CHAPTER-IV

DATA ANALYSIS AND INTERPRETATION

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4.0 INTRODUCTION

Raw data is worthless without analysis. However valid reliable and adequate data may or may not serve any worthwhile purpose unless it is carefully edited systematically classified and tabulated scientifically analyzed systematically and interpreted rationale concluded. Good research is characterized by what care has taken in the analysis and interpretation of data.Analysis of data means studying the tabulated material. In order to determine inherent factors in simple parts and putting the parts together in new arrangements for the purpose of interpretation. The process of interpretation is essentially important one of stating that result finding show what do you mean? What is their significance? What is the answer to the original problem? This part is the heart of the research. It calls for a critical examination of the results of one analysis in light of all the limitations of the data collection. This chapter includes the data collected from Bhopal city. The data thus collected was subjected to appropriate statistical procedure to test the hypotheses with which this study was in initiated. The details of the statistical techniques employed for analysis of the data, results obtained through this analysis and decisions regarding rejection or non-rejection of hypotheses are presented in this chapter.

Statistical techniques are used for organizing, analysis, interpretation of numerical data. Statistics is a basic tool of measurement and evaluation, when research has quantifiable data. A statistical method goes to the fundamental purpose of description and analysis. By applying statistical we can analyze and interpret the data in a systematic manner and by using appropriate statistical techniques, the results obtained are scientific and secret.

Interpretation of data refers to that important part of the research which is associated with the drawing of the inference from the data collected after an analytical study. It is the interpretation that makes it possible for us to utilize collected data. According to the hypotheses of the study the data collected was analyzed on the bases of scores of different tasks conducted on the sample. The statistical methods serve the fundamental purpose of description, analysis and their proper application involves answering the following questions.

1. What facts need to be gathered to provide the information necessary to test the hypotheses?
2. How are these data to be gathered, organized and analyzed?

3. What assumption under lie the statistical techniques to be employed?
4. What constructions can be validly drawn from the analysis of the data?

4.1 RESULTS AND INTERPRETATIONS

Objectives:

4.1.1 To study knowledge on Climate Change of prospective teachers of Bhopal

Table 4.1
Gender-wise and Class-wise Knowledge on Climate Change of Prospective Teachers

Gender of the Prospective Teachers	Gender		Name of the Class				Total
			B.A.B.Ed.	B.Sc. B.Ed.	B.Ed. Language	B.Ed. Science	
	Male	N	10	15	15	12	52
		% within Gender of the Prospective Teachers	19.2%	28.8%	28.8%	23.1%	100.0%
	Female	N	25	20	17	26	88
		% within Gender of the Prospective Teachers	28.4%	22.7%	19.3%	29.5%	100.0%
Total		N	35	35	32	38	140
		% within Gender of the Prospective Teachers	25.0%	25.0%	22.9%	27.1%	100.0%

Table 4.1 demonstrates that the gender-wise and class-wise knowledge on climate change of prospective teachers. It was found that 19.2%, 28.8%, 28.8.8% and 23.1% male students of B.A.B.Ed., B.Sc.B.Ed. B.Ed.(Lang.) and B.Ed. (sc.) classes had knowledge of the climate change, respectively. In contrast, 28.4%, 22.7%, 19.3% and 29.5% female students of B.A.B.Ed., B.Sc.B.Ed. B.Ed.(Lang.) and B.Ed. (sc.) classes had knowledge of the climate change, respectively. It shows that among the males, B.Sc.B.Ed. and B.Ed.(Lang.) students had more knowledge of the climate change than the other classes. Among the females B.Ed.(Sc.) had more knowledge of the climate change in comparison to other classes.

When compared overall, the B.Ed.(Sc.) students had more knowledge of the climate change than the other classes and B.Ed.(Lang.) students had the least knowledge of climate change.

