of data. Since main objective of the study is to find the relationship between classroom environment and achievement in science, quantitative analysis of data was done by the research scholar deriving conclusions.

4.3 Descriptive Analysis:

In descriptive analysis the basic statistical technique like mean, median, standard deviation etc. were used by the research scholar to find out

the general picture of the findings regarding the comparison of means and standard deviation of achievement in science and perception of classroom environment.

➤ **Performance in Science Achievement Test:-**

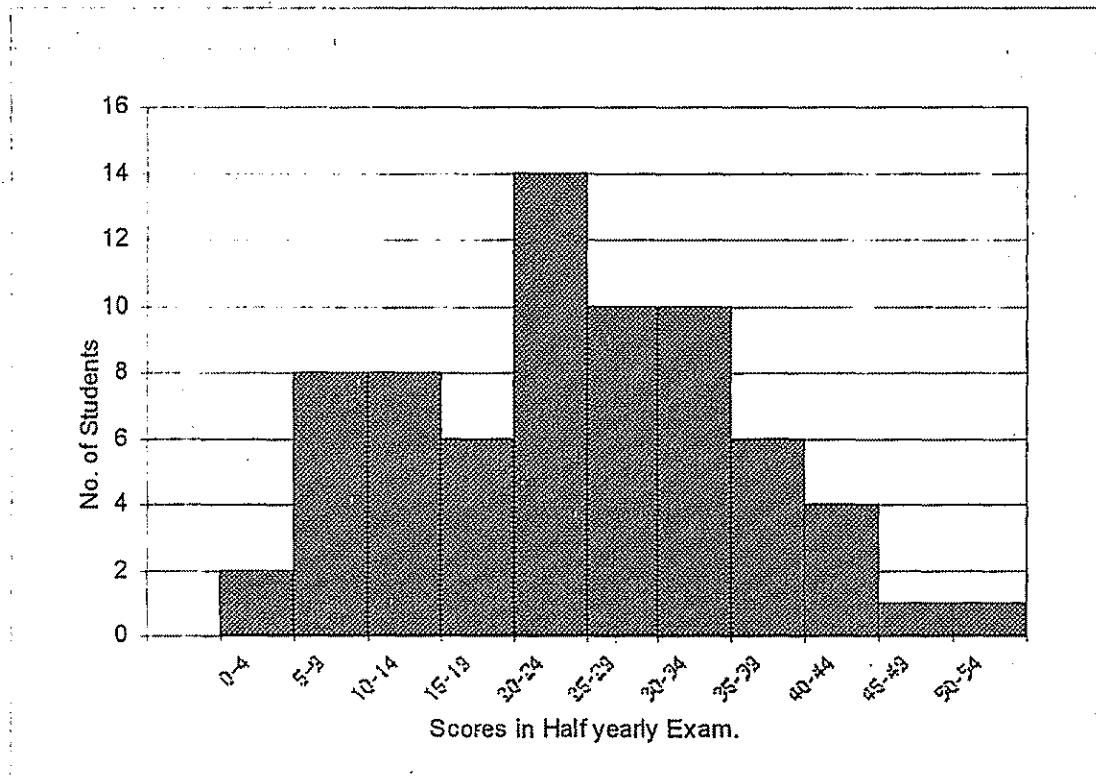
The scores obtained by students in Science Achievement Test are as shown in Table 4.3.1

Table 4.3.1 - Distribution of scores in Science Achievement Test

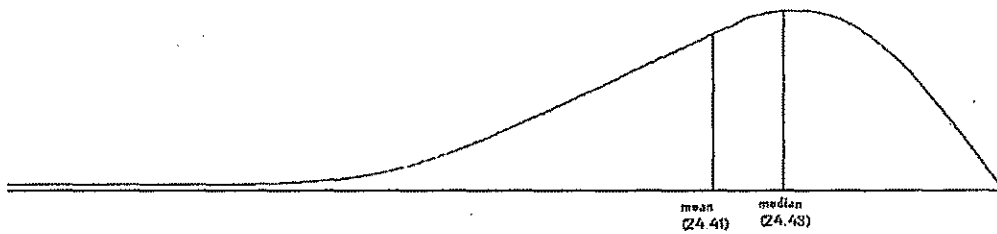
C.I.	f
50-54	1
45-49	1
40-44	4
35-39	6
30-34	10
25-29	10
20-24	14
15-19	6
10-14	8
05-09	8
00-04	2
	N = 70

From the table 4.3.1 it is clear that there is maximum frequency of students in class interval 20 – 24. If we plot a graph between the scores in Science Achievement Test and number of students, we get a histogram as shown below:

Graph 4.3.1 Histogram plotted between number of students and scores in Science Achievement Test.



