

CHAPTER-IV

**ANALYSIS AND
INTERPRETATION
OF DATA**

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The present chapter is divided into three major sections. These three major sections are classified according to the objectives of the study. The analysis and interpretation of the three sections are given ahead as follows :

- SECTION I :** The teaching aptitude of B.Ed. students with science as their first method.
- SECTION II :** The relationship between teaching aptitude and B.Ed. performance.
- Relationship of the graduate academic achievement and the B.Ed. performance.
- Effect of both teaching aptitude and graduate academic achievement on the B.Ed. performance.
- SECTION-III:** Levels of the teaching aptitude and graduate performance conducive for high B.Ed. performance.
- Levels of teaching aptitude and graduate performance responsible for average B.Ed. performance.
- Levels of teaching aptitude and graduate performance responsible for low B.Ed. performance.

SECTION - I**THE TEACHING APTITUDE OF B.ED. STUDENTS WITH SCIENCE AS THEIR FIRST METHOD**

According to the manual of teaching aptitude test, standard scores are classified in three groups as follows :

Low teaching aptitude	-	22 to 42
Average teaching aptitude	-	43 to 57
High teaching aptitude	-	58 and above

If teaching aptitude obtained are 42.30, 42.41 etc. (below 42.50), there are included in lower teaching aptitude group. If the obtained score is greater than or equal to 42.50, such values are included in average teaching aptitude group. Similarly if the scores are obtained below than 57.50, these are included in average teaching aptitude group. If the obtained score is greater than or equal to 57.50, such values are included in high teaching aptitude group.

Similarly the standard score grades as given in the manual are as follows :

G	-	Defective		Low teaching aptitude
F	-	Border line		
E	-	Dull normal		
D	-	Normal or Average - Average teaching aptitude		

C	-	Bright normal	High teaching aptitude
B	-	Superior	
A	-	Very superior	

General teaching aptitude, sex-wise teaching aptitude, degree-wise teaching aptitude, University-wise teaching aptitude, college-wise teaching aptitude are given in following tables :

Table No.1

Mean and Standard Deviation of Teaching Aptitude

	No.of students	Range in Manual	Mean	SD
Teaching Aptitude (Standard Score)	395	22 to 42 (Low)	37.38	7.93

Table No.1 shows that the mean scores for teaching aptitude is 37.38 and standard deviation is 7.93. The mean obtained falls in the range 22 to 42 of low teaching aptitude stated in the manual of T.A.T. Hence, it can be interpreted that the student-teachers drawn from the sample have low teaching aptitude.

Table No.2

**Mean and Standard Deviation of Teaching Aptitude with
Sex-wise Distribution**

Teaching Aptitude	Range of Manual 22 to 42 (Low)	Male (250)		Female (150)	
		Mean	S.D.	Mean	S.D.
		36.92	7.87	39.01	7.88

Table No.2 shows that the mean scores for teaching aptitude of 250 male is 36.92 and standard deviation is 7.87. Also mean scores for teaching aptitude of 150 female is 39.01 and standard deviation is 7.88. These two means obtained falls in the range 22 to 42 of low teaching aptitude stated in the T.A.T. From this it is inferred that, there is negligible difference between average teaching aptitude of male and female i.e. Teaching Aptitude of both male and female is same. Hence, it can be interpreted that the both, 250 male (student teachers) and 150 female (student-teachers) drawn for the sample have low teaching aptitude.

Table No.3

Mean and Standard Deviation of Teaching Aptitude with Degree-wise Distribution

Teaching Aptitude	Range of Manual 22 to 42 (Low)	B.Sc. (N=284)		M.Sc. (N=111)	
		Mean	S.D.	Mean	S.D.
		38.39	7.81	37.41	7.97

Table No.3 shows that the mean scores for teaching aptitude of 284 B.Sc. student-teachers is 38.39 and standard deviation is 7.81. Also mean scores for teaching aptitude of 111 M.Sc. student-teachers is 37.41 and standard deviation 7.97. These two means obtained falls in the range 22 to 42 of low teaching aptitude stated in the T.A.T. From this situation it is observed that, there is negligible difference between average teaching aptitude of graduate student-teachers and post-graduate student teachers i.e. Teaching Aptitude of both graduate student teachers (N= 284) and post-graduate student teachers (N=284) is same. Hence, it can be interpreted that the 284 graduate student teachers and 111 post-graduate student-teachers drawn for the sample have low teaching aptitude.