Table 4.2

Gender-wise, Institution-wise and Class-wise Knowledge on Climate Change of Prospective Teachers

			B.AB.Ed.	B.Sc.B.Ed.	B.Ed. Language	B.Ed. Science	Total
Govt.	Gender of the Prospective Teachers	Male	28.6%	42.9%	12.5%	22.2%	32.2%
		Female	71.4%	57.1%	87.5%	77.8%	67.8%
	Total		100.0%	100.0%	100.0%	100.0%	100.0%
Private	Gender of the Prospective Teachers	Male			58.3%	34.5%	45.3%
		Female			41.7%	65.5%	54.7%
	Total				100.0%	100.0%	100.0%

Table 4.2 shows the gender-wise, institution-wise and class-wise knowledge on climate change of prospective teachers. The results show that 28.6%, 42.9%, 12.5% and 22.2 % male students of B.A.B.Ed., B.Sc.B.Ed., B.Ed.(Lang.) and B.Ed. (sc.) classes of government institutions had knowledge of the climate change, respectively. In contrast, 71.4%, 57.1%, 87.5% and 77.8% female students of B.A.B.Ed., B.Sc.B.Ed. B.Ed.(Lang.) and B.Ed. (sc.) classes of government institutions had knowledge of the climate change respectively. It shows that female students of government institution had more knowledge on climate change than the students of private institutions. When compared among the students of private institutions, the B.Ed.(Lang.) female students had more knowledge of the climate change than the other classes and B.Ed.(Lang.) male students had the least knowledge of climate change.

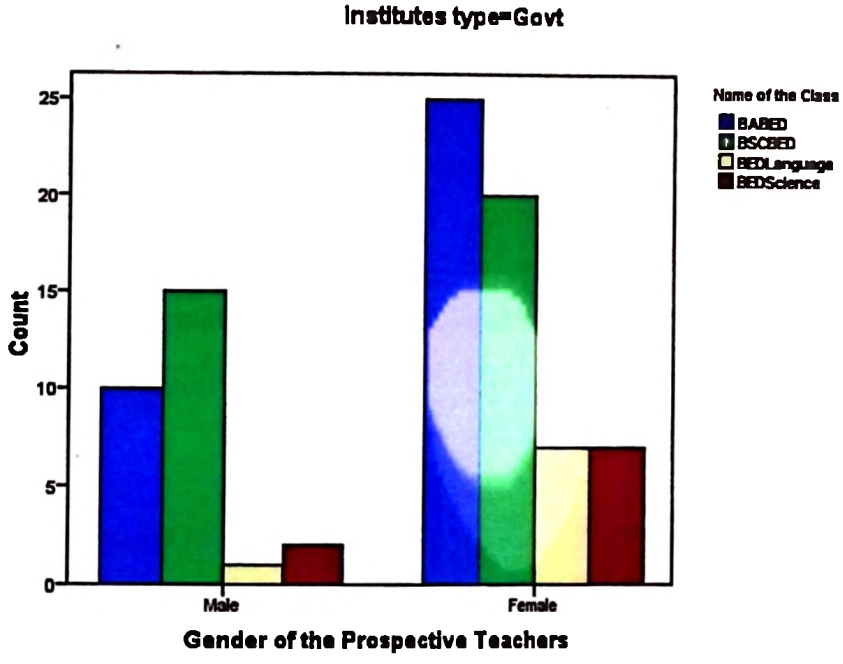
4.1.2 Perception on Climate Change of prospective teachers