➤ **Skewness:**



Negatively Skewed

Here numerical value of mean is slightly less than that of median. Due to this difference the curve is slightly skewed. This indicates that there are some students with their scores in science achievement test, higher than the average score of the group.

➤ **Classroom Environment Score:**

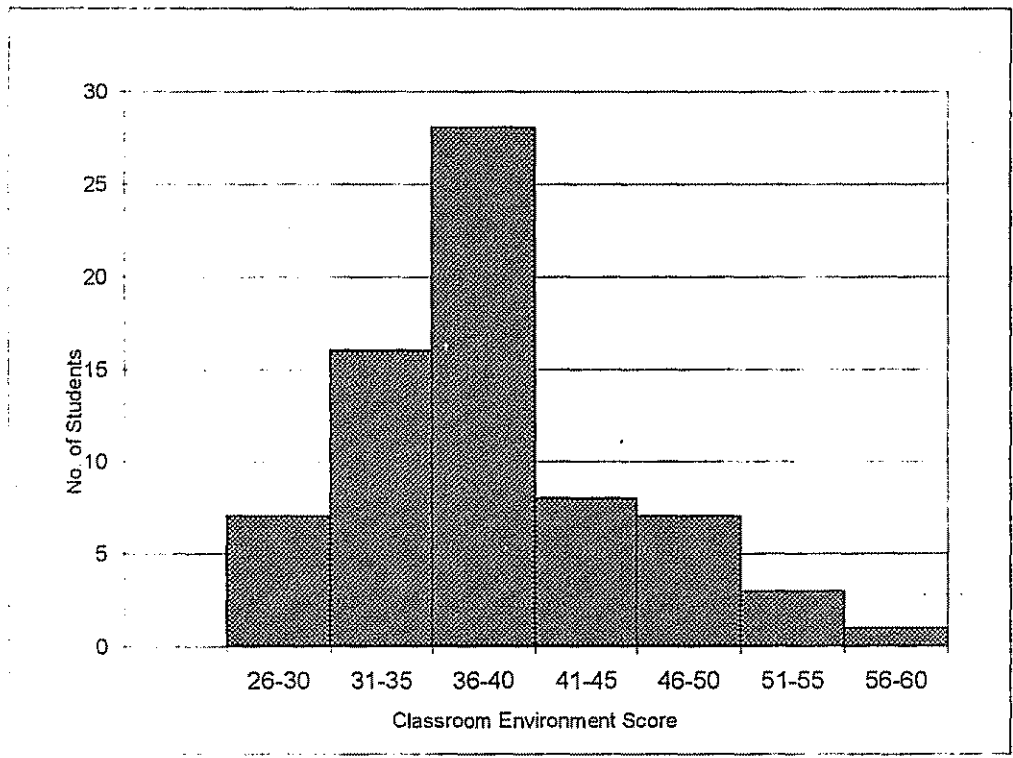
The values of Classroom Environment Score of students are shown in Table 4.3.2

Table 4.3.2 Distribution of Classroom Environment Score:

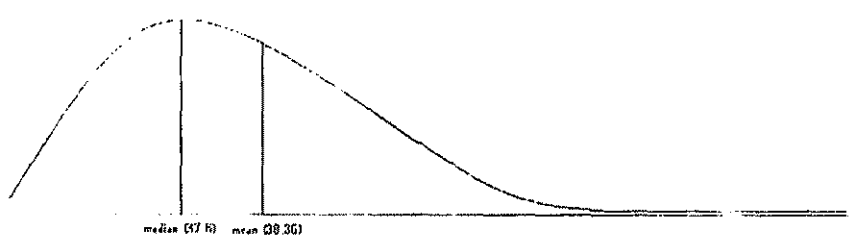
C.I.	f
56-60	1
51-55	3
46-50	7
41-45	8
36-40	28
31-35	16
26-30	7
	N = 70

From Table 4.3.2 it is clear that there is maximum frequency of students in class interval 36 - 40. If we plot a graph between the Classroom Environment Score and number of students, we get a histogram as shown below

Graph 4.3.2 Histogram plotted between number of students and the Classroom Environment Score



➤ Skewness



Positively Skewed

Here numerical value of mean is slightly more than that of median. Due to this difference the curve is slightly skewed. This indicates that there some students with there scores lesser than the average scores of the group.