Table No.4

**Mean and Standard Deviation of Teaching Aptitude with
University-wise Distribution**

Teaching Aptitude (Standard Score)	Range of Manual 22 to 42 (Low)	Shivaji University (N=315)		Other University (N=80)	
		Mean	S.D.	Mean	S.D.
		37.73	8.13	37.49	7.11

In Table No. 4 student-teachers are classified on the basis of University. 315 Students have come from Shivaji University and 80 students have come from other University. mean scores for teaching aptitude of 315 student teachers come from Shivaji University is 37.73 and standard deviation is 8.13. Also Mean scores for teaching aptitude of 80 student-teachers come from other University is 37.49 and standard deviation is 7.11. These two means obtained falls in the range 22 to 42 of low teaching aptitude stated in the T.A.T. From this situation it is observed that, there is no significant difference between average teaching aptitude of 315 student-teachers come from Shivaji University and 80 student-teachers come from other University is same. Hence, it can be interpreted that the 315 student teachers come from Shivaji University and 80 student-teachers come from other University drawn for the sample have low teaching aptitude.

Table No.5

**Distribution of Colleges according to the Standard Score Grade
of Teaching Aptitude**

Levels of Teaching Aptitude	High			Average	Low			Total
	Grade	A	B	C	D	E	F	
Range of Standard Score	81.72	71.65	64.58	57.43	42.36	35.29	28.22	-
No. of B.Ed. Colleges	-	-	-	-	17	6	1	24

Table No.5 shows the distribution of colleges according to the standard score grades A to G as per the teaching aptitude test manual. It is found that none of the colleges falls in the grades 'A' to 'C' which is equivalent to high teaching aptitude. hence it can be interpreted that students of none of the 24 B.Ed. colleges have high teaching aptitude.

Similarly, none of the colleges falls in 'D' grade which is equivalent to average teaching aptitude. hence, it can be interpreted that students of none of the 24 B.Ed. colleges have average teaching aptitude.

Seventeen colleges falls in the grade 'E' and six in grade 'F' and one in grade 'G'. Grades E, F and G is equivalent with low

teaching aptitude. Hence, it can be interpreted that the students in 24 B.Ed. colleges have low teaching aptitude. However, majority of the colleges i.e. 17, have just below average teaching aptitude and G have border line teaching aptitude and students from 1 B.Ed. college have very low teaching aptitude.

Table No.6

**Mean and Standard Deviation of Teaching Aptitude with
College-wise Distribution**

No.	Name of Colleges	No.of Students	Mean	S.D.
1.	S.M.T. College of Education, Kolhapur	15	33.20	7.77
2.	Balasaheb Kharade College of Education, Kolhapur	14	42.17	6.48
3.	Vasantrao Naik College of Education, Kolhapur	18	38.67	8.14
4.	Savitri Phule Women's College of Education, Kolhapur	22	36.95	8.87
5.	College of Education, Peth Wadgaon	13	36.38	10.08
6.	Chhatrapati Shivaji College of Education, Rukadi	15	35.80	9.94
7.	Ichalkaranji College of Education, Ichalkaranji	18	33.56	5.71
8.	BEDC-KGL College of Education, Kagal	15	38.00	6.41
9.	Yashwant College of Education, Kodoli	18	41.33	7.41
10.	D.K. Shinde College of Education, Gadhinglaj	16	41.81	6.34
11.	Acharya Javadekar College of Education, Gargoti	08	35.37	9.93
12.	Dayanand College of Education, Solapur	16	39.13	6.72
13.	Shivaji College of Education, Barshi	06	25.83	2.64
14.	Kasturbai College of Education, Solapur	18	33.94	8.35
15.	College of Education, Akluj	19	37.63	6.21