Table 4.3

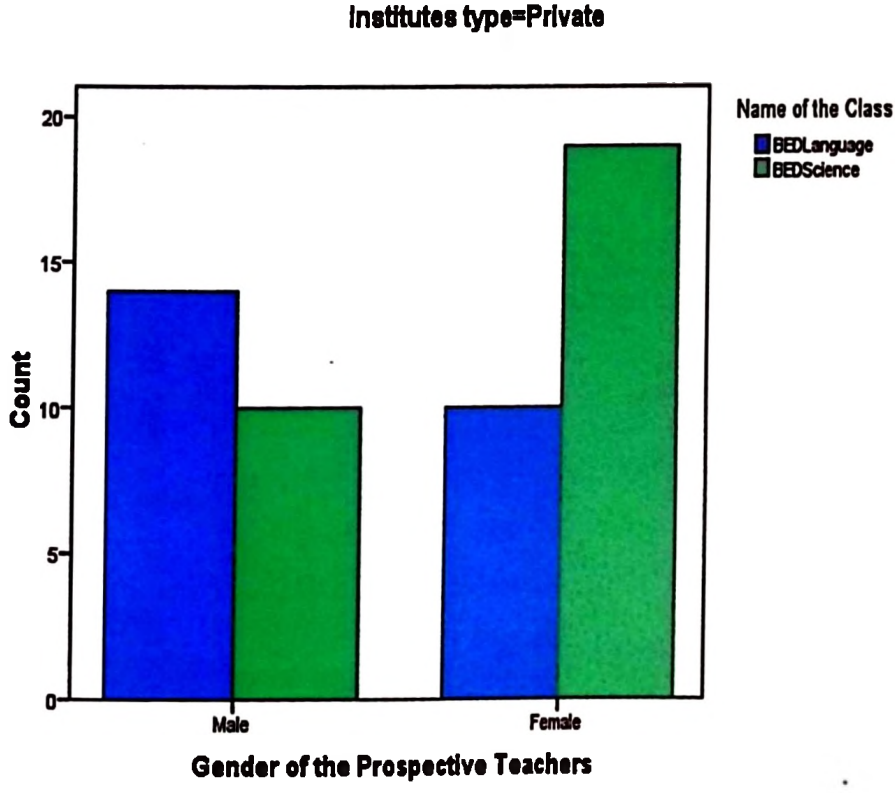
Gender-wise, Institution –wise and Class-wise Knowledge on Climate Change of Prospective Teachers

Institutes type			Name of the Class				Total
			B.A.B.Ed.	B.Sc.B.Ed.	B.Ed. Language	B.Ed. Science	
Govt	Gender of the Prospective Teachers	Male	28.6%	42.9%	12.5%	22.2%	32.2%
		Female	71.4%	57.1%	87.5%	77.8%	67.8%
	Total		100.0%	100.0%	100.0%	100.0%	100.0%
Private	Gender of the Prospective Teachers	Male			58.3%	34.5%	45.3%
		Female			41.7%	65.5%	54.7%
	Total				100.0%	100.0%	100.0%

Table 4.3 shows the gender-wise, institution-wise and class-wise perception on climate change of prospective teachers. The results show that 28.6%, 42.9%, 12.5% and 22.2 % male students of B.A.B.Ed., B.Sc.B.Ed. B.Ed.(Lang.) and B.Ed. (sc.) classes of government institutions had perception on the climate change, respectively. In contrast, 71.4%, 57.1%, 87.5% and 77.8% female students of B.A.B.Ed., B.Sc.B.Ed. B.Ed. (Lang.) and B.Ed. (sc.) classes of government institution respectively. The results shows that 58.3 %, 34.5% male students of B.Ed.(Lang.) and B.Ed. (sc.) classes of private institution had perception on Climate Change respectively. In contrast,41.7 % and 65.5% female students of B.Ed.(Lang.) and B.Ed. (sc.) classes of private institution had perception on Climate Change respectively. It shows that among the males, B.Sc.B.Ed. and B.Ed.(Lang.) students had more perception on the climate change than the other classes. Among the females B.Ed.(Sc.) had more perception on the climate change in comparison to other classes. When compared overall, the B.Ed.(Sc.) students had more perception on the climate change than the other classes and B.Ed.(Lang.) students had the least perception on the climate change. The students studying in government institution had more perception than students studying in private institutions.



Graph 4.1



Graph 4.2

4.1.3 Influence of Gender, Institutions, Courses and their Interaction on the Knowledge of Climate Change of the Prospective Teachers

The fourth objective of the present investigation was to study the Influence of Gender, Institutions and Courses and their interaction on the Knowledge of Climate Change of the Prospective Teachers. Gender has two levels, e.g. Male and female. There were two types of institutions e.g. government and private. There were four types of courses e.g. had B.A.B.Ed., B.Sc.B.Ed., B.Ed.(Language) and B.Ed. (Science). For assessing the Knowledge of Climate Change of the Prospective Teachers, a tool was developed by the investigator and it was administered to the prospective teachers. The collected data were analyzed with the help of 2 X 4 X 2 Factorial Design ANOVA of Unequal cell size.