➤ **Achievement in Half Yearly Exam:**

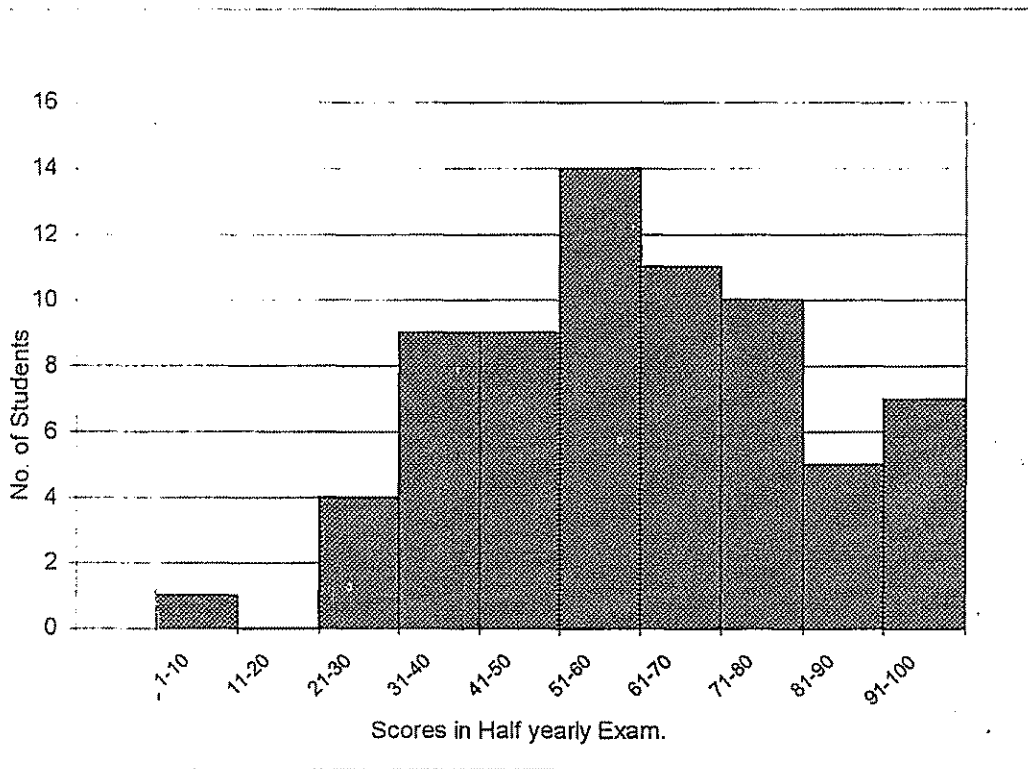
The scores obtained by students in Half Yearly Exam of science are as shown in Table 4.3.3

Table 4.3.3 Distribution of scores in Half Yearly Exam

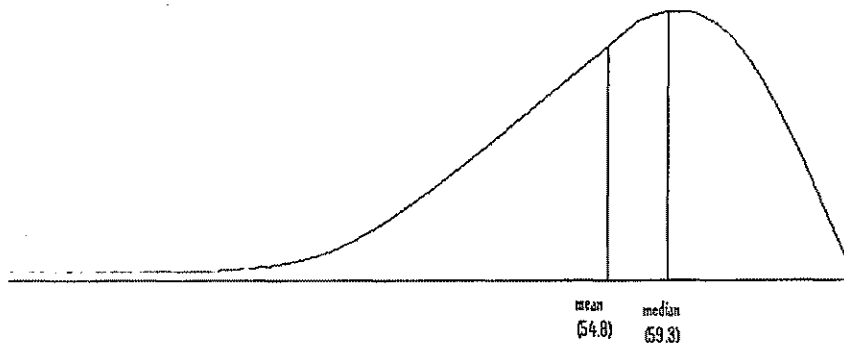
C.I.	f
91-100	7
81-90	5
71-80	10
61-70	11
51-60	14
41-50	9
31-40	9
21-30	4
11-20	0
1-10	1
	N = 70

From Table 4.3.3 it is clear that there is maximum frequency of students in class interval 51 - 60. If we plot a graph between the achievement in Half Yearly Exam and number of students, we get a histogram as shown below

Graph 4.3.3 Histogram plotted between number of students and Achievement in Half Yearly Exam



➤ Skewness



Negatively Skewed

Here numerical value of mean is slightly less than that of median. Due to this difference the curve is slightly skewed. This indicates that there some students with their scores in Half Yearly Exam of science, higher than the average score of the group.