No.	Name of Colleges	No.of Students	Mean	S.D.
16.	S.P.S. College of Education, Sangli	15	34.19	5.29
17.	M.V.P. Women's College of Education, Miraj	20	41.00	8.16
18.	College of Education, Vita	13	39.38	8.41
19.	Vasant College of Education, Islampur	13	42.36	5.01
20.	Women's College of Education, Tasgaon	17	40.00	7.79
21.	Azad College of Education, Satara	32	37.00	7.75
22.	College of Education, Karad	20	38.65	8.59
23.	College of Education, Phaltan	15	38.07	5.99
24.	College of Education, Patan	18	36.33	6.91

Table No. 6 shows that the mean and standard deviation of teaching aptitude with college-wise distribution. All 24 B.Ed. colleges included 395 student-teachers falls in the range 22 to 42 (from Table No.5). Hence it can be interpreted that the 395 student-teachers studying in these B.Ed. colleges have low teaching aptitude.

SECTION - II

According to normal probability curve B.Ed. performance are classified into three groups, as follows :

Low B.Ed. performance	-	below 53.77
Average B.Ed. performance	-	53.78 to 65.93
High B.Ed. performance	-	Above 65.94

Similarly, according to normal probability curve graduate academic achievement are classified into three groups same as above which are as follows :

Low graduate academic achievement	-	below 53.77
Average graduate academic achievement	-	53.78 to 65.93
High graduate academic achievement	-	above 65.94

Also standard score are classified like as follows :

Low standard score	-	below 42
Average standard score	-	43 to 57
High standard score	-	above 57

In Section-II, three objectives are included. For these objectives three hypotheses are stated. For testing these hypotheses, chi-square (χ^2) test is used. For analysis and interpretation, chi-square test are used for calculating χ^2 value the following formula which can be used.

$$1) \quad fe = \frac{(\sum f \text{ column})(\sum f \text{ row})}{\text{Grand total}}$$

$$2) \quad \chi^2 = \sum \left[\frac{(fo - fe)^2}{fe} \right]$$

$$3) \quad \text{Degrees of freedom} = (\text{rows}-1) (\text{columns} - 1)$$

Where χ^2 = Chi-square value

fo = Observed frequency

fe = Expected frequency

Objective No. 2

“To find out the relationship between teaching aptitude and B.Ed. performance.”

For this objective, Null hypothesis No.1 is stated as, 'The teaching aptitude and B.Ed. performance of students are independent of each other'.

The data was analysed and tested and presented in Table No. 7 and Table No. 8 and interpreted and results drawn.

Table No.7

Analysis of Teaching Aptitude and B.Ed. Performance

B.Ed. Performance _→	Low	Average	High	Total
Teaching Aptitude _↓				
Low	29 (36.86)	224 (221.87)	27 (28.35)	280
Average	13 (15)	88 (90.33)	13 (11.54)	114
High	0 (0.1316)	1 (0.79)	0 (0.1013)	1
Total	42	313	40	395

Values in brackets shows expected frequency and other values shows observed frequency.

If cell frequencies are less than 5, then we pool the corresponding row/ column to the nearest row/ column and then apply chi-square test for independence.

Since in the Table No. 8 third row has frequencies (0,1,0), so these observed frequencies are pooled in second row and obtain pooled Table No. 8. Then apply chi-square test for independence.

Table No.8

**Pooled Data for Analysis of Teaching Aptitude
and B.Ed. Performance**

B.Ed. Performance →	Low	Average	High	Total	Obtained χ^2 Value	Critical χ^2 value for df. 2	
						0.05	0.01
Teaching Aptitude ↓							
Low	29 (36.86)	224 (221.85)	27 (28.35)	280	0.3624	5.99	9.21
Average	13 (12.22)	89 (91.12)	13 (11.64)	115			
Total	42	313	40	395			

Values in brackets shows expected frequency and other values shows observed frequency.

Observation and Interpretation

Obtained χ^2 value is less than critical χ^2 value 5.99 at 0.05 level of significant for df. 2. Therefore, it is concluded that teaching aptitude and B.Ed. performance are independent. Hence, the Null hypothesis No.1 is accepted.