Table 4.4: Summary of 2 X 4 X 2 ANOVA for Knowledge of Climate Change of the Prospective Teachers

Source	df	Sum of Squares	Mean Square	F
Gender	1	21.084	21.084	7.520**
Courses	3	1.779	.593	.212
Institute	1	1.330	1.330	.474
Gender X Courses	3	5.675	1.892	.675
Gender X Institute	1	1.862	1.862	.664
Class X Institute	1	.008	.008	.003
Gender X Courses X Institute	1	2.272	2.272	.810
Error	128	358.866	2.804	
Total	139			

*** Significant at 0.01 Level***

Table 4.5: Gender-wise, Institution-wise and Course-wise Mean, SD and N of Knowledge of Climate Change of the Prospective Teachers

Gender of the Prospective Teachers	Name of the Courses	Types of Institutions	Mean	Std. Deviation	N
Male	B.A.B.Ed.	Govt	13.10	1.853	10
		Total	13.10	1.853	10
	B.Ss. B.Ed.	Govt	13.07	1.580	15
		Total	13.07	1.580	15
	B.Ed.(Language)	Govt	14.00	.	1
		Private	12.57	1.016	14
		Total	12.67	1.047	15
	B.Ed.(Science)	Govt	13.00	1.414	2
		Private	12.60	.843	10
		Total	12.67	.888	12
	Total	Govt	13.11	1.595	28
		Private	12.58	.929	24
		Total	12.87	1.344	52
Female	B.A.B.Ed.	Govt	11.84	1.908	25
		Total	11.84	1.908	25
	B.Ss. B.Ed.	Govt	12.40	2.037	20
		Total	12.40	2.037	20
	B.Ed.(Language)	Govt	11.14	2.673	7
		Private	11.80	1.687	10
		Total	11.53	2.095	17
	B.Ed.(Science)	Govt	12.71	1.254	7
		Private	12.21	1.228	19
		Total	12.35	1.231	26
	Total	Govt	12.05	1.995	59
		Private	12.07	1.387	29
		Total	12.06	1.809	88
	B.A.B.Ed.	Govt	12.20	1.952	35
		Total	12.20	1.952	35
	B.Ss. B.Ed.	Govt	12.69	1.859	35
		Total	12.69	1.859	35
	B.Ed.(Language)	Govt	11.50	2.673	8
		Private	12.25	1.359	24
		Total	12.06	1.759	32
	B.Ed.(Science)	Govt	12.78	1.202	9
		Private	12.34	1.111	29
		Total	12.45	1.132	38
	Total	Govt	12.39	1.931	87
		Private	12.30	1.218	53
		Total	12.36	1.692	140

4.1.3.1 Influence of Gender on the Knowledge of Climate Change of the Prospective Teachers

Table 4.4 shows that the F-value of Gender for Knowledge of Climate Change of the Prospective Teachers is 7.520. This is significant at 0.01 level with df equal to 1/139. Therefore, the null hypothesis, namely, "there is no significant influence of Gender on the Knowledge of Climate Change of the Prospective Teachers" is rejected. Thus, it can be said that the Knowledge of Climate Change is dependent of the Gender of the Prospective Teachers.

Table 4.5 shows that the overall mean score of Knowledge of Climate Change of the prospective teachers is 12.36. The SD of Knowledge of Climate Change of the prospective teachers is 1.692. The mean score of Knowledge of Climate Change of the prospective male teachers is 13.11 and SD is 1.595. The mean score of Knowledge of Climate Change of the prospective female teachers is 12.06 and SD is 1.809. The mean score of prospective male teachers is more than the prospective female teachers.

Finding: Gender influenced the Knowledge of Climate Change of the prospective teachers

4.1.3.2 Influence of Institutions on the Knowledge of Climate Change of the Prospective Teachers

Table 4.7 shows that the F-value of Institutions for Knowledge of Climate Change of the Prospective Teachers is .474. This is not significant at 0.05 level with df equal to 1/139. Therefore, the null hypothesis, namely, "there is no significant influence of Institutions on the Knowledge of Climate Change of the Prospective Teachers" is not rejected. Thus, it can be said that the Knowledge of Climate Change is independent of the Institutions of the Prospective Teachers where they study.

