

***CHAPTER - 4***  
***RESULTS AND DISCUSSIONS***

## **CHAPTER - 4**

### **RESULT AND DISCUSSION**

#### **4.1. Introduction**

The results obtained in the present investigation are discussed in detail in this chapter. The data collected for the study was consolidated, tabulated and statistically analysed. This chapter contains three major sections of analysis.

**Section I** deals with the analysis of the scores obtained by the sample for the dependent variable “Knowledge” using Differential Statistics

**Section II** deals with the analysis of the scores obtained by the sample for the variable ‘Attitude’ using Differential Statistics.

**Section III** deals with the Correlation Analysis of the scores in terms of the Variables.

**Section I:** The scores obtained for the variable ‘Knowledge’ was analysed in terms of different methods as well as in relation to the sub variables using Differential Analysis. Change in the ‘Knowledge’ was assessed initially as well as after teaching. The results were presented in the following Tables 4.1 to 4. 25 and interpreted.

**Table 4.1 Comparison of Knowledge score in the Pretest and Posttest in Relation to Different methods**

Methods	N	Achievement Test	Mean score	SD	df	't' ratio
Multimedia approach	65	Pretest	25.28	1.83	64	67.94**
		Posttest	47.52	2.25		
Cooperative Learning	75	Pretest	25.15	1.49	74	60.06**
		Posttest	42.09	2.01		
Situational approach	68	Pretest	25.19	1.65	67	23.21**
		Posttest	36.04	3.36		
Brain storming	65	Pretest	25.11	2.20	64	26.91**
		Posttest	36.18	2.84		
Conventional method	69	Pretest	25.09	2.47	68	1.55 <sup>NS</sup>
		Posttest	25.59	2.59		

\*\* Significant at 0.01 level; N - Number of Students; NS - Not Significant

It was inferred from the above table that in all the groups under different methods except the Conventional method, there was highly significant difference between the pretest and the posttest scores which was revealed by the highly significant 't' values at one per cent level. When the posttest scores were taken into consideration, Multimedia approach resulted in the highest mean score (47.52) followed by Cooperative learning (42.09). The two instructional methods namely Situational approach and Brainstorming proved to be effective in the same level (36.04 and 36.18 respectively) following Cooperative learning. Conventional method did not seem to be effective which was revealed by the insignificant "t" value. This may be due to the fact that the student teachers living in the era of technological revolution were very much moved by the way Human rights concepts and its violations were exposed to them using Multimedia.

Hence the **null hypothesis** stated as "There is no significant difference between the pretest score and the posttest score of the groups in terms of knowledge in Human rights education in relation to the instructional methods." was rejected in

the case of four instructional methods and accepted in the case of Conventional method. The result obtained in this study is in line with the findings of **Annakodi** and **Premakumari (2002)** who compared the achievement level of the Vocational groups in Nutrition Education taught by different methods namely Multimedia, Programmed Learning, Cooperative learning and Conventional method. It was found that Multimedia approach was the most effective method of imparting knowledge.

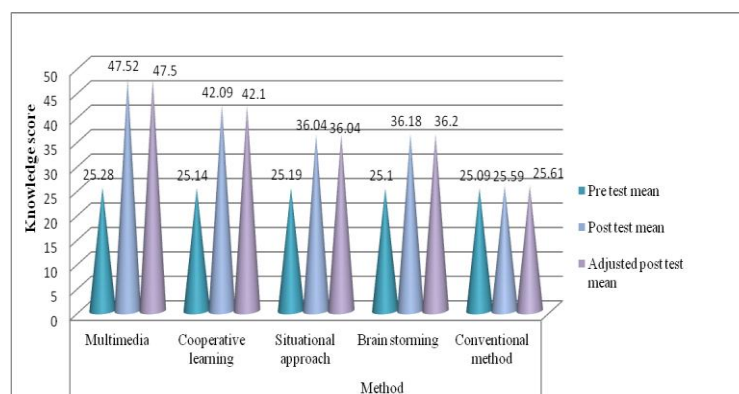
An attempt was made to test whether there was any difference among the mean scores of groups taught by different methods in the pretest and the posttest and given in Table 4.2.

**Table 4.2 Analysis of Knowledge Score in the Pretest and the Posttest Among Different Methods**

Knowledge score	Methods					Source of variance	Sum of Squares	df	Mean square	F-value
	MA (N-65)	CL (N-75)	SA (N-68)	BS (N-65)	CM (N-69)					
Pretest mean	25.28	25.14	25.19	25.10	25.09	BG	1.51	4	0.38	0.10 <sup>NS</sup>
						WG	1286.64	337	3.82	
Posttest mean	47.52	42.09	36.04	36.18	25.59	BG	18149.36	4	4537.34	650.16 <sup>**</sup>
						WG	2351.85	337	6.98	
Adjusted posttest mean	47.50	42.10	36.04	36.20	25.61	BG	18079.10	4	4519.77	662.17 <sup>**</sup>
						WG	2293.45	336	6.83	

\*\* Significant at 0.01 level; N-Number of Students; NS-Not Significant; BG-Between groups; WG-Within Groups; MA- Multimedia approach, CL - Cooperative Learning, SA - Situational approach, BS- Brainstorming, CM - Conventional method

The above table indicated that there was no significant difference among the groups in the pretest scores. However, in the posttest, high significant difference was found among the groups under different methods as revealed by the highly significant “F” value (650.16) at one per cent level. The adjusted posttest mean scores obtained after removing the effect of pretest using analysis of Covariance was found to be highly significant at one per cent level and the “F” value was 662.17. Hence the **null hypothesis** stated as “There is no significant difference among the groups taught by different methods in developing knowledge in Human rights education” was rejected. The high mean score of the Multimedia group (47.50) proved that this method was very effective in imparting Human rights education. This analysis is depicted in Figure 4.1.



**Figure 4.1. Knowledge Score of the Student Teachers in Relation to Different Methods**

Since significant improvements were recorded, the results were subjected to Post hoc analysis using Scheffe's Multiple Comparison test. The results were presented in Table 4.3

**Table 4.3 Scheffe's Multiple Comparison between the Methods on Knowledge Score**

Methods	Mean score	Groups	Mean difference
Multimedia approach	47.50	MA - CL	5.40**
		MA -SA	11.46**
		MA -BS	11.30**
		MA - CM	21.89**
Cooperative Learning	42.10	CL - SA	6.06**
		CL - BS	5.90**
		CL - CM	16.49**
Situational approach	36.04	SA - BS	0.16 <sup>NS</sup>
		SA - CM	10.43**
Brainstorming	36.20	BS - CM	10.59**
Conventional method	25.61		

\*\*Significant at 0.01 level; NS-Not Significant; MA- Multimedia approach, CL - Cooperative Learning, SA - Situational approach, BS- Brainstorming, CM - Conventional method

It was observed from the above table that the Multimedia approach had highly significant mean difference with the other methods at one per cent level. In the same way Cooperative learning differed significantly from the other methods. Situational approach and Brainstorming methods did not differ significantly from

each other but differed from other methods. But the Multimedia approach having the highest mean difference (21.89) from the Conventional method may be considered as the much effective method in imparting Human rights education. This may be because of the reason that living in the era of computer technology; the students were not at all interested to learn by the Conventional method of teaching. Rather they preferred to learn by Multimedia. Attempt was made to analyse the knowledge scores in terms of stream of courses and presented in the following Table 4.4.

\*\* Significant at 0.01 level; N - Number of Students; NS - Not Significant

**Table 4.4 Analysis of Knowledge score in Terms of Stream of Courses**

Stream of course	Knowledge Score	Methods					Source of Variance	Sum of Squares	df	Mean Squares	F-ratio
		MA (N-23)	CL (N-24)	SA (N-25)	BS (N-23)	CM (N-24)					
Arts	Pretest Mean	25.35	25.12	25.40	25.65	24.67	BG	13.02	4	3.25	0.80 <sup>NS</sup>
							WG	466.39	114	4.09	
	Posttest Mean	47.87	41.87	36.16	36.04	24.75	BG	6920.39	4	1730.10	240.51 <sup>**</sup>
							WG	820.05	114	7.19	
	Adjusted posttest Mean	47.85	41.89	36.14	35.98	24.83	BG	6812.25	4	1703.06	237.56 <sup>**</sup>
							WG	810.09	113	7.17	
Science	Knowledge Score	MA (No.42)	CL (No.51)	SA (No.43)	BS (No.42)	CM (No.45)					
	Pretest Mean	25.23	25.16	25.07	24.81	25.31	BG	6.45	4	1.61	0.44 <sup>NS</sup>
							WG	801.27	218	3.68	
	Posttest Mean	47.33	42.20	35.98	36.26	26.04	BG	11253.66	4	2813.42	409.32 <sup>**</sup>
							WG	1498.38	218	6.87	
	Adjusted posttest Mean	47.30	42.19	35.99	36.34	26.00	BG	11263.78	4	2815.94	420.96 <sup>**</sup>
							WG	1451.58	217	6.69	

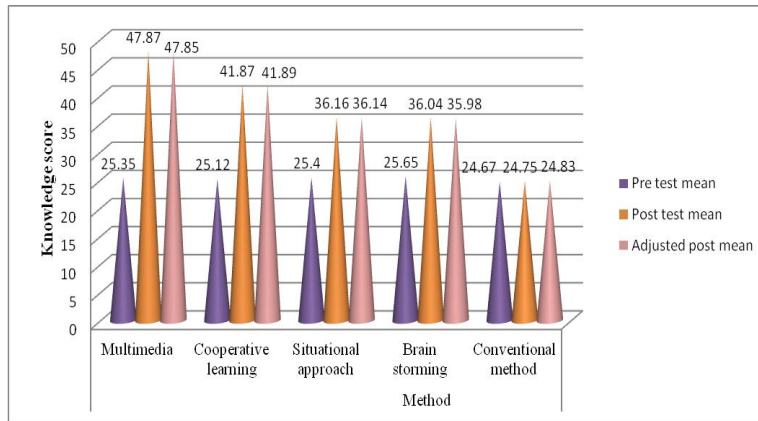
\*\* Significant at 0.01 level; NS-Not Significant; N- Number of students; BG-Between groups; WG-Within Groups; MA- Multimedia approach,

CL - Cooperative Learning, SA - Situational approach, BS- Brainstorming, CM - Conventional method

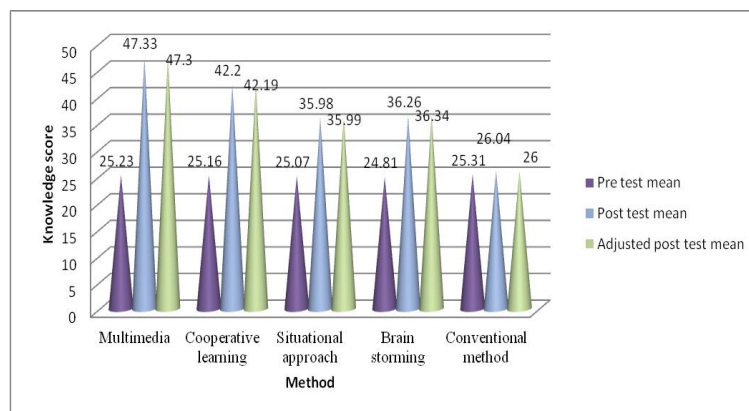
\*\* Significant at 0.01 level; NS-Not Significant; N- Number of students; BG-Between groups; WG-Within Groups; MA- Multimedia approach,  
CL - Co-operative Learning, SA - Situational approach, BS- Brainstorming, CM - Conventional method

It was evident from the above table that the “F” value obtained out of the pretest scores (0.80) was less than the required “F” value of 2.45 to be highly significant at five per cent level. This proved that there was no significant difference among the five groups of the arts stream at initial stage. But the “F” value (240.51) obtained out of the posttest scores proved that there was highly significant difference among the groups, as it was significant at one per cent level. Using analysis of Covariance, pretest’s effect was removed and the “F” value (237.56) obtained out of the adjusted mean scores showed that significant difference existed among the student teachers of arts stream which may be due to the difference in the motivational effect of the different methodologies adopted to the teaching of Human rights education. It was also seen that among all the methods, Multimedia approach seemed to be much effective as it has got high mean score(47.85) followed by the Cooperative learning(41.89), Situational approach(36.14) and Brainstorming(35.98).The Conventional method was not at all effective in the posttest.

The same result was obtained in the case of science stream students also. In the posttest there was highly significant difference found among the groups of different methods which was revealed by the highly significant “F” value (409.32) at one per cent level. Using analysis of Covariance, pretest’s effect was removed. The “F” value (420.96) obtained out of the adjusted posttest means of groups was highly significant at one per cent level. It was also seen that among all the methods, Multimedia seemed to be much effective as it has got high mean score(47.30) followed by the Cooperative learning(42.19), Situational approach(35.99) and Brainstorming(36.34) methods. There was no improvement in the performance of the Conventional method group. Hence the **null hypothesis** stated as “There is no significant difference among the groups taught by different methods in developing knowledge in Human rights education in relation to the variable namely the stream of courses” was rejected. Figures 4.2 and 4.3 explain the above analysis graphically.



**Figure 4.2 Knowledge Score of the Arts Stream students in Relation to Different Methods**



**Figure 4.3 Knowledge Scores of the Science Stream students in Relation to Different Methods**

Scheffe's Multiple Comparison was carried out to find out which method had high significant mean difference with the other methods among the student teachers of the arts stream and the science stream and the result is presented in the following Table 4.5.