Obtained χ^2 value is less than critical χ^2 value 9.21 at 0.01 level of significant for df. 2. Therefore, teaching aptitude and B.Ed. performance are independent of each other. Hence, the Null hypothesis No. 1 is accepted.

Objective No. 3

“To find out the relationship of the graduate academic achievement and the B.Ed. performance.”

For this objective, Null hypothesis No. 2 is stated as, “The graduate academic achievement and the B.Ed. performance are independent of each other.”

The data was analysed and tested and presented in Table No. 9 and interpreted and results drawn.

Table No.9

Analysis of Graduate Academic Achievement and the B.Ed. Performance

B.Ed. Performance → Graduate Academic Achievement ↓	Low	Average	High	Total	Obtained χ^2 Value	Critical χ^2 value for df.4	
						0.05	0.01
Low	7 (6.167)	49 (45.95)	2 (5.873)	58	6.33	9.49	13.28
Average	29 (28.07)	209 (209.19)	26 (26.73)	264			
High	6 (77.62)	55 (57.84)	12 (7.932)	73			
Total	42	313	40	395			

Values in brackets shows expected frequency and other values shows observed frequency.

Observation and Interpretation

Obtained χ^2 value is less than critical χ^2 value 9.49 at 0.05 level of significant for df. 4. Therefore it is concluded that, graduate academic achievement and the B.Ed. performance are independent of each other. Hence, the Null hypothesis No. 2 is accepted.

Similarly, obtained χ^2 value is less than critical χ^2 value 13.28 at 0.01 level of significant for df. 4 i.e. there is no effect of graduate academic achievement and the B.Ed. performance. It means that the graduate academic achievement and the B.Ed. performance are independent of each other. Hence, the Null hypothesis No. 2 is accepted.

Objective No. 4

“To find out the effect of both teaching aptitude and graduate academic achievement on the B.Ed. performance.”

For this objective, Null hypothesis No. 3 is stated as, ‘B.Ed. performance is independent of both teaching aptitude and graduate academic achievement.’

The data was analysed and tested and presented in Table No. 10 and Table No. 11 and interpreted and results drawn.

Table No.10

Analysis of Teaching Aptitude and Graduate Academic Achievement on the B.Ed. Performance

Graduate Academic Achievement →	Low	Average	High	Total
Teaching Aptitude ↓				
Low	43 (41.11)	184 (187.13)	53 (51.74)	280
Average	14 (16.73)	80 (76.11)	20 (21.06)	114
High	1 (0.1468)	0 (0.6608)	0 (0.1848)	1
Total	58	264	73	395

Values in brackets shows expected frequency and other values shows observed frequency.

In the Table No. 10, third row has frequencies (1,0,0), so these observed frequencies are pooled in second row and obtain pooled Table No.11. Then apply chi-square test for independence.

Table No.11

Pooled Data for Analysis of Teaching Aptitude and Graduate Academic Achievement on the B.Ed. Performance

Graduate Academic Achievement →	Low	Average	High	Total	Obtained χ^2 Value	Critical χ^2 value for df.2	
						Teaching Aptitude ↓	
						0.05	0.01
Low	43 (41.11)	184 (187.13)	53 (51.74)	280	0.5807	5.99	9.21
Average	15 (16.88)	80 (76.86)	20 (21.25)	115			
Total	58	264	73	395			

Observation and Interpretation

Obtained χ^2 value is less than critical χ^2 value 5.99 at 0.05 level of significant for df. 2. Therefore B.Ed. performance is independent of both teaching aptitude and graduate academic achievement. Hence, the Null hypothesis No.3 is accepted.

Also obtained χ^2 value is less than critical χ^2 value 9.21 at 0.01 level of significant for df. 2. Therefore there is no effect of both teaching aptitude and graduate academic achievement on the B.Ed performance. It means that B.Ed. performance is independent of both teaching aptitude and graduate academic achievement. Hence, the Null hypothesis No.3 is accepted.

SECTION -III

This part includes the levels of teaching aptitude and graduate performance conducive for high B.Ed. performance and responsible for average and low B.Ed. performance.