➤ **Analysis of the data collected through Classroom Observation Schedule.**

The schedule consisted of 35 students which can be divided in seven components. Distribution of statements in seven components was as follows:

TABLE 4.3.4 Distribution of statements in components

S No.	Component	Number of statements related
1.	Teacher's Activity	7
2.	Student's Activity	5
3.	Interaction between teacher and student	6
4.	Physical aspect of the class	2
5.	Teaching method	2
6.	Teaching-Learning material	3
7.	Psychological environment	10
	Total	35

Investigator observed three classes of science taught by the same teacher and recorded the number of times any particular activity takes place in the class.

TABLE 4.3.5 Frequency of activities

SNo.	Component	Observation			Total
		I	II	III	
1.	Teacher's Activity	5/7	3/7	3/7	11/21
2.	Student's Activity	3/5	2/5	2/5	7/15
3.	Interaction between teacher and student	5/6	4/6	4/6	13/18
4.	Physical aspect of the class	1/2	2/2	1/2	4/6
5.	Teaching method	2/2	2/2	1/2	5/6
6.	Teaching-Learning material	2/3	2/3	2/3	6/9
7.	Psychological environment	7/10	6/10	8/10	21/30

Then the percentage of each component was calculated.

TABLE 4.3.6 Percentage Frequency

S No.	Component	Observation						Total Obs. %
		I		II		III		
		f	%	f	%	f	%	
1.	Teacher's Activity	5	71.4	3	42.8	3	42.8	52.38
2.	Student's Activity	3	60	2	40	2	40	46.66
3.	Interaction between teacher and student	5	83	4	66.6	4	66.6	72.22
4.	Physical aspect of the class	1	50	2	100	1	50	66.66
5.	Teaching method	2	100	2	100	1	50	83.33
6.	Teaching-Learning material	2	66.6	2	66.6	2	66.6	66.66
7.	Psychological environment	7	70	6	60	8	80	70
	Total	25	71.4	21	60	21	60	

Table 4.3.6 indicates that in first observation 71.4% activities are observed while it is reduced to 60% in subsequent observations. The teacher as well as students are same in three observations still the activities are reduced. One of the reasons of this decline may be the topic which had been dealt by the teacher.

If we look at the component wise percentage then first three activities are being reduced from first observation to third observation. This again may be credited to the topic been taught or discussed in the class.

The last component shows increment of 10% in third observation as compared to the first one. This is a good sign if psychological environment of the class has been improved.

4.4 Testing of Hypotheses:

Hypothesis (H_0-1)

There will be no significant relationship between classroom environment and performance of students of grade VIII in Science Achievement Test.

Table 4.4.1 Relationship between classroom environment and performances of students in Science Achievement Test.

S.No.	Variable	N	df	r
1.	Classroom Environment(C.E.)	70	68	0.87
2.	Performances in Science Achievement Test (Ach.in SAT)			P < 0.01 (0.302)

Table 4.4.1 shows that the computed value of the coefficient of correlation 'r' is 0.87 while the table value is 0.302 at 0.01 level. The computed value 'r' is more than the table value and hence the null hypothesis is rejected. This indicates that there is a significant positive correlation between classroom environment and performance of students in Science Achievement Test. This positive relationship reveals that if classroom environment is congenial, then the achievement of students will be more. In order to improve achievement of students it is necessary to create a congenial classroom environment. For a congenial classroom environment to be created teacher's activity, student's activity and interaction between teacher and student, all should run in a harmonious way. If adequate teaching method is used with student friendly material and social as well as physical aspect of the classroom is good then it helps student's learning and which in turn facilitates their academic achievement.

Hypothesis (H₀-2)

There will be no significant relationship between classroom environment and performance of students of grade VIII in Half Yearly Exam.

Table 4.4.2 Relationship of classroom environment and performance of students in Half Yearly Exam.