**Table 4.5 Scheffe's Multiple Comparison between the Methods on Knowledge Score in Terms of Stream of Courses**

Methods	Arts stream		Mean difference
	Mean score	Groups	
Multimedia approach	47.85	MA - CL	5.96**
		MA -SA	11.71**
		MA -BS	11.87**
		MA - CM	23.02**
Cooperative Learning	41.89	CL - SA	5.75**
		CL - BS	5.91**
		CL - CM	17.06**
Situational approach	36.14	SA - BS	0.16 <sup>NS</sup>
		SA - CM	11.31**
Brainstorming	35.98	BS - CM	11.15**
Conventional method	24.83		
<b>Science stream</b>			
Multimedia approach	47.3	MA - CL	5.11**
		MA -SA	11.31**
		MA -BS	10.96**
		MA - CM	21.3**
Cooperative Learning	42.19	CL - SA	6.2**
		CL - BS	5.85**
		CL - CM	16.19**
Situational approach	35.99	SA - BS	0.35 <sup>NS</sup>
		SA - CM	9.99**
Brainstorming	36.34	BS - CM	10.34**
Conventional method	26		

\*\*Significant at 0.01 level; NS-Not Significant ; MA- Multimedia approach, CL - Cooperative Learning, SA - Situational approach, BS- Brainstorming, CM - Conventional method

It was understood from the above table that each method differed significantly at one per cent level from the other methods except Situational approach and Brainstorming which did not differ from each other significantly in both the arts stream and the science stream. It was also inferred that irrespective of the stream of courses, the Multimedia approach had highly significant mean difference (23.02&21.3 respectively) with the Conventional method which proved that this method was much effective in teaching Human rights education when compared to other methods.

An attempt was made to analyse the knowledge scores of the student teachers taught by the different methods in terms of type of Institution and depicted in the following Tables 4.6 -4.11.

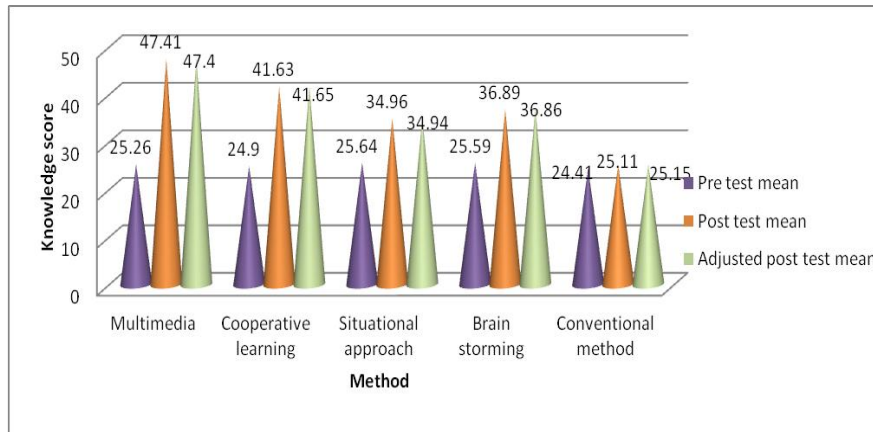
**Table 4.6 Analysis of Knowledge Score in Self Financing College**

Knowledge score	Methods					Source of variance	Sum of Squares	df	Mean Squares	F ratio
	MA (N-27)	CL (N- 30)	SA (N-28)	BS (N-27)	CM (N-27)					
Pretest mean	25.26	24.90	25.64	25.59	24.41	BG	29.17	4	7.29	2.18 NS
						WG	447.35	134	3.34	
Posttest mean	47.41	41.63	34.96	36.89	25.11	BG	7490.27	4	1872.56	303.86**
						WG	825.78	134	6.16	
Adjusted posttest mean	47.40	41.65	34.94	36.86	25.15	BG	7380.85	4	1845.21	297.70**
						WG	824.36	133	6.20	

\*\*Significant at 0.01 level; NS-Not Significant; N-Number of Students; BG-Between groups; WG-Within Groups; MA- Multimedia approach, CL - Cooperative Learning, SA - Situational approach, BS- Brainstorming, CM - Conventional method

It was inferred from the above table that there was no significant difference in the pretest score obtained by the student teachers in Self financing college under different methods. But in the posttest, there was significant difference among the groups which was revealed by the highly significant “F” value (303.86) which was at one per cent level. After removing pretest effect using analysis of Covariance, it was found that five methods differed significantly in the adjusted posttest means as the “F” value (297.70) was highly significant at one per cent level. Hence **the null hypothesis** stated as “There is no significant difference among the groups taught by

different methods in developing knowledge in Human rights education in Self financing college” was rejected. Figure 4.4 gives the graphical picture of the above analysis.



**Figure 4.4 Knowledge Score of the Student Teachers in Self financing College in Relation to Different Methods**

Scheffe’s Multiple Comparison was done to find out which method had high significant mean difference with the other methods in the Self financing college which is depicted in the following Table 4.7.

**Table 4.7 Scheffe’s Multiple Comparison between Methods on Knowledge Score in Self financing College**

Methods	Mean score	Groups	Mean difference
Multimedia approach	47.4	MA - CL	5.75**
		MA -SA	12.46**
		MA -BS	10.54**
		MA - CM	22.25**
Cooperative Learning	41.65	CL - SA	6.71**
		CL - BS	4.79**
		CL - CM	16.5**
Situational approach	34.94	SA - BS	1.92 <sup>NS</sup>
		SA - CM	9.79**
Brainstorming	36.86	BS - CM	11.71**
Conventional method	25.15		

\*\*Significant at 0.01 level; NS-Not Significant; BG-Between groups; WG-Within Groups; MA- Multimedia approach, CL - Cooperative Learning, SA - Situational approach, BS- Brainstorming, CM - Conventional method

It was observed from the above table that the Multimedia approach differed significantly from the other methods at one per cent level. All the other

methods also differed from each other except the Situational approach and Brainstorming method which did not differ from each other. Based on the high mean difference of the Multimedia approach (22.25), it can be said that this method is the effective method in imparting Human rights education followed by the Cooperative learning, Brainstorming and Situational approach. The group under Conventional method got the least mean score. So we can say that the students evinced keen interest in learning through Multimedia when compared to other methods.

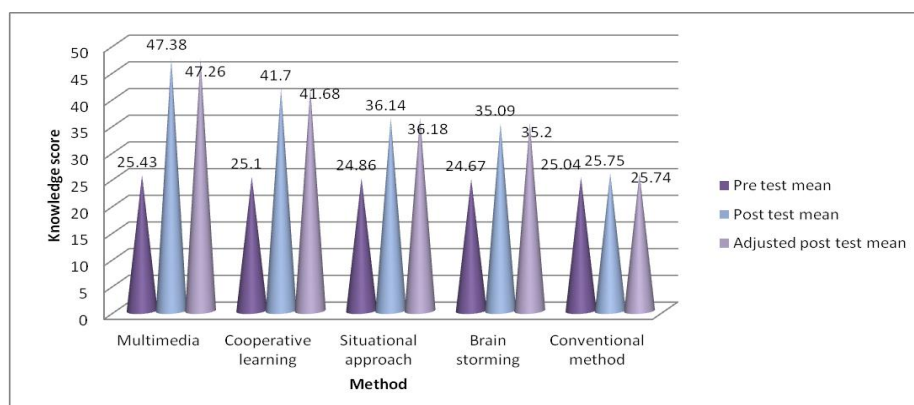
Attempt was made to analyse the knowledge scores of the groups in Government College and depicted in the following Table 4.8.

**Table 4.8 Analysis of Knowledge Score in Government College**

Knowledge score	Methods					Source of variance	Sum of Squares	df	Mean Squares	F-ratio
	MA (N-21)	CL (N-20)	SA (N-22)	BS (N-21)	CL (N-24)					
Pretest mean	25.43	25.10	24.86	24.67	25.04	BG	6.80	4	1.70	0.36 <sup>NS</sup>
						WG	487.16	103	4.73	
Post test Mean	47.38	41.70	36.14	35.09	25.75	BG	5832.27	4	1458.07	166.86 <sup>**</sup>
						WG	900.05	103	8.74	
Adjusted posttest mean	47.26	41.68	36.18	35.20	25.74	BG	5745.82	4	1436.45	171.05 <sup>**</sup>
						WG	856.59	102	8.40	

\*\*Significant at 0.01 level; NS-Not Significant; N-Number of students; BG-Between groups; WG-Within Groups; MA- Multimedia approach, CL - Cooperative Learning, SA - Situational approach, BS- Brainstorming, CM - Conventional method

The above table indicated that there was no significant difference in the pretest scores among the student teachers taught by different methods in Government College. But considering the posttest scores, there was highly significant difference among the groups which was revealed by the highly significant “F” value (166.86) at one per cent level. Removing the effect of the pretest by using analysis of Covariance, it was found that five methods differed significantly in the adjusted posttest mean, revealed by the highly significant “F” value (171.05) at one per cent level. Hence the **null hypothesis** stated as “There is no significant difference among the groups taught by different methods in developing knowledge in Human rights education in Government College” was rejected. Figure 4.5 depicts the above analysis graphically.



**Figure 4.5 Knowledge Score of the Student teachers in Government College in Relation to Different Methods**

Scheffe's Multiple Comparison was done to find out which method had high mean difference with the other methods and depicted in the following Table 4.9

**Table 4.9 Scheffe's Multiple Comparison between the Methods on Knowledge Score in Government College**

Methods	Mean score	Groups	Mean difference
Multimedia approach	47.26	MA - CL	5.58**
		MA -SA	11.08**
		MA -BS	12.06**
		MA - CM	21.52**
Cooperative Learning	41.68	CL - SA	5.5**
		CL - BS	6.48**
		CL - CM	15.94**
Situational approach	36.18	SA - BS	0.98NS
		SA - CM	10.44**
Brainstorming	35.2	BS - CM	9.46**
Conventional method	25.74		

\*\*Significant at 0.01 level; NS-Not Significant; MA- Multimedia approach, CL - Cooperative Learning, SA - Situational approach, BS- Brainstorming, CM - Conventional method

It was evident from the above table that in Government College, all the methods differed significantly from each other at one per cent level except the Situational approach and Brainstorming method which did not differ significantly. The Multimedia approach was having the highest mean difference (21.52) with the Conventional method. So it may be concluded that Multimedia approach is the effective one followed by the Cooperative learning (15.94), Situational approach

(10.44) and Brainstorming (9.46) in developing the knowledge of the student teachers in Human rights education. Analysis was done concerning knowledge scores of the five groups under different methods in Government Aided Institution and given in the following Table 4.10.

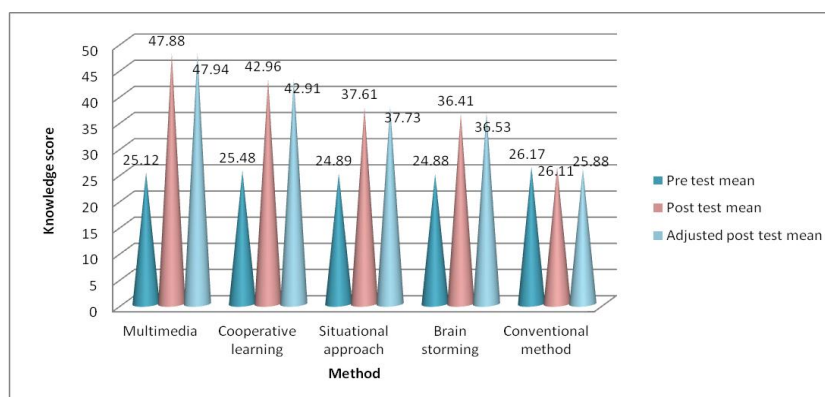
**Table 4.10 Analysis of Knowledge Score in Government Aided Institution**

Knowledge score	Methods					Source of Variance	Sum of Squares	df	Mean Squares	F ratio
	MA (N-17)	CL (N-25)	SA (N- 18)	BS (No-17)	CM (N-18)					
Pretest Mean	25.12	25.48	24.89	24.88	26.17	BG	20.84	4	5.21	1.60 <sup>NS</sup>
						WG	292.05	90	3.24	
Posttest Mean	47.88	42.96	37.61	36.41	26.11	BG	4844.72	4	1211.18	233.4**
						WG	466.90	90	5.12	
Adjusted posttest mean	47.94	42.91	37.73	36.53	25.88	BG	4833.49	4	1208.37	241.51**
						WG	445.30	89	5.00	

\*\*Significant at 0.01 level; N-Number of students; NS-Not Significant; BG-Between groups;

WG-Within Groups; MA- Multimedia approach, CL - Cooperative Learning, SA - Situational approach, BS- Brainstorming, CM - Conventional method

It was observed from the above table that there was no significant difference among the student teachers studying in Government Aided Institution in the pretest. But seeing the posttest scores it is understood that significant difference existed among the groups as revealed by the “F” value (233.47) which was highly significant at one per cent level. The analysis of Covariance was done to remove the effect of the pretest and the “F” value (241.51) calculated out of the adjusted posttest mean scores was highly significant at one per cent level which proved that there was highly significant difference among the five methods. Hence the **null hypothesis** stated as “There is no significant difference among the groups taught by different methods in developing knowledge in Human rights education in Government Aided college” was rejected. The above analysis is depicted in Figure 4.6



**Figure 4.6 Knowledge Score of the Student Teachers in Government Aided Institution in Relation to Different Methods**

To find out which method had high mean difference with the other methods, Scheffe's Multiple Comparison was done and depicted in the following Table 4.11

**Table 4.11 Scheffe's Multiple Comparison between the Methods on Knowledge Score in Government Aided Institution**

Methods	Mean score	Groups	Mean difference
Multimedia approach	47.94	MA - CL	5.03**
		MA -SA	10.21**
		MA -BS	11.41**
		MA - CM	22.06**
Cooperative Learning	42.91	CL - SA	5.18**
		CL - BS	6.38**
		CL - CM	17.03**
Situational approach	37.73	SA - BS	1.2NS
		SA - CM	11.85**
Brainstorming	36.53	BS - CM	10.65**
Conventional method	25.88		

\*\*Significant at 0.01 level; NS-Not Significant; MA- Multimedia approach, CL - Cooperative Learning, SA - Situational approach, BS- Brainstorming, CM - Conventional method

The above table indicated that in Government Aided Institution, all the methods had highly significant mean difference with the other methods at one per cent level except the Situational approach and Brainstorming method which did not differ from each other significantly. Based on the above observations, it can be concluded that Multimedia approach having the highest mean difference (22.06) proved to be effective in imparting knowledge in Human rights education followed

by the Cooperative learning (17.03), Situational approach (11.85) and Brainstorming(10.65).