Objective No. 5

“To determine the levels of teaching aptitude and graduate performance conducive for high B.Ed. performance.”

For this objective, Null hypothesis No. 4 is stated as, “the levels of teaching aptitude and graduate performance are independent of high B.Ed. performance.”

The data was analysed and tested and presented in Table No. 12 and Table No. 13 and interpreted and results drawn.

Table No.12

Two Way Classification of B.Ed. Students having high B.Ed. performance based on graduate academic achievement and teaching aptitude.

Graduate Academic Achievement →	Low	Average	High	Total
Teaching Aptitude ↓				
Low	2 (1.35)	16 (17.55)	9 (8.1)	27
Average	0 (0.65)	10 (8.45)	3 (2.15)	13
High	0 (0)	0 (0)	0 (0)	0
Total	2	26	12	40

Values in brackets shows expected frequency and other values shows observed frequency.

In the Table No. 12 first column has frequencies (2,0,0), so these observed frequencies are pooled in second column. Similarly, third row has frequencies (0,0,0), so these observed frequencies are pooled in second row and obtain pooled Table No.13. Then apply chi-square test for independence.

Table No.13

Pooled Data for two way classification of B.Ed. students having high B.Ed. performance based on graduate academic achievement and teaching aptitude

Graduate Academic Achievement → Teaching Aptitude ↓	Average	High	Total	Obtained χ^2 Value	Critical χ^2 value for df.1	
					0.05	0.01
Low	18 (18.9)	9 (8.11)	27	0.4394	3.84	6.64
Average	10 (9.1)	3 (3.9)	13			
Total	28	12	40			

Values in brackets shows expected frequency and other values shows observed frequency.

Observation and Interpretation

Obtained χ^2 value is less than critical χ^2 value 3.84 at 0.05 level of significant for df.1. Therefore, high B.Ed. performance does not depend upon the levels of teaching aptitude and graduate academic achievement. Hence, the Null hypothesis No.4 is accepted.

Also obtained χ^2 value is less than critical χ^2 value 6.64 at 0.01 level of significant for df.1. Therefore high B.Ed. performance does not depend upon the levels of teaching aptitude and graduate academic achievement. Hence the Null hypothesis No. 4 is accepted. From Table No.13 it is seen that, out of 395 student-teachers only 40 student-teachers have get high B.Ed. performance but their levels of teaching aptitude and graduate academic achievement are different.

Objective No. 6

"To determine the levels of teaching aptitude and graduate performance responsible for average B.Ed. performance."

For this objective, Null hypothesis No. 5 is stated as, 'The levels of teaching aptitude and graduate performance are independent of average B.Ed. performance.'

The data was analysed and tested and presented in Table No.14 and Table No. 15 and interpreted and results drawn.

Table No.14

Two way classification of B.Ed. students having average B.Ed. performance based on graduate academic achievement and teaching aptitude

Graduate Academic Achievement →	Low	Average	High	Total
Teaching Aptitude ↓				
Low	37 (35.06)	148 (149.59)	39 (39.36)	224
Average	11 (13.77)	61 (58.76)	15 (15.46)	88
High	1 (0.1565)	0 (0.6677)	0 (0.1757)	01
Total	49	209	55	313

Values in brackets shows expected frequency and other values shows observed frequency.

In the Table No. 14, third row has frequencies (1,0,0), so these observed frequencies are pooled in second row and obtain pooled Table No.15. Then apply chi-square test for independence.

Table No.15

Pooled Data for two way classification of B.Ed. students having average B.Ed. performance based on graduate academic achievement and teaching aptitude

B Ed Performance →	Low	Average	High	Total	Obtained χ^2 Value	Critical χ^2 value for df. 2	
						0.05	0.01
Teaching Aptitude ↓							
Low	37 (35.06)	148 (149.57)	39 (39.36)	224	0.445	5.99	9.21
Average	12 (13.93)	61 (59.42)	16 (15.63)	89			
Total	49	209	55	313			

Values in brackets shows expected frequency and other values shows observed frequency.