S.No	Variable	N	df	r
1.	Classroom Environment(C.E.)	70	68	0.78
2.	Performances in Half Yearly Exam (Ach. In HYE)			p < 0.01 (0.32)

Table 4.4.2 shows that the computed value of the coefficient of correlation 'r' is 0.78 while the table value of 'r' is 0.302 at 0.01 level. The computed value of 'r' is more than the table value and hence the null hypothesis is rejected. This indicates there is a significant positive correlation between classroom environment and performance of students in half yearly exam.

This reveals that a healthy and congenial environment of classroom having all the essential components leads to high achievement of students.

Hypothesis (H₀-3)

There will be no significant difference between achievements of boys and girls of grade VIII in science.

Table 4.4.3 Mean difference between achievements of boys and girls in science

S.No	Variable	Number of students	Mean	S.D	df	't' value
1.	Boys	41	22.56	11.7	68	1.65
2.	Girls	29	27.03	10.9		p>0.01 (2.65)

The table 4.4.3 shows that the computed value of the 't' is 1.65 and the table value of 't' is 2.65 at 0.01 level of significance. Thus the computed value of 't' is less than table value and hence the hypothesis is not rejected. It indicates that boys and girls do not differ in their achievement. If we compare the means, achievement of girls (27.03) is better than achievement of boys (22.56) but still the difference is not significant. This may be interpreted that achievement of boys and girls is not affected by their gender.

Hypothesis (H₀-4)

There will be no significant difference between achievements of students of grade VIII in Science Achievement Test and Half Yearly Exam.

Table 4.4.4 Mean difference of students in Science Achievement Test and Half Yearly Exam.

S.No	Variable	Number of students	Mean	S.D	df	't' value
1.	Achievement in Science Achievement Test(Ach.in SAT)	70	24.41	11.6	68	2.86
2.	Achievement in Half Yearly Exam (Ach.in HYE)		29.65	10		(2.65)

Table 4.4.4 shows that computed value of the 't' is 2.86 and the table value of 't' is 2.65 at 0.01 level. As the computed value of 't' is more than table value, hence the hypothesis is rejected. It indicates that students differ significantly in their achievements in science achievement test and in half yearly examination.

If we compare the means, it is found that students' achievement in Half Yearly Exam (29.65) is more than their achievement in science test (24.41)

Normally, half yearly exam papers are teacher made. Teachers are likely to prepare the test paper on the basis of what has been taught in the class in spite of total curriculum coverage. During evaluation teacher gives more weightage to those points which have been discussed in class. On the other hand Science Achievement Test has been prepared by the research scholar with comprehensive coverage. Perhaps due to this difference students scored higher marks in teacher made test. This means that Science Achievement Test prepared by the research scholar has a wider range of dispersion of scores.

Hypothesis (H₀-5)

There will be no significant difference between perceptions of boys and girls of grade VIII about classroom environment.

Table 4.4.5 Mean difference of perceptions of boys and girls about classroom environment.

S.No	Variable	Number of students	Mean	S.D	df	't' value
1.	Boys	41	38.5	6.5	68	0.26
2.	Girls	29	38.9	6.32		P>0.01 (2.65)

Table 4.4.5 shows that computed value of the 't' is 0.26 and the table value of 't' is 2.65 at 0.01 level. As the computed value of 't' is less than table value hence the hypothesis is not rejected. It indicates that perceptions of boys and girls about classroom environment do not differ significantly. This reveals that the environment of the classroom is perceived almost in the same way by boys and girls. The students' perception is not affected by their gender.

Hypothesis (H₀-6)

There will be no significant difference between perceptions of high achievers and low achievers of grade VIII about classroom environment.

Table 4.4.6 Mean difference between perceptions of high achievers and low achievers about classroom environment.

S.No	Variable	Number of students	Mean	S.D	df	't' value
1.	High Achievers (HA)	25	44.68	5.7	68	6.7
2.	Low Achievers (LA)	45	34.8	6.3		p<0.01 (2.65)

Table 4.4.6 shows that computed value of the 't' is 6.7 and the table value of 't' is 2.65 at 0.01 level. As the computed value of 't' is more than table value hence the hypothesis is rejected. It indicates that perceptions of high achievers and low achievers do differ significantly with respect to

classroom environment. When means are compared it is found that the perception of classroom environment of high achiever (44.68) is better than the perception of low achiever (34.8).