An attempt was made to analyse the knowledge scores of the groups taught by the different methods in terms of locality and depicted in the following Table 4.12

**Table 4.12 Analysis of Knowledge Score in Terms of Locality**

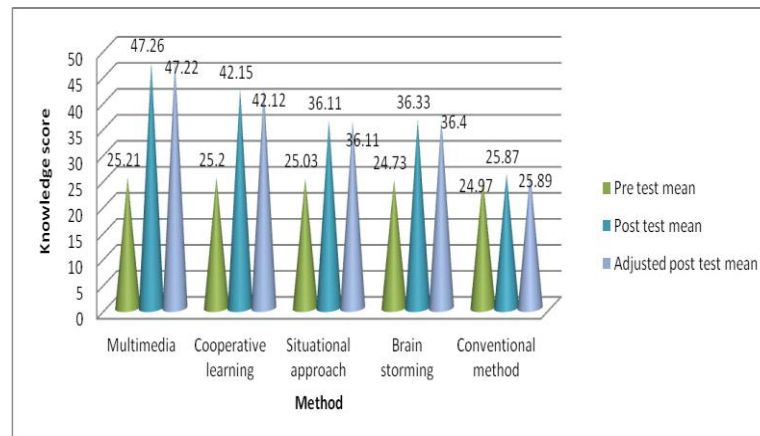
Locality	Knowledge Score	Methods					Source of Variance	Sum of Squares	df	Mean squares	F-ratio
		MA (No-32)	CL (No-43)	SA (No-38)	BS (No-35)	CM (No-37)					
Rural	Pretest mean	25.21	25.20	25.03	24.73	24.97	BG	5.65	4	1.41	0.39NS
							WG	658.00	180	3.66	
	Posttest mean	47.26	42.15	36.11	36.33	25.87	BG	9287.25	4	2321.81	349.53**
							WG	1195.69	180	6.64	
	Adjusted posttest mean	47.22	42.12	36.11	36.40	25.89	BG	9201.69	4	2300.42	352.46**
							WG	1168.29	179	6.53	
Urban	Knowledge Score	MA (No-33)	CL (No-32)	SA (No-30)	BS (No-30)	CM (No-32)					
	Pretest mean	25.41	25.09	25.38	25.50	25.19	BG	3.83	4	0.96	0.23 NS
							WG	615.09	152	4.04	
	Posttest mean	48.04	42.03	35.98	36.03	25.35	BG	8616.87	4	2154.21	287.15**
							WG	1140.29	152	7.50	
	Adjusted posttest mean	48.02	42.08	35.95	35.98	25.38	BG	8603.06	4	2150.76	293.47**
							WG	1106.61	151	7.32	

\*Significant at 0.01 level; NS -Not Significant; N-Number of students; BG-Between groups; WG- Within Group; MA- Multimedia approach, CL - Cooperative Learning, SA - Situational approach, BS- Brainstorming, CM - Conventional method

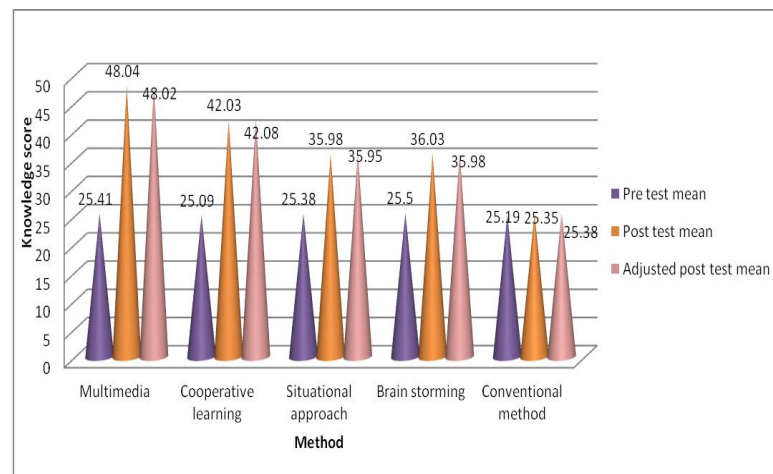
The above table revealed that there was no significant difference in the pretest scores obtained by the student teachers from rural area under different methods. But the posttest scores and the adjusted posttest scores showed highly significant difference among the groups which was proved by the highly significant “F” values (349.53 and 352.46 respectively) at one per cent level. Seeing the high mean score (47.22) of the group under Multimedia approach, it can be concluded that this method was effective in teaching Human rights education.

Similar result was obtained in urban area also. Unlike the pretest scores, the posttest scores as well as adjusted posttest mean scores of groups under different methods showed the significant difference among them which was revealed by the

highly significant “F” values (287.15 and 293.47 respectively) at one percent level. The high mean value (48.02) of the Multimedia approach indicates that this method may be considered as the effective method. Hence the **null hypothesis** stated as “There is no significant difference among the groups taught by different methods in developing knowledge in Human rights education in terms of locality –rural area and urban area” was rejected. Figures 4.7 and 4.8 depict the above analysis.



**Figure 4.7 Knowledge Score of the Student Teachers from Rural Area in Relation to Different Methods**



**Figure 4.8 Knowledge Scores of the Student Teachers from Urban Area in Relation to Different Methods**

Scheffe’s Multiple Comparison was done to find out which method had high mean difference with the other methods, and depicted in the following Table 4.13

**STable 4. 13 Scheffe’s Multiple Comparison between the Methods on Knowledge Score in Terms of Locality**

Methods	Mean score	Groups	Mean difference
		Rural	
Multimedia approach	47.22	MA - CL	5.10**
		MA -SA	11.11**
		MA -BS	10.82**
		MA - CM	21.33**
Cooperative Learning	42.12	CL - SA	6.01**
		CL - BS	5.72**
		CL - CM	16.23**
Situational approach	36.11	SA - BS	0.29NS
		SA - CM	10.22**
Brainstorming	36.40	BS - CM	10.51**
Conventional method	25.89		
Urban			
Multimedia approach	48.02	MA - CL	5.94**
		MA -SA	12.07**
		MA -BS	12.04**
		MA - CM	22.64**
Cooperative Learning	42.08	CL - SA	6.13**
		CL - BS	6.10**
		CL - CM	16.70**
Situational approach	35.95	SA - BS	0.03NS
		SA - CM	10.57**
Brainstorming	35.98	BS - CM	10.60**
Conventional method	25.38		

\*Significant at 0.01 level; NS-Not Significant; MA- Multimedia approach, CL - Cooperative Learning, SA - Situational approach, BS- Brainstorming, CM - Conventional method

It was observed from the above table that all the methods differed significantly from the other methods at one per cent level except the Situational approach and Brainstorming which did not differ from each other. Seeing the high mean difference of the Multimedia approach with the Conventional method in both the areas (23.33& 22.64 respectively), it can be said that this method can be adopted to impart Human rights education to the student teachers irrespective of the locality.

Analysis was made to find out which method was effective in imparting knowledge in Human rights education to the student teachers of different subject specialization (optional) and the results obtained were depicted in the following Tables 4.14 to 4.25.

**Table 4.14 Analysis of Knowledge Score of the Student Teachers of Mathematics Optional in Relation to Different Methods**

Knowledge score	Methods					Source of Variance	Sum of Squares	df	Mean Squares	F-ratio
	MA (N-16)	CL (N-20)	SA (N-17)	BS (N-16)	CM (N-18)					
Pretest mean	25.56	25.05	24.53	24.75	24.89	BG	9.92	4	2.48	0.67NS
						WG	303.90	82	3.71	
Posttest mean	46.62	42.30	35.23	35.56	25.83	BG	4374.14	4	1093.53	141.5**
						WG	633.45	82	7.72	
Adjusted posttest mean	46.53	42.28	35.30	35.59	25.84	BG	4275.81	4	1068.95	138.34**
						WG	625.90	81	7.73	

\*\*Significant at 0.01 level; NS-Not Significant; N- Number of students; BG-Between groups; WG-Within Groups; MA- Multimedia approach, CL - Cooperative Learning, SA - Situational approach, BS- Brainstorming, CM - Conventional method

The above table indicated that in Mathematics optional, there was highly significant difference among the groups under different methods in gaining knowledge in Human rights education in the posttest unlike the pretest which was revealed by the highly significant “F” value (141.5) at one per cent level. The pretest effect was removed by the analysis of Covariance. The “F” value (138.34) obtained out of the adjusted posttest mean scores was found to be highly significant at one per cent level which proved that there was highly significant difference among the five methods.

Based on the adjusted posttest mean scores, it was understood that in the Mathematics optional, the effective method for teaching Human rights education was Multimedia approach since this group got the highest mean score(46.53). Cooperative learning was in the second position followed by the other two instructional methods namely Brainstorming and Situational approach. The Conventional method did not produce any effect at all.

Scheffe's Multiple Comparison test was used to find out which method differed significantly from the other methods in the Mathematics optional and results obtained were given in Table 4.15.

**Table 4.15 Scheffe's Multiple Comparison between the Methods on Knowledge Score of the Student Teachers of Mathematics Optional**

Methods	Mean score	Groups	Mean difference
Multimedia approach	46.53	MA - CL	4.25NS
		MA -SA	11.23**
		MA -BS	10.94**
		MA - CM	20.69**
Cooperative Learning	42.28	CL - SA	6.98**
		CL - BS	6.69**
		CL - CM	16.44**
Situational approach	35.3	SA - BS	0.29NS
		SA - CM	9.46**
Brainstorming	35.59	BS - CM	9.75**
Conventional method	25.84		

\*\*Significant at 0.01 level; NS-Not Significant; MA- Multimedia approach, CL - Cooperative Learning, SA - Situational approach, BS- Brainstorming, CM - Conventional method

It was inferred from the above Scheffe's Multiple comparison table that in the Mathematics optional group, Multimedia approach had highly significant mean difference with Situational approach, Brainstorming and Conventional method at one per cent level. It did not differ from the Cooperative learning group which had significant mean difference with the Situational approach, Brainstorming and Conventional method group at one per cent level. Situational approach and Brainstorming method had significant mean difference with the Conventional method group at one per cent level. Since Multimedia approach had high mean difference (20.69), it can be said that this method was effective in imparting Human rights education to the student teachers of Mathematics optional.

Attempt was made to find out which method was effective in imparting Human rights education to the Computer Science optional students and the results obtained were explained in the following Table 4.16.

**Table 4.16 Analysis of the Knowledge Score of the Student Teachers of Computer Science Optional in Relation to Different Methods**

Knowledge score	Methods					Source of variance	Sum of Squares	df	Mean Squares	F ratio
	MA (N-16)	CL (N-20)	SA (N-17)	BS (N-16)	CM (N-18)					
Pretest mean	24.43	24.87	26.14	24.86	24.00	BG	18.72	4	4.68	0.89NS
						WG	168.30	32	5.26	
Posttest mean	47.86	41.00	35.71	37.14	24.62	BG	2189.95	4	547.49	104.90**
						WG	167.02	32	5.22	
Adjusted posttest mean	47.83	41.00	35.80	37.14	24.57	BG	2185.83	4	546.46	101.88**
						WG	166.28	31	5.36	

\*\*Significant at 0.01 level; NS-Not Significant; N- Number of students; BG-Between groups; WG-Within Groups; MA- Multimedia approach, CL - Cooperative Learning, SA - Situational approach, BS- Brainstorming, CM - Conventional method

The above table indicated that in Computer science optional, there was highly significant difference among the student teachers taught by different methods in gaining knowledge in Human rights education in the posttest which was revealed by the highly significant “F” value (104.90) at one per cent level. Removing the effect of the pretest score by using analysis of Covariance, it was found that five methods differed significantly in the adjusted posttest mean and the “F” value (101.88) was highly significant at one per cent level. When we considered the mean scores of all the groups, it was understood that the Multimedia approach was effective in imparting Human rights education to the Computer science optional students since the mean score of this group (47.83) was significantly higher than the scores of other groups. Cooperative learning was in the second position followed by the other two instructional methods namely Brainstorming and Situational approach. The Conventional method was not at all effective.

The following Multiple Comparison Table 4.17 shows which method had high mean difference with the other methods among the Computer Science Optional Students in gaining knowledge in Human rights education.

**Table 4.17 Scheffe's Multiple Comparison between the Methods on Knowledge Score of the Student Teachers of Computer Science Optional**

Methods	Mean score	Groups	Mean difference
Multimedia approach	47.83	MA - CL	6.83NS
		MA -SA	12.03**
		MA -BS	10.69**
		MA - CM	23.26**
Cooperative Learning	41	CL - SA	5.2NS
		CL - BS	3.86NS
		CL - CM	16.43**
Situational approach	35.8	SA - BS	1.34 NS
		SA - CM	11.23**
Brainstorming	37.14	BS - CM	12.57**
Conventional method	24.57		

\*\*Significant at 0.01 level; NS-Not Significant; MA- Multimedia approach, CL - Cooperative Learning, SA - Situational approach, BS- Brainstorming, CM - Conventional method

The above Scheffe's Multiple comparison table showed that in the Computer Science optional group, Multimedia approach had significant mean difference with Situational approach, Brainstorming and Conventional method at one per cent level. It did not differ from the Cooperative learning group. The Cooperative learning, Situational approach and Brainstorming method had significant mean difference with the Conventional method group at one per cent level. Taking the highest significant mean difference into consideration, Multimedia approach (23.26) may be considered to be much effective in imparting Human rights education to the Computer Science student teachers.