Table 4.6 shows that the overall mean score of Knowledge of Climate Change of the prospective teachers 12.36. The SD of Knowledge of Climate Change of the prospective teachers is 1.692. The mean score of Knowledge of Climate Change of the prospective teachers studying in govt. institutions is 12.39 and SD is 1.931. The mean score of Knowledge of Climate Change of the prospective teachers studying in private institutions is 12.30 and SD is 1.218. There is very nominal difference in mean score of Knowledge of Climate Change of the prospective teachers between the prospective teachers studying in govt. and private institutions.

Finding: Institutions did not influence the Knowledge of Climate Change of the prospective teachers

4.1.3.3 Influence of Courses on the Knowledge of Climate Change of the Prospective Teachers

Table 4.7 shows that the F-value of Courses for Knowledge of Climate Change of the Prospective Teachers is .212. This is not significant at 0.05 level with df equal to 3/139. Therefore, the null hypothesis, namely, "there is no significant influence of Courses on the Knowledge of Climate Change of the Prospective Teachers" is not rejected. Thus, it can be said that the Knowledge of Climate Change is independent of the Courses of the Prospective Teachers which they study.

Table 4.6 shows that the overall mean score of Knowledge of Climate Change of the prospective teachers 12.36. The SD of Knowledge of Climate Change of the prospective teachers is 1.692. The mean score of Knowledge of Climate Change of the prospective teachers studying in B.A.B.Ed., B.Sc.B.Ed., B.Ed.(Language) and B.Ed. (science) are 12.20, 12.69, 12.06 and 12.45. The SD of Knowledge of Climate Change of the prospective teachers studying in B.A.B.Ed., B.Sc.B.Ed., B.Ed.(Language) and B.Ed. (science) are 1.952, 1.859, 1.759 and 1.132. The results show that the prospective teachers studying in B.Sc.B.Ed. Courses have scored more than the prospective teachers studying in any other courses.

Finding: Courses did not influence the Knowledge of Climate Change of the prospective teachers

4.1.3.4 Interaction of Gender, Institutions and Courses on the Knowledge of Climate Change of the Prospective Teachers

Table 4.7 shows that the F-value of interaction of Gender, Institutions and Courses for Knowledge of Climate Change of the Prospective Teachers is 0.810. This is not significant at 0.05 level with df equal to 1/139. Therefore, the null hypothesis, namely, "there is no significant interaction of Gender, Institutions and Courses on the Knowledge of Climate Change of the Prospective Teachers" is not rejected. Thus, it can be said that the Knowledge of Climate Change is independent of the interactional influence of Gender, Institutions and Courses of the Prospective Teachers.

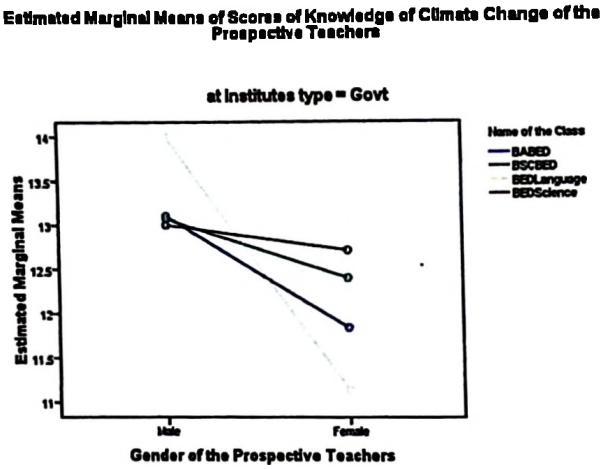


Fig.4.1: ***Interactional Influence of Gender, Govt. Institutions and Courses on the Knowledge of Climate Change of the Prospective Teachers***