Observation and Interpretation

Obtained χ^2 value is less than critical χ^2 value 5.99 at 0.05 level of significant for df.2. Therefore average B.Ed. performance does not depend upon the levels of teaching aptitude and graduate academic achievement. Hence, the Null hypothesis No. 5 is accepted.

Also obtained χ^2 value is less than critical χ^2 value 9.21 at 0.05 level of significant for df.2. Therefore, average B.Ed. performance does not depend upon the levels of teaching aptitude and graduate academic achievement. Hence the Null hypothesis No. 5 is accepted.

Objective No. 7

“To determine the levels of training aptitude and graduate performance responsible for low B.Ed. performance.”

For this objective, Null hypothesis No. 6 is stated as, ‘The levels of teaching aptitude and graduate performance are independent of low B.Ed. performance.’

The data was analysed and tested and presented in Table No. 16 and Table No. 17 and interpreted and results drawn.

Table No.16

Two way classification of B.Ed. students having low B.Ed. performance based on graduate academic achievement and teaching aptitude

Graduate Academic Achievement →	Low	Average	High	Total
Teaching Aptitude ↓				
Low	4 (4.83)	20 (20.02)	5 (4.142)	29
Average	3 (2.166)	9 (8.976)	1 (1.052)	13
High	0 (0)	0 (0)	0 (0)	0
Total	07	29	06	42

Values in brackets shows expected frequency and other values shows observed frequency.

In the Table No. 16, third row has frequencies (0,0,0), so these observed frequencies are pooled in second row and obtain pooled Table No. 17. Then apply chi-square test for independence.

Table No.17

Pooled Data for two way classification of B.Ed. students having low B.Ed. performance based on graduate academic achievement and teaching aptitude

Graduate academic achievement →	Low	Average	High	Total	Obtained χ^2 Value	Critical χ^2 value for df. 2	
						0.05	0.01
Teaching Aptitude ↓							
Low	4 (4.83)	20 (20.02)	5 (4.142)	29	1.04	5.99	9.21
Average	3 (2.166)	9 (8.976)	1 (1.052)	13			
Total	07	29	06	42			

Observation and Interpretation

Obtained χ^2 value is less than critical χ^2 value 5.99 at 0.05 level of significant for df.2. Therefore low B.Ed. performance does not depend upon the levels of teaching aptitude and graduate academic achievement. Hence, the Null hypothesis No. 6 is accepted.

Also obtained χ^2 value is less than critical χ^2 value 9.21 at 0.01 level of significant for df.2. Therefore low B.Ed. performance does not depend upon the levels of teaching aptitude and graduate academic achievement. Hence, the Null hypothesis No. 6 is accepted.

RESULTS

- 1) B.Ed. students with science as their first method have low teaching aptitude (Table No.1).
- 2) There is very slight difference between teaching aptitude of male and female. Male and female student teachers both have low teaching aptitude (Table No.2).
- 3) There is no difference between teaching aptitude of graduate student-teachers and post-graduate student-teachers. Both the graduate student-teachers and post-graduate student-teachers have low teaching aptitude (Table No.3).
- 4) There is no difference between teaching aptitude of Shivaji University student-teachers and other University student-teachers i.e. student teachers who have graduated from Shivaji University, Kolhapur and student-teachers who have graduated from other Universities, both have found low teaching aptitude (Table No.4).
- 5) The student-teachers of 24 B.Ed. colleges are found to have low teaching aptitude (Table No.5 and 6).

- 6) There is no relationship between teaching aptitude and B.Ed. performance i.e. teaching aptitude and B.Ed. performance are independent of each other (Table No.8).
- 7) There is no relationship between graduate academic achievement and the B.Ed. performance i.e. graduate academic achievement and the B.Ed. performance are independent of each other (Table No.9).
- 8) B.Ed. performance does not depend upon the teaching aptitude and graduate academic achievement (Table No.11).
- 9) High B.Ed. performance does not depend upon the levels of graduate academic achievement and teaching aptitude (Table No.13).
- 10) Average B.Ed. performance does not depend upon the levels graduate academic achievement and teaching aptitude (Table No.15).
- 11) Low B.Ed. performance does not depend upon the levels of graduate academic achievement and teaching aptitude (Table No.17).