Analysis was done to find out which method was effective one in imparting Human rights education to the Physical Science optional students and the results obtained were given in the following Table 4.18.

**Table 4.18 Analysis of the Knowledge Score of the Students Teachers of Physical Science Optional in Relation to Different Methods**

Knowledge score	Methods					Source of variance	Sum of Squares	df	Mean Squares	F ratio
	MA (N-16)	CL (N-20)	SA (N-17)	BS (N-16)	CM (N-18)					
Pretest mean	25.66	25.27	25.11	24.44	26.66	BG	24.19	4	6.04	2.13NS
						WG	119.29	42	2.84	
Posttest mean	47.66	42.72	37.44	37.55	27.22	BG	2113.64	4	528.41	128.89**
						WG	172.18	42	4.10	
Adjusted posttest mean	47.47	42.84	37.69	38.22	26.24	BG	2186.98	4	546.74	227.81**
						WG	98.39	41	2.40	

\*\*Significant at 0.01 level; NS-Not Significant; N- Number of students; BG-Between groups; WG-Within Groups; MA- Multimedia approach, CL - Cooperative Learning, SA - Situational approach, BS- Brainstorming, CM - Conventional method

It was understood from the above table that in Physical science optional, unlike the pretest, significant difference was found in the posttest among the groups taught by different methods in gaining knowledge in Human rights education which was revealed by the highly significant “F” value (128.89) at one per cent level. Analysis of Covariance was carried out to remove the effect of the pretest. It was found that five methods differed significantly since the “F” value (227.81) obtained out of the adjusted posttest mean scores was highly significant at one per cent level. Multimedia approach having the highest mean score(47.47) can be considered as the effective method of teaching Human rights education to the student teachers of Physical science followed by Cooperative learning, Brainstorming and Situational approach. The Conventional method was not at all effective.

The following Multiple Comparison Table 4.19 explains which method had high mean difference with the other methods in developing knowledge in Human rights education among the Physical Science Students teachers.

**Table 4.19 Scheffe's Multiple Comparison between the Methods on Knowledge Score of the Student Teachers of Physical Science Optional**

Methods	Mean score	Groups	Mean difference
Multimedia approach	47.47	MA - CL	4.63**
		MA -SA	9.78**
		MA -BS	9.15**
		MA - CM	21.23**
Cooperative Learning	42.84	CL - SA	5.15**
		CL - BS	4.52**
		CL - CM	16.6**
Situational approach	37.69	SA - BS	0.63 NS
		SA - CM	11.45**
Brainstorming	38.32	BS - CM	12.08**
Conventional method	26.24		

\*Significant at 0.01 level; NS-Not Significant; MA- Multimedia approach, CL - Cooperative Learning, SA - Situational approach, BS- Brainstorming, CM - Conventional method

It was observed from the above table that as far as the student teachers of Physical Science optional are concerned, though Multimedia approach differed significantly from the other methods, the mean difference was high with the Conventional method at one per cent level. The other methods namely Cooperative Learning, Brainstorming and Situational approach also differed significantly from the Conventional method. Since Multimedia approach had high mean difference (21.23), it may be concluded that Multimedia approach was effective in teaching Human rights education to the Physical Science optional students.

Effort was taken to analyse the knowledge scores of the Biological Science student teachers to find out which method was effective and the results obtained were depicted in the following Table 4.20.

**Table 4.20 Analysis of the Knowledge Score of the Student Teachers of Biological Science Optional in Relation to Different Methods**

Knowledge score	Methods					Source of variance	Sum of Squares	df	Mean Squares	F-ratio
	MA (N-10)	CL (N-12)	SA (N-10)	BS (N-10)	CM (N-10)					
Pretest mean	24.90	25.41	25.20	25.20	25.90	BG	5.52	4	1.38	0.44NS
						WG	145.91	47	3.10	
Posttest mean	47.80	42.33	36.10	35.60	26.50	BG	2600.70	4	650.17	75.62**
						WG	404.06	47	8.59	
Adjusted posttest mean	47.89	42.31	36.12	35.62	26.36	BG	2580.89	4	645.22	74.85**
						WG	396.49	46	8.62	

\*\*Significant at 0.01 level; NS-Not Significant; N- Number of students; BG-Between groups; WG-Within Groups; MA- Multimedia approach, CL - Cooperative Learning, SA - Situational approach, BS- Brainstorming, CM - Conventional method

It was inferred from the above table that in Biological science optional, highly significant difference was found among the groups taught by different methods in gaining knowledge in Human rights education in the posttest which was revealed by the highly significant “F” value (75.62) at one per cent level unlike the pretest. After removing the pretest effect by the analysis of Covariance, the calculated adjusted posttest mean scores showed that five methods differed significantly and the “F” value (74.82) was highly significant at one per cent level. Based on the above observations, it can be concluded that the Multimedia approach was the effective method of teaching Human rights education to the student teachers of Biological science which was reflected in their high mean score (47.89). The Cooperative learning, Brainstorming and Situational approach occupied the second, third and the fourth position in its effectiveness. The group taught by the Conventional method did not show any improvement in their knowledge acquisition.

The following Scheffe’s Multiple Comparison Table 4.21 explains which method had high mean difference with the other methods in obtaining knowledge in Human rights education among the student teachers of Biological Science.

**Table 4.21 Scheffe's Multiple Comparison between the Methods on Knowledge Score of the Student Teachers of Biological Science Optional**

Methods	Mean score	Groups	Mean difference
Multimedia approach	47.89	MA - CL	5.58NS
		MA -SA	11.77**
		MA -BS	12.27**
		MA - CM	21.53**
Cooperative Learning	42.31	CL - SA	6.19NS
		CL - BS	6.69NS
		CL - CM	15.95**
Situational approach	36.12	SA - BS	0.5NS**
		SA - CM	9.76**
Brainstorming	35.62	BS - CM	9.26**
Conventional method	26.36		

\*\*Significant at 0.01 level; NS-Not Significant; MA- Multimedia approach, CL - Co-operative Learning, SA - Situational approach, BS- Brainstorming, CM - Conventional method

It was observed from the above table that among the five groups taught by different methods in Biological Science optional, the Multimedia approach followed by Cooperative learning, Situational approach and the Brainstorming method had high significant mean difference from the Conventional method at one per cent level. As Multimedia approach group had the highest mean difference (21.53) with the group under Conventional method at one per cent level, it can be said that this method had been effective in imparting Human rights education to the Biological Science student teachers.

Analysis was done to find out which method was effective in imparting Human rights education to the Language optional students and the obtained results were shown in the following Table 4.22.

**Table 4.22 Analysis of the Knowledge Score of the Student Teachers of Language Optional in Relation to Different Methods**

Knowledge score	Methods					Source of variance	Sum of Squares	df	Mean Squares	F ratio
	MA (N-11)	CL (N-12)	SA (N-13)	BS (N-12)	CM (N-13)					
Pretest mean	25.36	25.50	25.30	26.33	24.07	BG	32.78	4	8.19	1.701 NS
						WG	269.90	56	4.82	
Posttest mean	48.18	41.75	35.92	36.66	25.00	BG	3533.93	4	883.48	115.73**
						WG	427.47	56	7.63	
Adjusted posttest mean	48.19	41.77	35.92	36.80	24.83	BG	3442.89	4	860.72	111.97**
						WG	422.78	55	7.68	

\*\*Significant at 0.01 level; NS-Not Significant; N- Number of students; BG-Between groups; WG-Within Groups; MA- Multimedia approach, CL - Cooperative Learning, SA - Situational approach, BS- Brainstorming, CM - Conventional method

The above table indicated that in the Language optional, there was highly significant difference among the groups taught by different methods in gaining knowledge in Human rights education in the posttest unlike the pretest which was revealed by the highly significant “F” value (115.73) at one per cent level. Removing the effect of the pretest by using analysis of Covariance, it was found that five methods differed significantly in the adjusted posttest mean scores and the “F” value (119.97) was highly significant at one per cent level. Based on the adjusted posttest mean scores, it was understood that among the student teachers of Language optional, the effective method for teaching Human rights education was Multimedia approach.

Scheffe’s Multiple Comparison was done to find out which method had high mean difference with the other methods among the Language optional student teachers and the results were explained in the following Table 4.23.

**Table 4.23 Scheffe's Multiple Comparison between the Methods on Knowledge Score of the Student Teachers of Language Optional**

Methods	Mean score	Groups	Mean difference
Multimedia approach	48.19	MA - CL	6.42NS
		MA -SA	12.27**
		MA -BS	11.39**
		MA - CM	23.36**
Cooperative Learning	41.77	CL - SA	5.85NS
		CL - BS	4.97NS
		CL - CM	16.94**
Situational approach	35.92	SA - BS	0.88 NS
		SA - CM	11.09**
Brainstorming	36.8	BS - CM	11.97**
Conventional method	24.83		

\*\*Significant at 0.01 level; NS-Not Significant; MA- Multimedia approach, CL - Cooperative Learning, SA - Situational approach, BS- Brainstorming, CM - Conventional method

It was observed from the above Scheffe's Multiple comparison table that as far as the five groups in Language optional were concerned, the mean difference of Multimedia group (23.36) was high which differed significantly from the Conventional method group at one per cent level. The Multimedia approach group had also mean difference with the Situational approach and the Brainstorming groups. The groups taught by Cooperative Learning, Brainstorming and Situational approach also differed significantly from the Conventional method group at one per cent level. As the group under Multimedia approach got high mean difference, it may be concluded that this method was much effective in imparting knowledge in Human rights education to the student teachers of the Language optional.

The analysis of the knowledge scores of the Social Science optional students was done to find out which method was effective in imparting Human rights education and depicted in the following table Table 4.24

**Table 4.24 Analysis of the Knowledge Score of the Student Teachers of Social Science Optional in Relation to Different Methods**

Knowledge score	Methods					Source of variance	Sum of Squares	df	Mean Squares	F ratio
	MA (N-12)	CL (N-12)	SA (N-12)	BS (N-11)	CM (N-11)					
Pretest mean	25.33	24.75	25.50	24.90	25.36	BG	4.90	4	1.22	0.37NS
						WG	171.37	53	3.23	
Posttest mean	47.58	42.00	36.41	35.36	24.45	BG	3398.96	4	849.74	119.42**
						WG	377.40	53	7.11	
Adjusted posttest mean	47.49	42.24	36.23	35.51	24.34	BG	3427.77	4	856.94	138.65**
						WG	321.39	52	6.18	

\*\*Significant at 0.01 level; NS-Not Significant; N- Number of students; BG-Between groups;

WG-Within Groups; MA- Multimedia approach, CL - Cooperative Learning, SA - Situational approach, BS- Brainstorming, CM - Conventional method

The above table showed that in Social science optional group, unlike the pretest, significant difference was found among the groups taught by different methods in the posttest which was revealed by the highly significant “F” value (119.42) at one per cent level. Analysis of Covariance was carried out to remove the effect of the pretest. It was also found that five methods differed significantly in the adjusted posttest mean and the “F” value (138.65) was highly significant at one per cent level. Based on the high mean score (47.49) of the Multimedia group, it can be said that this method is the effective method for imparting Human rights education to the Social science optional students. The second, third and the fourth position were occupied by the Cooperative learning, Brainstorming and Situational approach in its effectiveness. The group taught by the Conventional method did not show any improvement.

Scheffe’s Multiple Comparison was attempted to find out which method had high mean difference with the other methods and results obtained were depicted in the following Table 4.25.

**Table 4.25 Scheffe’s Multiple Comparison between the Methods on Knowledge Score of the Student teachers of Social Science Optional**

Methods	Mean score	Groups	Mean difference
Multimedia approach	47.49	MA - CL	5.25NS
		MA -SA	11.26**
		MA -BS	11.98**
		MA - CM	23.15**
Cooperative Learning	42.24	CL - SA	6.01NS
		CL - BS	6.73**
		CL - CM	17.90**
Situational approach	36.23	SA - BS	0.72NS
		SA - CM	11.89**
Brainstorming	35.51	BS - CM	11.17**
Conventional method	24.34		

\*\*Significant at 0.01 level; NS-Not Significant; MA- Multimedia approach, CL - Cooperative Learning, SA - Situational approach, BS- Brainstorming, CM - Conventional method

It was observed from the above Scheffe’s Multiple comparison table that as far as the groups taught by different methods in Social Science optional were concerned, the mean difference was high in the case of Multimedia group which differed significantly from the group under Conventional method at one per cent level. The Multimedia group also had mean difference with the Situational approach and the Brainstorming groups.

The groups of Cooperative Learning, Brainstorming and Situational approach also differed significantly from the Conventional method group at one per cent level. Taking the high mean difference (23.36) of the Multimedia approach group into consideration, it may be concluded that the Multimedia approach was effective in imparting knowledge to the student teachers of Social science optional in Human rights education.

Based on the inferences from the above tables 4.14 to 4.25, it can be said that in all the subject groups, Multimedia approach proved to be effective as this method had got high mean value in each optional and also mean difference with the other methods in imparting knowledge to the student teachers in Human rights education.

Hence the **null hypothesis** stated as “There is no significant difference among the groups taught by different methods in developing knowledge in Human rights education in relation to the variable namely subject specialisation (optional- Mathematics, Computer science, Physical Science, Biological Science, Language and Social science” was rejected.

**Section II:** The scores obtained for the variable ‘Attitude’ was analysed in terms of different methods as well as in relation to the sub variables using Differential Analysis. Changes in the ‘Attitude’ were assessed initially as well as after teaching. The results were presented in the following Tables 4.26 to 4.50 and interpreted.

The comparison of the attitude scores in the pretest and the posttest obtained by the groups was depicted in the following Table 4.26.