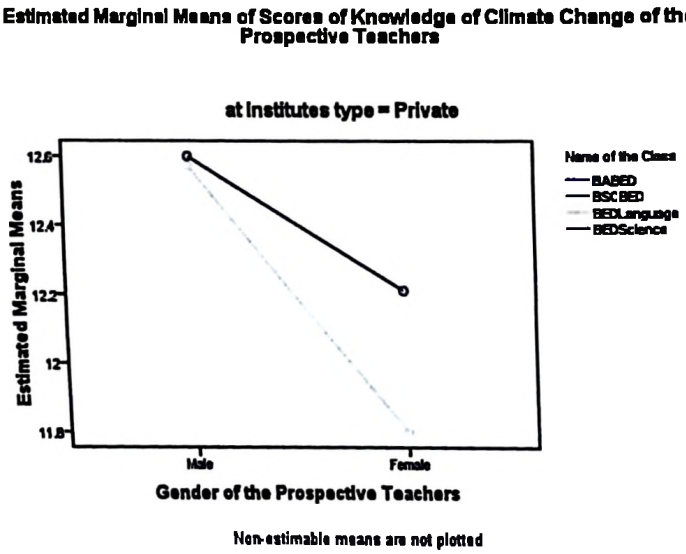


Fig.4.2: ***Interactional Influence of Gender, Pvt. Institutions and Courses on the Knowledge of Climate Change of the Prospective Teachers***

Finding: There is no interactional influence of Gender, Institutions and Courses on the Knowledge of Climate Change of the prospective teachers

4.1.4 Influence of Gender, Institutions, Courses and their Interaction on the Perception on Climate Change of the Prospective Teachers

The fifth objective of the present investigation was to study the Influence of Gender, Institutions and Courses and their interaction on the Perception on Climate Change of the Prospective Teachers. Gender has two levels, e.g. Male and female. There were two types of institutions e.g. government and private. There were four types of courses e.g. had B.A.B.Ed., B.Sc.B.Ed. B.Ed.(Language) and B.Ed. (Science). For assessing the Perception on Climate Change of the Prospective Teachers, a tool was developed by the investigator and it was

administered to the prospective teachers. The collected data were analyzed with the help of 2 X 4 X 2 Factorial Design ANOVA of Unequal cell size.

4.1.4.1 Influence of Gender on the Perception on Climate Change of the Prospective Teachers

Table 4.7 shows that the F-value of Gender for Perception on Climate Change of the Prospective Teachers is 13.945. This is significant at 0.05 level with df equal to 1/139. Therefore, the null hypothesis, namely, "there is no significant influence of Gender on the Perception on Climate Change of the Prospective Teachers" is rejected. Thus, it can be said that the Perception on Climate Change is dependent of the Gender of the Prospective Teachers.

Table 4.6 shows that the overall mean score of Perception on Climate Change of the prospective teachers is 134.78. The SD of Perception on Climate Change of the prospective teachers is 10.795. The mean score of Perception on Climate Change of the prospective male teachers is 130.69 and SD is 10.911. The mean score of Perception on Climate Change of the prospective female teachers is 137.19 and SD is 10.026. The mean score of prospective female teachers is more than the prospective male teachers.

Finding: Gender influenced the Perception on Climate Change of the prospective teacher.

Table 4.6 Summary of 2 X 4 X 2 ANOVA for Perception on Climate Change of the Prospective Teachers

Sources of Variance	df	Type III Sum of Squares	Mean Square	F
Gender	1	1501.743	1501.743	13.945**
Courses	3	516.405	172.135	1.598
Institute	1	426.629	426.629	3.962*
Gender X Courses	3	24.998	8.333	.077
Gender X Institute	1	6.236	6.236	.058
Courses X Institute	1	.751	.751	.007
Gender_X Courses X Institute	1	.113	.113	.001
Error	128	13783.958	107.687	
Total	139			

*** Significant at 0.01 Level***

** Significant at 0.05 Level*

Table 4.7: Gender-wise, Institution-wise and Course-wise Mean, SD and N of Perception on Climate Change of the Prospective Teachers