**Table 4.26 Comparison of Attitude Score in the Pretest and Posttest in Relation to Different methods**

Methods	N	Mean score	SD	df	‘t’ ratio	
Multimedia approach	65	Pretest	10.60	3.01	64	24.28**
		Posttest	29.84	6.79		
Co-operative Learning	75	Pretest	10.09	3.61	74	23.17**
		Posttest	28.64	7.50		
Situational approach	68	Pretest	10.10	3.29	67	24.23**
		Posttest	28.60	6.98		
Brainstorming	65	Pretest	9.64	2.97	64	32.17**
		Posttest	32.41	6.69		
Conventional method	69	Pretest	9.63	2.69	68	16.67**
		Posttest	23.15	7.05		

\*\*Significant at 0.01 level; N-Number of students

It was inferred from the above table that there was highly significant difference between the pretest and the posttest mean scores for all the groups concerning their attitude towards Human rights education. The highly significant ‘t’ values revealed that all the methods were effective in bringing the attitudinal change among the students. It was also understood that the Brainstorming group was highly impressed by the teaching of Human rights education which was reflected in their high attitude mean score (32.17). The group taught by Conventional method also showed some improvement in the posttest score. The result in this study is in line with the findings of **Gundogdu (2010)** who studied the effect of employing constructivist methods and materials on the attitudes of prospective teachers (psychological counseling students) towards Human rights education and found out

that attitudes of the prospective psychological counselors towards Human rights education in both experimental and control groups increased.

However in the current study, the improvement in the attitude of the student teachers under Conventional method was not to the extent of the other groups. This may be due to the fact that they were not much impressed by mere lecturing on Human rights but at the same time, out of the human sensitivity they were moved by the teaching of Human rights concepts and its violations which could have brought this attitudinal change. Hence **the null hypothesis** stated as “There is no significant difference between the pretest score and the posttest score of the groups taught by different methods in changing the attitude towards Human rights education” was rejected.

Analysis was done to find out which method had brought better attitudinal change towards Human rights education and depicted in the following Table 4.27.

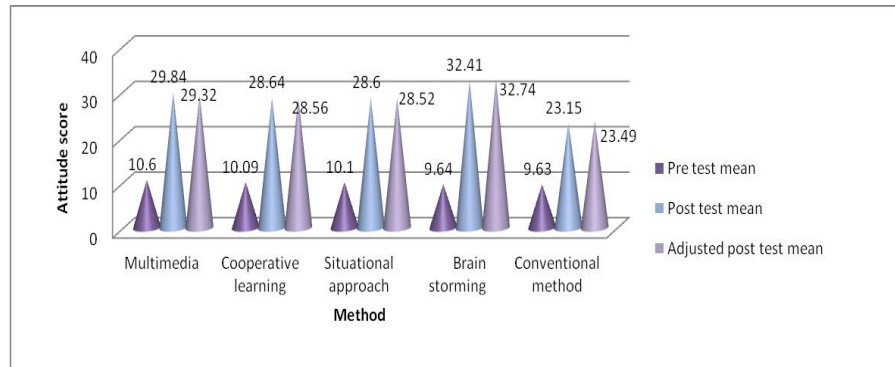
**Table 4.27. Analysis of Attitude Score in the pretest and the posttest Among Different Methods**

Attitude score	Methods					Source of Variance	Sum of Squares	df	Mean Squares	F-ratio
	MA (N-65)	CL (N-75)	SA (N-68)	BS (N-65)	CM (N-69)					
Pretest Mean	10.60	10.09	10.10	9.64	9.63	BG	41.89	4	10.47	1.05NS
						WG	3335.03	337	9.89	
Posttest Mean	29.84	28.64	28.60	32.41	23.15	BG	3084.21	4	771.05	15.60*
						WG	16647.05	337	49.39	
Adjusted posttest mean	29.32	28.56	28.52	32.74	23.49	BG	2941.36	4	735.34	17.69*
						WG	13961.29	336	41.55	

\*Significant at 0.05 level; N-Number of students; MA- Multimedia approach, CL - Cooperative Learning, SA - Situational approach, BS- Brainstorming, CM - Conventional method

The above table indicated that there was no significant difference among the groups taught by different methods in their pretest attitude scores. But in the posttest, significant difference prevailed among the groups which were revealed by the significant ‘F’ value (15.60) at five per cent level. Pretest effect was removed using analysis of Covariance and it was found that the five groups differed significantly in their adjusted posttest attitude mean score at five per cent level.

Hence the **null hypothesis** stated as “There is no significant difference among the groups taught by different methods in developing proper attitude towards Human rights education” was rejected. The above analysis is graphically represented in Figure 4.9.



**Figure 4.9. Attitude Score of the Student Teachers in Relation to Different methods**

Scheffe’s Multiple Comparison test was used to find out which method differed significantly from the other methods and presented in the following Table 4.28.

**Table 4.28 Scheffe’s Multiple Comparison between the Methods on Attitude Scores**

Methods	Mean score	Groups	Mean difference
Multimedia approach	29.32	MA - CL	0.76NS
		MA -SA	0.8NS
		MA -BS	3.42NS
		MA - CM	5.83*
Cooperative Learning	28.56	CL - SA	0.04NS
		CL - BS	4.18*
		CL - CM	5.07*
Situational approach	28.52	SA - BS	4.22*
		SA - CM	5.03*
Brainstorming	32.74	BS - CM	9.2*
Conventional method	23.49		

\*Significant at 0.05 level; NS-Not Significant; MA- Multimedia approach, CL - Cooperative Learning, SA - Situational approach, BS- Brainstorming, CM - Conventional method

It was observed from the above table that the group under Brainstorming had significant mean difference with the Cooperative learning, Situational approach and the Conventional method groups at five per cent level. In the same way Cooperative learning and Situational approach also differed significantly from the Conventional method at five per cent level. Based on the high mean difference (9.2) of the Brainstorming group, it may be stated that group under Brainstorming had

developed the high attitudinal change towards Human rights education when compared to other methods.

An attempt was made to analyse the attitude scores of the five groups under different methods in terms of stream of courses and the results obtained are given in the following Table 4.29.

**Table 4.29 Analysis of Attitude Score in Terms of Stream of Courses**

Stream of courses	Attitude Score	Methods					Source of Variance	Sum of Squares	df	Mean Squares	F ratio
		MA (N-23)	CL (N-24)	SA (N-25)	BS (N-23)	CM (N-23)					
Arts stream	Pretest Mean	10.47	10.20	11.20	10.82	10.25	BG	17.13	4	4.28	0.50NS
							WG	959.50	114	8.41	
	Post test Mean	30.82	28.75	29.80	34.78	22.79	BG	1774.87	4	443.72	9.02 *
							WG	5607.67	114	49.19	
	Adjusted post test mean	30.98	29.25	29.01	34.48	23.24	BG	1560.04	4	390.01	11.09*
							WG	3972.59	113	35.15	
Science stream	Attitude Score	MA (N-42)	CL (N-51)	SA (N-43)	BS (N-42)	CM (N-45)					
	Pretest mean	10.66	9.82	9.46	9.00	9.31	BG	69.32	4	17.33	1.61 NS
							WG	2339.08	218	10.73	
	Post test Mean	29.30	28.11	27.90	31.11	23.35	BG	1450.40	4	362.60	7.21*
							WG	10952.61	218	50.24	
	Adjusted post test mean	28.56	27.99	28.04	31.60	23.61	BG	1424.00	4	356.00	7.98*
WG							9671.21	217	44.56		

\*Significant at 0.05 level; NS-Not Significant; N-Number of students; BG-Between group;

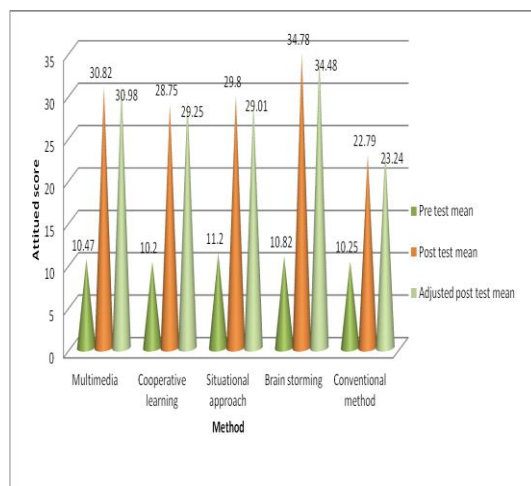
WG-Within Groups; MA- Multimedia approach, CL - Cooperative Learning, SA - Situational approach, BS- Brainstorming, CM - Conventional method

The above table indicated that significant difference existed among the groups of arts stream taught by different methods in the posttest unlike the pretest resulting in the significant 'F' value (9.02) at five per cent level concerning their change of attitude towards Human rights education. Using analysis of Covariance, pretest effect was removed and the significant 'F' value (11.09) obtained out of the adjusted mean scores also revealed the fact that significant difference existed among these groups at five per cent level. It was also noticed that among all the methods, Brainstorming(33.48) seemed to bring much attitudinal change followed by the other

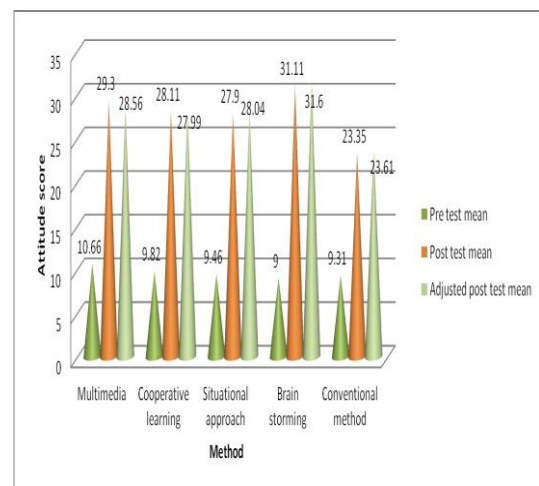
methods. The Conventional method group also showed some improvement in their attitude resulting in the change in posttest mean score but not to the extent of the other groups.

As far as the five groups of science stream were concerned, the adjusted mean scores showed that the group under Brainstorming (31.60) had showed much attitudinal change followed by the Multimedia, Situational approach and Cooperative learning groups. The Conventional method has also brought some attitudinal change.

So it was inferred that among the students of arts and the science streams, Brainstorming seemed to bring much attitudinal change. Hence the **null hypothesis** stated as “There is no significant difference among the groups taught by different methods in the development of attitude towards Human rights education in relation to the variable namely the stream of courses.” was rejected. The above analysis is depicted graphically in Figures 4.10 and 4.11.



**Figure 4. 10. Attitude Scores of the Arts stream Students in relation to Different Methods**



**Figure 4. 11 Attitude Scores of Science stream student s in Relation to Different Methods**

Scheffe’s Multiple Comparison test was used to find out which method had high mean difference with the other methods and the results were shown in Table 4.30.

**Table 4.30 Scheffe's Multiple Comparison of Attitude Score between methods in Terms of Stream of Courses**

Methods	Arts stream		Mean difference
	Mean score	Groups	
Multimedia approach	30.98	MA - CL	1.73NS
		MA -SA	1.97 NS
		MA -BS	3.5 NS
		MA - CM	7.74 *
Cooperative Learning	29.25	CL - SA	0.24NS
		CL - BS	5.23 NS
		CL - CM	6.01 NS
Situational approach	29.01	SA - BS	5.47 NS
		SA - CM	5.77 NS
Brainstorming	34.48	BS - CM	11.24*
Conventional method	23.24		
<b>Science stream</b>			
Multimedia approach	28.56	MA - CL	0.57 NS
		MA -SA	0.52 NS
		MA -BS	3.04 NS
		MA - CM	4.95 NS
Cooperative Learning	27.99	CL - SA	0.05 NS
		CL - BS	3.61 NS
		CL - CM	4.38 NS
Situational approach	28.04	SA - BS	3.56 NS
		SA - CM	4.43 NS
Brainstorming	31.6	BS - CM	7.99*
Conventional method	23.61		

\*Significant at 0.05 level; NS-Not Significant; MA- Multimedia approach, CL - Cooperative Learning, SA - Situational approach, BS- Brainstorming, CM - Conventional method

It was observed from the above table that the mean difference (11.24) was high in the case of group under Brainstorming which differed significantly from the Conventional method group at five per cent level. Group under Multimedia also had significant difference with the Conventional method but not to the extent of Brainstorming. All the other methods did not differ from each other.

The same result was obtained in the case of science stream also in which the Brainstorming group got high mean difference (7.99) with the Conventional method. So it can be said that the Brainstorming group had developed much attitudinal change towards Human rights education. This may be due to the reason that the students in these groups were made to think and come out with ideas to find out the solutions for the Human rights issues.

Efforts were made to find out which method was much effective in changing the attitude of the student teachers in Self financing college and depicted in the following Table 4.31.

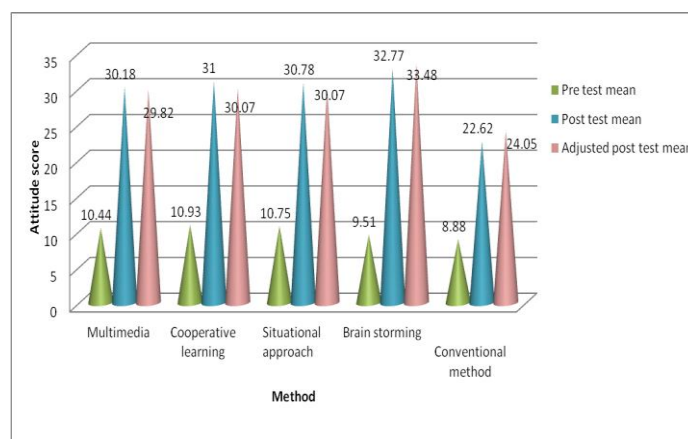
**Table 4.31 Analysis of Attitude Score in Self Financing College**

Attitude score	Methods					Source of variance	Sum of Squares	df	Mean Squares	“F” ratio
	MA (N-27)	CL (N-30)	SA (N -30)	BS (N-27)	CM (N-27)					
Pretest mean	10.44	10.93	10.75	9.51	8.88	BG	84.47	4	21.12	2.03NS
						WG	931.19	134	6.94	
Posttest mean	30.18	31.00	30.78	32.77	22.62	BG	1690.95	4	422.73	9.17*
						WG	6175.75	134	46.08	
Adjusted posttest mean	29.82	30.07	30.07	33.48	24.05	BG	1229.15	4	307.29	8.27*
						WG	4941.01	133	37.15	

\*Significant at 0.05 level; NS-Not Significant; N-Number of students ; BG-Between groups; WG-Within Groups; MA- Multimedia approach, CL - Cooperative Learning, SA - Situational approach, BS- Brainstorming, CM - Conventional method

It was evident from the above table that the ‘F’ value obtained out of the pretest mean scores was not significant at five per cent level. But in the posttest, the significant ‘F’ value (9.17) at five per cent level indicated that there existed significant difference among the five groups concerning their attitude. The pretest effect was removed by the analysis of Covariance and the ‘F’ value (8.27) obtained from the adjusted posttest mean scores also denoted that there was significant difference among the five groups at five per cent level. The high mean score of the Brain storming group (33.48) showed that the attitude of this group had been changed much which may be due to the influence of the effective Brainstorming. Hence **the null hypothesis** stated as “There is no significant difference among the five groups taught by different methods in the development of attitude towards

Human rights education in Self financing college” was rejected. Figure 4.12 gives the graphical representation of the above analysis.



**Figure 4.12 Attitude score of the student Teachers in Self financing college in Relation to Different Methods**

Scheffe’s Multiple comparison test was used to find out which method has high mean difference with the other method in Self financing college and the result is given in the Table 4.32

**Table 4.32 Scheffe’s Multiple Comparison between the Methods on Attitude Scores in Self Financing College**

Methods	Mean score	Groups	Mean difference
Multimedia approach	29.82	MA - CL	0.25NS
		MA -SA	0.25 NS
		MA -BS	3.66 NS
		MA - CM	5.77 NS
Cooperative Learning	30.07	CL - SA	0 NS NS
		CL - BS	3.41 NS
		CL - CM	6.02 NS
Situational approach	30.07	SA - BS	3.41 NS
		SA - CM	6.02 NS
Brainstorming	33.48	BS - CM	9.43*
Conventional method	24.05		

\*Significant at 0.05 level; NS-Not Significant; MA- Multimedia approach, CL - Cooperative Learning, SA - Situational approach, BS- Brainstorming, CM - Conventional method

It was observed from the above table that among the five groups, the Brainstorming group had significant mean difference (9.43) with the Conventional method group at five per cent level and Cooperative learning and Situational approach got second high mean difference with the Conventional method group in the Self financing Institution. So it can be said that Brainstorming group had developed much attitudinal change towards Human rights education.

Attempt was made to analyse the attitude score of the groups in Government College and depicted in the following Table 4.33.

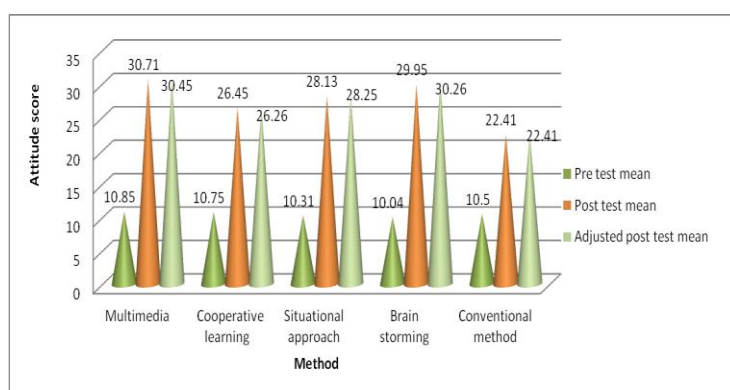
**Table 4.33 Analysis of Attitude Score in Government College**

Attitude score	Methods					Source of Variance	Sum of Squares	df	Mean Squares	F- ratio
	MA (N-21)	CL (N-20)	SA (N-22)	BS (N-21)	CM (N-24)					
Pretest Mean	10.85	10.75	10.31	10.04	10.50	BG	8.94	4	2.23	0.15NS
						WG	1462.04	103	14.19	
Posttest Mean	30.71	26.45	28.13	29.95	22.41	BG	993.46	4	248.36	4.99*
						WG	5122.61	103	49.73	
Adjusted posttest mean	30.45	26.26	28.25	30.26	22.41	BG	1007.63	4	251.90	5.83*
						WG	4406.13	102	43.19	

\*Significant at 0.05 level; NS-Not Significant; N-Number of students; BG-Between groups;

WG-Within Groups; MA- Multimedia approach, CL - Cooperative Learning, SA - Situational approach, BS- Brainstorming, CM - Conventional method

The observation made out of the above table showed that the ‘F’ value (4.99) obtained from the posttest mean scores was significant at five per cent level which indicated that there was highly significant difference among the five groups belonging to the Government College regarding the attitudinal change unlike the pretest scores. The pretest effect was removed by the analysis of Covariance and ‘F’ value (5.83) obtained out of the adjusted mean score also proved the existence of the significant difference among the groups at five per cent level. The highest mean score (30.45) got by the Multimedia approach group indicated that this group was much influenced by the teaching of Human rights education. Hence the **null hypothesis** stated as “There is no significant difference among the groups taught by different methods in the development of attitude towards Human rights education in Government College” was rejected. The following Figure 4.13 gives the graphical picture of the above analysis



**Figure 4.13 Attitude Scores of the Student Teachers in Government College in Relation to Different Methods**

Scheffe's Multiple comparison was done to find out which method differed significantly from the other method and presented in the following Table 4.34.

**Table 4.34 Scheffe's Multiple Comparison of Attitude Score between the Methods in Government College**

Methods	Mean score	Groups	Mean difference
Multimedia approach	30.45	MA - CL	4.19 NS
		MA -SA	2.20 NS
		MA -BS	0.19 NS
		MA - CM	8.04*
Cooperative Learning	26.26	CL - SA	1.99 NS
		CL - BS	4.00 NS
		CL - CM	3.85 NS
Situational approach	28.25	SA - BS	2.01 NS
		SA - CM	5.84 NS
Brainstorming	30.26	BS - CM	7.85 NS
Conventional method	22.41		

\*Significant at 0.05 level; NS-Not Significant; N-Number of students ; MA- Multimedia approach, CL - Cooperative Learning, SA - Situational approach, BS- Brainstorming, CM - Conventional method

The table given above indicated that in Government College, the group taught by Multimedia approach got high mean difference (8.04) with the Conventional method group. Based on this, it can be said that Multimedia approach group had developed favourable attitude towards Human rights education in

Government College. No other group had significant mean difference with the other methods.

Analysis was done concerning the attitudinal change of the five groups under different methodologies in Government Aided Institution and given in the following Table 4.35.

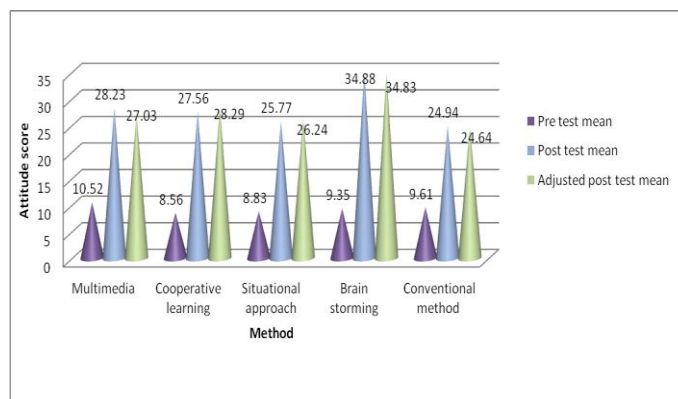
**Table 4.35 Analysis of Attitude Score in Government Aided Institution**

Attitude score	Methods					Source of variance	Sum of Squares	df	Mean Squares	F ratio
	MA (N-17)	CL (N-25)	SA (N-18)	BS (N-17)	CM (N-18)					
Pretest mean	10.52	8.56	8.83	9.35	9.61	BG	45.09	4	11.27	1.31NS
						WG	771.05	90	8.56	
Posttest mean	28.23	27.56	25.77	34.88	24.94	BG	1065.59	4	266.39	5.45*
						WG	4399.03	90	48.87	
Adjusted posttest mean	27.03	28.29	26.24	34.83	24.64	BG	1067.71	4	266.92	6.50*
						WG	3654.47	89	41.06	

\*Significant at 0.05 level; NS-Not Significant; N-Number of students; BG-Between groups; WG- Within Groups; MA- Multimedia approach, CL - Cooperative Learning, SA - Situational approach, BS- Brainstorming, CM - Conventional method

It was evident from the above table that the obtained 'F' value in the pretest was not significant. The 'F' values (5.45 and 6.50) obtained from the posttest mean scores and the adjusted posttest mean scores respectively were significant at five per cent level which indicated that significant difference existed among the groups under five different methods. The analysis of mean scores showed that Brainstorming group got the maximum attitude score (34.83) followed by the groups of Co-operative learning, Multimedia approach and Situational approach and finally the Conventional method group. The reason for the Brainstorming group getting the highest score may be because of the involvement of the students in coming out with ideas to sort out the Human rights issues and for the Conventional method group getting lowest score may be due to the fact that in this group the students were passive listeners and not interactive. Hence the **null hypothesis** stated as "There is

no significant difference among the groups taught by different methods in the development of attitude towards Human rights education in Government Aided Institution” was rejected. The above analysis is depicted in the Figure 4.14



**Figure 4.14 Attitude Score of the Student Teachers in Government Aided Institution in Relation to Different Methods**

Scheffe’s Multiple comparison was done to find out which method got significant mean difference from the other method and presented in the following Table 4.36.

**Table 4.36 Scheffe’s Multiple Comparison between the Methods on Attitude Score in Government Aided Institution**

Methods	Mean score	Groups	Mean difference
Multimedia approach	27.03	MA - CL	1.26NS
		MA -SA	0.79NS
		MA -BS	7.80NS
		MA - CM	2.39NS
Cooperative Learning	28.29	CL - SA	2.05NS
		CL - BS	6.54NS
		CL - CM	3.65NS
Situational approach	26.24	SA - BS	8.59NS
		SA - CM	1.60NS
Brainstorming	34.83	BS - CM	10.19*
Conventional method	24.64		

\*Significant at 0.05 level; NS-Not Significant; MA- Multimedia approach, CL - Cooperative Learning, SA - Situational approach, BS- Brainstorming, CM - Conventional method

The above table revealed that in the Government Aided Institution, group under Brainstorming got significant mean difference (10.19) with the Conventional method group which was significant at five per cent level. So it can be concluded that Brainstorming method had motivated the student teachers to develop favourable attitude towards Human rights education.

The attitude score of the groups taught by different methods in terms of locality were compared and the results obtained were shown in the following table 4.37.

**Table 4.37 Analysis of Attitude Score in Terms of Locality**

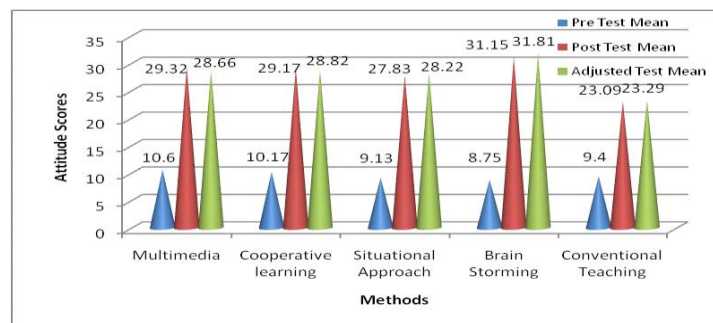
Locality	Attitude score	Methods					Source of Variance	Sum of Squares	df	Mean Squares	F ratio
		MA (No-32)	CL (No-43)	SA (No-38)	BS (No-35)	CM (No-37)					
Rural	Pretest mean	10.60	10.17	9.13	8.75	9.40	BG	88.02	4	22.00	1.98NS
							WG	1996.15	180	11.09	
	Posttest Mean	29.32	29.17	27.83	31.15	23.09	BG	1218.84	4	304.71	6.05*
							WG	9061.20	180	50.34	
	Adjusted posttest mean	28.66	28.82	28.22	31.81	23.29	BG	1225.78	4	306.44	6.82*
							WG	8036.62	179	44.89	
Urban	Attitude score	MA (No-33)	CL (No-32)	SA (No-30)	BS (No-30)	CM (No-32)					
	Pretest mean	10.59	10.00	11.25	10.56	9.83	BG	41.75	4	10.43	1.31NS
							WG	1206.15	152	7.93	
	Posttest mean	30.86	28.00	29.51	33.71	23.21	BG	2059.22	4	514.80	10.63*
							WG	7357.07	152	48.40	
	Adjusted posttest mean	30.65	28.47	28.52	33.54	23.88	BG	1680.89	4	420.22	11.09*
							WG	5720.43	151	37.88	

\*Significant at 0.05 level; NS-Not Significant; N- Number of Students; BG-Between groups; WG- Within Group; MA- Multimedia approach, CL - Cooperative Learning, SA - Situational approach, BS- Brainstorming, CM - Conventional method

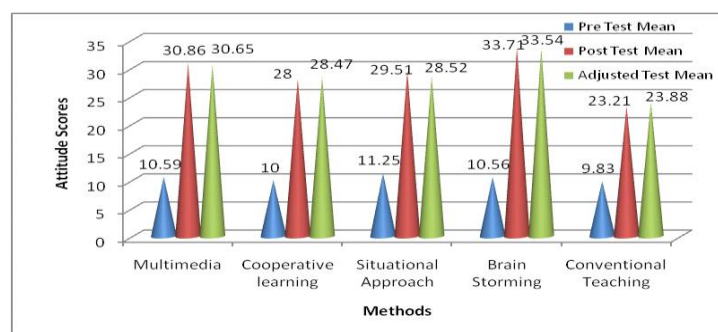
The above table indicated that the 'F' values (6.05& 6.82) obtained out of the mean scores in the posttest and adjusted posttest mean scores respectively were significant which shows that the student teachers of the five groups differed significantly at five per cent level in rural area unlike the pretest. The group under Brainstorming got high mean score (33.54) followed by Cooperative learning,

Multimedia and Situational approach groups . Even the Conventional method group which did not show any improvement in the knowledge level in Human rights education showed a difference between the pretest and the posttest scores which may be due to the fact that they too are human beings who tend to have human emotions resulting in having the tendency to develop better attitude towards Human rights. Hence it may be stated that the Brainstorming group was impressed by Human rights education resulting in the better development of attitude.