Gender of the Prospective Teachers	Name of the Courses	Types of Institutes	Mean	Std. Deviation	N
Male	B.A.B.Ed.	Govt	125.80	11.213	10
		Total	125.80	11.213	10
	B.Sc. B.Ed.	Govt	131.60	11.593	15
		Total	131.60	11.593	15
	B.Ed.(Language)	Govt	125.00	.	1
		Private	133.21	10.504	14
		Total	132.67	10.342	15
	B.Ed.(Science)	Govt	124.00	2.828	2
		Private	132.60	11.138	10
		Total	131.17	10.650	12
	Total	Govt	128.75	11.037	28
		Private	132.96	10.536	24
		Total	130.69	10.911	52
Female	B.A.B.Ed.	Govt	135.76	11.137	25
		Total	135.76	11.137	25
	B.Ss. B.Ed.	Govt	139.05	9.219	20
		Total	139.05	9.219	20
	B.Ed.(Language)	Govt	133.14	5.728	7
		Private	139.30	10.328	10
		Total	136.76	9.059	17
	B.Ed.(Science)	Govt	132.29	12.566	7
		Private	139.32	9.178	19
		Total	137.42	10.424	26
	Total	Govt	136.15	10.235	59
		Private	139.31	9.404	29
		Total	137.19	10.026	88
Total	B.A.B.Ed.	Govt	132.91	11.902	35
		Total	132.91	11.902	35
	B.Ss. B.Ed.	Govt	135.86	10.809	35
		Total	135.86	10.809	35
	B.Ed.(Language)	Govt	132.12	6.034	8
		Private	135.75	10.654	24
		Total	134.84	9.746	32
	B.Ed.(Science)	Govt	130.44	11.523	9
		Private	137.00	10.226	29
		Total	135.45	10.762	38
	Total	Govt	133.77	11.000	87
		Private	136.43	10.339	53
		Total	134.	10.795	140

4.4.2 Influence of Institutions on the Perception on Climate Change of the Prospective Teachers

Table 4.7 shows that the F-value of Institutions for Perception on Climate Change of the Prospective Teachers is 3.962. This is significant at 0.01 level with df equal to 1/139. Therefore, the null hypothesis, namely, "there is no significant influence of Institutions on the Perception on Climate Change of the Prospective Teachers" is rejected. Thus, it can be said that the Perception on Climate Change is dependent of the Institutions of the Prospective Teachers where they study.

Table 4.6 shows that the overall mean score of Perception on Climate Change of the prospective teachers is 134.78. The SD of Perception on Climate Change of the prospective teachers is 10.795. The mean score of Perception on Climate Change of the prospective teachers studying in govt. institutions is 133.77 and SD is 11. The mean score of Perception on Climate Change of the prospective teachers studying in private institutions is 136.43 and SD is 10.339. There is very nominal difference in mean score of Perception on Climate Change of the prospective teachers between the prospective teachers studying in govt. and private institutions.

Finding: Institutions influence the perception on Climate Change of the prospective teachers.

4.4.3 Influence of Courses on the Perception on Climate Change of the Prospective Teachers

Table 4.7 shows that the F-value of Courses for Perception on Climate Change of the Prospective Teachers is .77. This is not significant at 0.05 level with df equal to 3/139. Therefore, the null hypothesis, namely, "there is no significant influence of Courses on the Perception on Climate Change of the Prospective Teachers" is not rejected. Thus, it can be said that the Perception on Climate Change is independent of the Courses of the Prospective Teachers which they study.

Table 4.6 shows that the overall mean score of Perception on Climate Change of the prospective teachers 134.78. The SD of Perception on Climate Change of the prospective teachers is 10.795 . The mean score of Perception on Climate Change of the prospective teachers studying in B.A.B.Ed., B.Sc.B.Ed. B.Ed.(Language) and B.Ed. (science) are 132.91, 135.86 , 134.84 and 135.45. The SD of Perception on Climate Change of the prospective teachers studying in B.A.B.Ed., B.Sc.B.Ed. B.Ed.(Language) and B.Ed. (science) are 11.902, 10.809, 9.746 and 10.762. The results show that the prospective teachers studying in

B.Sc.B.Ed. Courses have scored more than the prospective teachers studying in any other courses.

Findings: Courses did not influence the Perception on Climate Change of the prospective teachers.

4.4.4 Interaction of Gender, Institutions and Courses on the Perception on Climate Change of the Prospective Teachers

Table 4.7 shows that the F-value of interaction of Gender, Institutions and Courses for Knowledge of Climate Change of the Prospective Teachers is .001. This is not significant at 0.05 level with df equal to 1/139. Therefore, the null hypothesis, namely, "there is no significant interaction of Gender, Institutions and Courses on the Perception on Climate Change of the Prospective Teachers" is not rejected. Thus, it can be said that the Perception on Climate Change is independent of the interactional influence of Gender, Institutions and Courses of the Prospective Teachers.