When the five groups belonging to urban area were concerned, the same trend prevailed. The ‘F’ values (10.63 & 11.09) obtained out of the posttest mean scores and the adjusted posttest mean scores respectively were significant at five per cent level which showed that the groups taught by different methods differed significantly. Seeing the high mean score (33.54), we can say that the Brainstorming group showed a better development of the attitude followed by the Multimedia, Situational approach, Cooperative learning and Conventional method groups. Hence the **null hypothesis** stated as “There is no significant difference among the groups taught by different methods in developing attitude towards Human rights education in terms of locality” is rejected. This analysis is depicted in the following Figures 4.15 & 4.16 graphically.



**Figure 4.15 Attitude Score of the student Teachers from Rural area in relation to Different methods**



**Figure 4.16 Attitude Scores of the student teachers from Urban area in Relation to Different Methods**

To find out which method had significant mean difference with the other methods, Scheffe's Multiple comparison was done and presented in the following Table 4.38 .

**Table 4.38 Scheffe's Multiple Comparison between the Methods on Attitude Scores in Terms of Locality**

Locality	Rural		Mean difference
	Mean Score	Groups	
Multimedia approach	28.66	MA - CL	0.16 NS
		MA -SA	0.44 NS
		MA -BS	3.15 NS
		MA - CM	5.37 NS
Cooperative Learning	28.82	CL - SA	0.60NS
		CL - BS	2.99 NS
		CL - CM	5.53 NS
Situational approach	28.22	SA - BS	3.59 NS
		SA - CM	4.93 NS
Brainstorming	31.81	BS - CM	8.52*
Conventional method	23.29		
<b>Urban</b>			
Multimedia approach	30.65	MA - CL	2.18 NS
		MA -SA	2.13 NS
		MA -BS	2.89 NS
		MA - CM	6.77 NS
Cooperative Learning	28.47	CL - SA	0.05 N S
		CL - BS	5.07 NS
		CL - CM	4.59 NS
Situational approach	28.52	SA - BS	5.02 NS
		SA - CM	4.64 NS
Brainstorming	33.54	BS - CM	9.66*
Conventional method	23.88		

\*Significant at 0.05 level; NS-Not Significant; MA- Multimedia approach, CL - Co-operative Learning, SA - Situational approach, BS- Brainstorming, CM - Conventional method

It was inferred from the Scheffe's Multiple comparison table that in the rural area, the group under Brainstorming had high mean difference (8.52) with the Conventional method group at five per cent level. All the other groups under different methodology did not differ from each other.

In the urban area also, the group under Brainstorming alone had high significant mean difference (9.66) with the Conventional method group at five per cent level and all the other groups did not differ from each other. So the Brainstorming method can be taken as the effective method of teaching Human rights education in developing the attitude among the student teachers irrespective of the locality.

Attempt was made to analyse the attitude scores of the student teachers of different (Subject specializations) optional in relation to different methods and the results obtained were depicted in the following Tables 4.39 to 4.50.

**Table 4.39 Analysis of the Attitude Score of the Student Teachers of Mathematics Optional in Relation to Different Methods**

Attitude score	Methods					Source of variance	Sum of Squares	df	Mean Squares	F ratio
	MA (N-16)	CL (N-20)	SA (N-17)	BS (N-16)	CM (N-18)					
Pretest mean	9.37	19.40	8.05	8.43	10.16	BG	1703.17	4	425.79	13.40*
						WG	2603.92	82	31.75	
Posttest mean	28.43	33.15	29.35	31.50	23.66	BG	957.00	4	239.25	6.01*
						WG	3262.37	82	39.78	
Adjusted posttest mean	28.59	32.52	29.61	31.73	23.76	BG	798.64	4	199.66	4.98*
						WG	3246.18	81	40.07	

\*Significant at 0.05 level; NS-Not Significant; N- Number of students; BG-Between groups; WG-Within Groups; MA- Multimedia approach, CL - Cooperative Learning, SA - Situational approach, BS- Brainstorming, CM - Conventional method

From the above table it was inferred that in Mathematics optional, though significant difference existed among the five groups under different methods in the pretest itself which was revealed by the significant “F” value (13.40), the posttest mean scores and the adjusted posttest mean scores indicated that all methods showed better development of the attitude than the pretest. The pretest effect was removed by the analysis of Covariance.

Based on the adjusted posttest mean scores, it was understood that in the Mathematics optional group, the first effective method was Cooperative learning (32.52) followed by Brainstorming, Situational approach, Multimedia approach and the Conventional method. This finding goes in line with the findings of **Aruna** and

**Annakodi (2005)** who studied the effectiveness of Multimedia and Cooperative Learning Strategies at secondary level and revealed that there was significant difference between the mean gain scores of Traditional, Multimedia and Cooperative learning groups and though Multimedia process is effective, the effectiveness of Cooperative learning approach is highly significant.

Scheffe's Multiple comparison was done to find out which method had high mean difference with the other methods among the Mathematics optional students and presented in the following table 4.40.

**Table 4.40 Scheffe's Multiple Comparison between the Methods on Attitude Score of the Student teachers of Mathematics Optional**

Methods	Mean score	Groups	Mean difference
Multimedia approach	28.59	MA - CL	3.93 NS
		MA -SA	1.02NS
		MA -BS	3.14 NS
		MA - CM	4.83NS
Cooperative Learning	32.52	CL - SA	2.91NS
		CL - BS	0.79NS
		CL - CM	8.76*
Situational approach	29.61	SA - BS	2.12NS
		SA - CM	5.85NS
Brainstorming	31.73	BS - CM	7.97NS
Conventional method	23.76		

\*Significant at 0.05 level; NS-Not Significant; MA- Multimedia approach, CL - Cooperative Learning, SA - Situational approach, BS- Brainstorming, CM - Conventional method

It was inferred from the above table that among the Mathematics optional students, Cooperative Learning group had high mean difference (8.76) with the Conventional method group at five per cent level. All the other methods did not differ from each other. Hence this method can be considered as the effective method in developing the attitude of the student teachers towards Human rights education among the students of Mathematics optional.

**Table 4.41 Analysis of the Attitude Score of the Student Teachers of  
Computer Science Optional in Relation to Different Methods**

Attitude Score	Methods					Source of variance	Sum of Squares	df	Mean Squares	F ratio
	MA (N-7)	CL (N-8)	SA (N-7)	BS (N-7)	CM (N-8)					
Pretest mean	9.00	15.00	12.28	9.28	8.87	BG	224.16	4	56.04	4.64*
						WG	385.73	32	12.05	
Posttest mean	29.14	30.50	29.28	30.71	22.62	BG	348.84	4	87.21	5.56*
						WG	1787.58	32	55.86	
Adjusted posttest mean	30.05	28.59	28.65	31.49	23.60	BG	269.906	4	67.477	5.22*
						WG	1702.070	31	54.905	

\*Significant at 0.05 level; NS-Not Significant; N-Number of students; BG-Between groups; WG-Within Groups ; MA- Multimedia approach, CL - Cooperative Learning, SA - Situational approach, BS- Brainstorming, CM - Conventional method

It was understood from the above table that in Computer science Optional, though significant difference existed among the five groups in the pretest itself, the posttest mean scores indicated that all groups showed better development of the attitude towards the Human rights education at five per cent level but to a varying degree. The pretest effect was removed by the analysis of Covariance and the calculated adjusted posttest mean scores showed that in the case of Computer science optional students, Brainstorming (31.49) stood as the first effective method followed by Multimedia approach (30.05), Situational approach (28.65), Cooperative learning (28.59) and Conventional method (23.60) in developing the attitude towards Human rights education.

Scheffe's Multiple comparison was done to find out which method had high mean difference with the other methods among the Computer Science Optional students and presented in the following Table 4.42.

**Table 4.42 Scheffe's Multiple Comparison between the Methods on Attitude Score of the Student Teachers of Computer Science Optional**

Methods	Mean score	Groups	Mean difference
Multimedia approach	30.05	MA - CL	1.46 NS
		MA -SA	1.4NS
		MA -BS	1.44NS
		MA - CM	6.45NS
Cooperative Learning	28.59	CL - SA	0.06NS
		CL - BS	2.9NS
		CL - CM	4.99NS
Situational approach	28.65	SA - BS	2.84NS
		SA - CM	5.05NS
Brainstorming	31.49	BS - CM	7.89*
Conventional method	23.6		

\*Significant at 0.05 level; NS-Not Significant; MA- Multimedia approach, CL - Cooperative Learning, SA - Situational approach, BS- Brainstorming, CM - Conventional method

It was evident from the above table that in the case of Computer science Optional students, no method differed from each other in changing the attitude of the student teachers except Brainstorming which had significant mean difference (7.89) from the Conventional method at five per cent level. Hence it may be stated that this method has much effect on the development of the attitude of the Computer Science Optional students towards Human rights education.

Analysis was done using the attitude score of the Physical Science optional students to find out which method is effective in developing the proper attitude of the students and result obtained was explained in Table 4.43.

**Table 4.43. Analysis of the Attitude Score of the Student Teachers of Physical Science Optional in Relation to Different Methods**

Attitude Score	Methods					Source of variance	Sum of Squares	df	Mean Squares	F ratio
	MA (N-9)	CL (N-11)	SA (N-9)	BS (N-9)	CM (N-9)					
Pretest mean	13.77	20.27	10.11	10.33	8.55	BG	903.96	4	225.99	6.11*
						WG	1552.84	42	36.97	
Posttest mean	31.88	27.81	25.44	31.66	23.00	BG	541.16	4	135.29	3.09*
						WG	1834.74	42	43.68	
Adjusted posttest mean	31.45	24.06	26.89	32.99	25.24	BG	552.44	4	138.11	3.96*
						WG	1427.86	41	34.82	

\*Significant at 0.05 level; NS-Not Significant; N- Number of students; BG-Between groups; WG-Within Groups; MA- Multimedia approach, CL - Cooperative Learning, SA - Situational approach, BS- Brainstorming, CM - Conventional method

It was evident from the above table that there was significant difference among the groups taught by different methods in Physical science optional in developing attitude towards Human rights education in the pretest itself. The posttest mean scores indicated that the groups under all methods showed better development of the attitude towards Human rights education than the pretest scores. This means that all the five methods have changed their attitude. The pretest effect was removed by the analysis of Covariance and the obtained adjusted posttest mean scores showed that in the Physical science optional, Brainstorming can be taken as the most effective method in developing proper attitude towards Human rights education as this group got the highest mean score (32.99). Scheffe's Multiple comparison was done to find out which method had high mean difference with the other methods in the Physical Science Optional which was presented in the following Table 4.44.

**Table 4.44 Scheffe's Multiple Comparison between the Methods on Attitude Score of the Student Teachers of Physical Science Optional**

Methods	Mean score	Groups	Mean difference
Multimedia approach	31.45	MA - CL	1.46NS
		MA -SA	1.4NS
		MA -BS	1.44NS
		MA - CM	6.45NS
Cooperative Learning	24.06	CL - SA	0.06NS
		CL - BS	8.93*
		CL - CM	4.99NS
Situational approach	26.89	SA - BS	2.84NS
		SA - CM	5.05NS
Brainstorming	32.99	BS - CM	7.75*
Conventional method	25.24		

\*Significant at 0.05 level; NS-Not Significant; MA- Multimedia approach, CL - Cooperative Learning, SA - Situational approach, BS- Brainstorming, CM - Conventional method

The above table indicated that among the Physical science optional students, Brainstorming group alone had significant mean difference with the Cooperative learning and Conventional method at five per cent level. All the other methods did not differ from each other. Hence it can be said that Brainstorming can be considered as the effective method of developing the attitude of the Physical science student teachers towards Human rights education.

An attempt was made to find out which method was the effective method in developing the attitude of the Biological science optional students and result obtained is explained in Table 4.45.

**Table 4.45 Analysis of the Attitude Score of the Student Teachers of Biological Science Optional in Relation to Different Methods**

Attitude Score	Methods					Source of variance	Sum of squares	df	Mean Squares	F ratio
	MA (N-10)	CL (N-12)	SA (N-10)	BS (N-10)	CM (N-10)					
Pretest mean	11.100	17.083	9.30	8.50	8.80	BG	582.06	4	145.51	2.95NS
						WG	2314.01	47	49.23	
Posttest mean	28.50	26.00	26.70	30.30	23.70	BG	253.20	4	63.30	4.13*
						WG	2632.80	47	56.01	
Adjusted posttest mean	28.54	23.18	27.60	31.58	24.84	BG	415.53	4	103.88	4.27*
						WG	2104.84	46	45.75	

\*Significant at 0.05 level; NS-Not Significant; N- Number of students; BG-Between groups; WG-Within Groups; MA- Multimedia approach, CL - Cooperative Learning, SA - Situational approach, BS- Brainstorming, CM - Conventional method

The above table showed that unlike the pretest, there was significant difference among the groups taught by different methods in Biological science optional in developing attitude towards Human rights education in the posttest which is revealed by the significant “F” value (4.13) at five per cent level. The analysis of Covariance removed the pretest effect and the “F” value (4.27) calculated out of the adjusted posttest mean scores also indicated that significant difference existed among the five methods. As the group under Brainstorming had the highest mean score (31.58), it can be stated that Brainstorming was effective in developing the attitude towards Human rights education in the Biological science optional.

An attempt to find out which method had high mean difference with the other methods among the Biological Science optional students was made by doing Scheffe’s Multiple comparison and the result was depicted in the following Table 4.46.

**Table 4.46. Scheffe's Multiple Comparison between the Methods on Attitude Score of the Student Teachers of Biological Science Optional**

Methods	Attitude Mean score	Groups	Mean difference
Multimedia approach	28.54	MA - CL	5.36NS
		MA -SA	0.94NS
		MA -BS	3.04NS
		MA - CM	3.7NS
Cooperative Learning	23.18	CL - SA	4.42NS
		CL - BS	8.40*
		CL - CM	1.66NS
Situational approach	27.6	SA - BS	3.98NS
		SA - CM	2.76NS
Brainstorming	31.58	BS - CM	6.74NS
Conventional method	24.84		

\*Significant at 0.05 level; NS-Not Significant; MA- Multimedia approach, CL - Cooperative Learning, SA - Situational approach, BS- Brainstorming, CM - Conventional method

It was evident from the above table that among the Biological science optional students, groups under Cooperative learning and Brainstorming alone differed significantly from each other at five per cent level. Taking the high mean difference of the Brainstorming group (8.40) into consideration, it can be said that among the Biological Science optional students, Brainstorming proved to be effective in developing the attitude towards Human rights education

Taking the attitude scores of the groups under five methods, analysis was done to find out which method was effective in developing the proper attitude of the Language optional student teachers towards Human rights education and the obtained result was shown in the Table 4.47.

**Table 4.47 Analysis of the Attitude Score of the Student Teachers of Language Optional in Relation to Different Methods**

Attitude Score	Methods					Source of variance	Sum of Squares	df	Mean Squares	F ratio
	MA (N-11)	CL (N-12)	SA (N-13)	BS (N-12)	CM (N-13)					
Pretest Mean	10.45	17.83	10.07	10.58	10.84	BG	523.81	4	130.95	4.77*
						WG	1535.92	56	27.42	
Posttest Mean	28.81	31.16	27.84	34.50	23.15	BG	881.29	4	220.32	4.76*
						WG	2591.68	56	46.28	
Adjusted posttest mean	29.30	29.23	28.45	34.94	23.51	BG	821.039	4	205.260	4.65*
						WG	2426.171	55	44.112	

\*Significant at 0.05 level; NS-Not Significant; BG-Between groups; WG-Within Groups; MA-Multimedia approach, CL - Cooperative Learning, SA - Situational approach, BS- Brainstorming, CM - Conventional method

It was observed from the above table that there was significant difference among the Language optional student teachers under different methods in their attitude towards Human rights education in the pretest as well as the posttest which is revealed by the significant “F” values (4.77 and 4.76 respectively). But the high posttest mean scores indicated that all the five groups had shown some more development in their attitude. The pretest effect was removed by the analysis of Covariance and the “F” value calculated (4.65) out of adjusted posttest means revealed that significant difference existed among the five groups at five per cent level. And as the Brainstorming group got the highest mean score (34.94). this method can be considered as the effective method in developing the attitude towards Human rights education.

Scheffe’s Multiple comparison was done to find out which method had high mean difference with the other methods among the Language optional student teachers and presented in the following Table 4.48.

**Table 4.48 Scheffe's Multiple Comparison between the Methods on Attitude Score of the student teachers of Language Optional**

Methods	Attitude Mean score	Groups	Mean difference
Multimedia approach	29.3	MA - CL	0.07NS
		MA -SA	0.85NS
		MA -BS	5.64NS
		MA - CM	5.79NS
Cooperative Learning	29.23	CL - SA	0.78NS
		CL - BS	5.71NS
		CL - CM	5.72NS
Situational approach	28.45	SA - BS	6.49 NS
		SA - CM	4.94NS
Brainstorming	34.94	BS - CM	11.43*
Conventional method	23.51		

\*Significant at 0.05 level; NS-Not Significant; MA- Multimedia approach, CL - Cooperative Learning, SA - Situational approach, BS- Brainstorming, CM - Conventional method

The above table indicated that among the Language optional students, group under Brainstorming had high mean difference (11.43) with the Conventional method group at five per cent level and all the other methods did not differ from each other. Hence it can be said that as far as the student teachers of Language optional was concerned, Brainstorming proved to be effective in developing the proper attitude towards Human rights education.

Analysis was done to find out which method was effective out of the five instructional methods in developing the attitude of the Social Science optional student teachers and the following Table 4.49 depicts the result of the analysis.

**Table 4.49 Analysis of the Attitude Score of the Student Teachers of Social Science Optional in Relation to Different Methods**

Attitude score	Methods					Source of variance	Sum of Squares	df	Mean Squares	F-ratio
	MA (N-12)	CL (N-12)	SA (N-12)	BS (N-11)	CM (N-11)					
Prettest mean	10.50	16.08	12.41	11.09	9.54	BG	304.513	4	76.128	2.74 NS
						WG	1472.470	53	27.782	
Posttest mean	32.66	30.00	31.91	35.09	22.36	BG	1043.39	4	260.84	6.24*
						WG	2213.03	53	41.75	
Adjusted posttest mean	33.29	28.26	31.73	35.46	23.39	BG	998.55	4	249.63	6.65*
						WG	1949.32	52	37.48	

\*Significant at 0.05 level; NS-Not Significant; BG-Between groups; WG-Within Groups; MA- Multimedia approach, CL - Cooperative Learning, SA - Situational approach, BS- Brainstorming, CM - Conventional method

It was evident from the above table that in Social Science optional, there was no significant difference among the groups taught by different methods in their attitude towards Human rights education in the pretest. But in their posttest score, the “F” value (6.24) revealed that significant difference existed among the groups at five per cent level. The adjusted posttest means calculated after removing the pretest effect showed that the Brainstorming group got the highest attitude score (35.46) followed by the Multimedia (33.29), Situational approach(31.73) and Cooperative learning groups (28.26). The Conventional method group got the least score (23.39). Hence it can be stated that the Brainstorming group had high attitudinal change towards Human rights education.

Scheffe’s Multiple Comparison test was used to find out which method had high mean difference with the other methods and shown in the Table 4.50.

**Table 4.50 Scheffe's Multiple Comparison between the Methods on Attitude Score of Student Teachers of Social Science Optional**

Methods	Attitude Mean score	Groups	Mean difference
Multimedia approach	33.29	MA - CL	5.03NS
		MA -SA	1.56NS
		MA -BS	2.17NS
		MA - CM	9.9NS
Cooperative Learning	28.26	CL - SA	3.47NS
		CL - BS	7.2NS
		CL - CM	4.87NS
Situational approach	31.73	SA - BS	3.73NS
		SA - CM	8.34NS
Brainstorming	35.46	BS - CM	12.07*
Conventional method	23.39		

\*Significant at 0.05 level; NS-Not Significant; MA- Multimedia approach, CL - Cooperative Learning, SA - Situational approach, BS- Brainstorming, CM - Conventional method

It was evident from the above table that in Social science optional, group under Brainstorming had high mean difference (12.07) with the Conventional method at five per cent level and all the other methods did not differ from each other. Hence it can be said that Brainstorming method proved to be effective in developing the attitude of the student teachers towards Human rights education in the Social science optional .

Based on all the above observations from the Tables 4.39 to 4.50, it may be concluded that the Brainstorming method proved to be effective in bringing the attitudinal change among the student teachers towards Human rights education except the Mathematics optional in which the Cooperative learning group showed high attitudinal change.

Hence the **null hypothesis** stated as “There is no significant difference among the groups taught by different methods in developing attitude towards Human rights education in relation to the variable namely subject specialisation (optional- Mathematics, Computer science, Physical Science, Biological Science, Language and Social Science)” was rejected.

**Section III** dealt with the Correlational analysis in terms of the variables selected for the study. The analysis of the relationship between the variables Knowledge and Attitude using the measure of correlation was done for the groups under five instructional methods namely Multimedia approach, Cooperative learning, Situational approach, Brainstorming and Conventional method and depicted in the following tables 4.51 to 4.55.

**Table 4.51. Correlation between Knowledge and Attitude Scores of the Group under Multimedia approach in the Posttest**

Variables		N	Knowledge		Attitude		Correlation 'r'
			Mean	SD	Mean	SD	
Stream of courses	Arts	23	47.86	1.84	30.82	6.16	0.15
	Science	42	47.33	2.44	29.30	7.13	0.08
Type of institution	Self financing	27	47.40	2.39	30.18	5.89	0.08
	Government	21	47.38	2.39	30.71	6.97	0.17
	Aided	17	47.88	1.90	28.23	7.98	0.15
Locality	Rural	43	47.25	2.37	29.32	7.04	0.23
	Urban	22	48.04	1.93	30.86	6.30	0.27

N-Number of students; SD-Standard Deviation

It was evident from the above table that the correlation between knowledge and attitude in terms of the variables namely stream of courses, type of institution, locality was very low. Hence it could be interpreted that **the null hypothesis** stated as “There is no correlation between knowledge and attitude developed by the group under Multimedia approach in relation to the variables namely stream of courses, the type of institution and locality” was accepted.

**Table 4.52. Correlation between Knowledge and Attitude Scores of the Group under Cooperative Learning in the Posttest**

Variables		N	Knowledge		Attitude		Correlation 'r'
			Mean	S D	Mean	S D	
Stream of courses	Arts	24	41.87	1.89	28.75	8.16	0.28
	Science	51	42.19	2.07	28.11	7.54	0.25
Type of institution	Self - financing	30	41.63	1.69	30.96	7.20	0.23
	Government	20	41.70	2.36	26.45	7.66	0.37
	Aided	25	42.96	1.85	27.56	7.20	0.24
Locality	Rural	40	42.15	2.06	29.17	7.70	0.27
	Urban	35	42.02	1.97	28.00	7.30	0.15

N-Number of students; SD-Standard Deviation

The above table showed that the correlation between knowledge and attitude in terms of the variables namely stream of courses, type of institution, locality was very low. Hence it could be interpreted that **the null hypothesis** stated as “There is no correlation between knowledge and attitude developed by Cooperative Learning group in relation to the variables namely stream of courses , the type of institution and locality” was accepted.

**Table 4.53 Correlation between Knowledge and Attitude Scores of the Group under Situational Approach in the Posttest**

Variables		N	Knowledge		Attitude		Correlation 'r'
			Mean	S D	Mean	S D	
Stream of courses	Arts	25	36.16	3.14	29.80	7.81	0.17
	Science	43	35.97	3.50	27.90	6.45	0.003
Type of institution	Self-financing	28	34.96	3.59	30.78	7.63	0.34
	Government	22	36.13	3.46	28.13	6.40	0.06
	Aided	18	37.61	2.11	25.77	5.72	0.23
Locality	Rural	37	36.10	3.38	27.83	6.23	0.09
	Urban	31	35.96	3.38	29.51	7.79	0.21

N - Number of Students; SD-Standard Deviation

It was inferred from the above table that the correlation between knowledge and attitude in the posttest in terms of the variables namely stream of courses, type of institution, locality was very low. Hence it could be interpreted that the **null hypothesis** stated as “There is no correlation between knowledge and attitude developed by Situational approach group in relation to the variables namely stream of courses, type of institution and locality” was accepted.

**Table 4.54 Correlation between Knowledge and Attitude Scores of the Group under Brainstorming in the Posttest**

Variables		N	Knowledge		Attitude		Correlation 'r'
			Mean	S D	Mean	S D.	
Stream of courses	Arts	23	36.04	3.32	34.78	5.50	0.03
	Science	42	36.26	2.58	31.11	6.98	0.01
Type of institution	Self-financing	27	36.88	2.24	32.77	6.24	0.20
	Government	21	35.09	3.12	29.95	7.61	0.04
	Aided	17	36.41	3.08	34.88	5.36	0.07
Locality	Rural	33	36.33	2.49	31.15	7.04	0.20
	Urban	32	36.03	3.19	33.71	6.14	0.15

N-Number of students; SD-Standard Deviation

The above table indicated that the correlation of the posttest scores between knowledge and attitude in terms of the variables namely stream of courses, type of institution, locality was very low. Hence it could be interpreted that the null hypothesis stated as “There is no correlation between knowledge and attitude developed by Brainstorming group in relation to the variables namely stream of courses, type of institution and locality” was accepted.

**Table 4.55 Correlation between Knowledge and Attitude Scores of the Group under Conventional Method in the Posttest**

Variables		N	Knowledge		Attitude		Correlation 'r'
			Mean	SD.	Mean	SD	
Stream of Courses	Arts	24	24.75	2.81	22.79	6.934	0.09
	Science	45	26.04	2.36	23.35	7.186	0.24
Type of institution	Self-financing	27	25.11	2.10	22.62	6.714	0.13
	Government	24	25.75	3.16	22.41	6.645	0.31
	Aided	18	26.11	2.39	24.94	8.105	0.04
Locality	Rural	32	25.87	2.41	23.09	7.336	0.15
	Urban	37	25.35	2.73	23.21	6.900	0.22

N- Number of students ; SD-Standard Deviation

It was understood from the above table that the correlation between knowledge and attitude of the group taught by Conventional method in the posttest in terms of the variables namely stream of courses, type of institution, locality was very low. Hence it could be interpreted that the **null hypothesis** stated as “There is no correlation between knowledge and attitude developed by Conventional method group in relation to the variable namely stream of courses, type of institution and locality” was accepted.

The results of the present investigation indicated that different ‘methods’ of teaching had imparted different influences over their gaining ‘knowledge’, and changing ‘attitudes’. The impact of education also differed among the different groups.