SECTION III
ANALYSIS OF DATA AND CONCLUSIONS

The authenticity and validity of data depends upon the truthfulness and trustworthiness of data and appropriate techniques applied for analysis. This is vital condition in research activities. At the beginning, the data is categorized according to objectives and hypothesis under investigation. The direction of analysis is defined by the step of categorization. There are several techniques to apply for qualitative and quantitative analysis. They are preferred according to nature of data and nature of research problem.

There are four objectives of the present study. Among them Objective No. 1 (To identify the abilities essentially to be developed among student-teachers for using constructivism in teaching-learning process..), Objective No. 2 (To develop a Computer Multimedia package for enhancing Constructivist Approach among Student teachers and Teacher Educators.) and Objective No. 3 (To provide a training) belonging to procedure of development of Computer Multimedia package. So, they are included in previous section. Remaining Objective No. 4 is belonging to data analysis through quantitative techniques.

3.1 Analysis of Data

The major objective of this project was to enable teacher educators and student teachers for teaching to Constructivist Classroom by providing training through Computer Multimedia Package. This task was completed by providing modular training programme in two colleges of Education in Maharashtra as described in the last Chapter.
Three types of tools were used to measure the effect of training which are as follows:

1. Paper Pencil Tests to measure the level of acquisition of theoretical base of Constructivism.
2. Checklist to measure the level of acquisition of Planning for teaching with constructivist approach.

3. Concepts maps for measuring the quality of comprehension of Constructivism, Brain based teaching –learning, Collaborative and Constructivist teaching learning.

All the above mentioned tools were researcher made and used for both teacher educators and student teachers.

The statistical techniques used to measure the level of acquisition of theoretical base and planning for teaching is mean and standard deviation.

The data collected by using the third tool was analyzed quantitatively using percentage and qualitatively.

The detailed analysis is given the following tables.

The process of data analysis is aimed to detection of facts and significant findings in the context of research problem. These facts and findings are based on the data gathered related to concerning situation, persons or event through various tools.

Table No. 3.1

Mean and SD Values of Teacher Educators in Achievement in Theoretical Base of Constructivism

Sr. No.	Name of Test	Achievement Level of Teacher Educators in Karad(Urban)		Achievement Level of Teacher Educators in Gargoti(Rural)	
		Mean	SD	Mean	SD
01	Constructivism: Nature and Concepts	18.02	3.78	17.92	4.08
02	Brain Based Learning	15.75	4.35	16.25	4.57
03	Psychological Perspectives of Constructivism	21.35	5.36	20.35	5.65

Observations and Interpretations

1. Achievements of the Teacher Educators in both the Colleges of Education are at satisfactory level in acquiring theoretical Base of Constructivism.
2. The achievement is almost same in Urban as well as rural college.

Table No. 3.2

Mean and SD values of Student Teacher in Achievement in Theoretical Base of Constructivism

Sr. No.	Name of Test	Achievement Level of Teacher Educators in Karad(Urban)		Achievement Level of Teacher Educators in Gargoti(Rural)	
		Mean	SD	Mean	SD
01	Constructivism: Nature and Concepts	13.62	3.00	13.03	2.85
02	Brain Based Learning	06.69	3.8	05.50	4.65
03	Psychological Perspectives of Constructivism	20.78	2.79	22.66	3.83

Observations and Interpretations

1. Achievements of the Teacher Educators in both the Colleges of Education are at satisfactory level in acquiring theoretical Base of Constructivism.
2. The achievement is almost same in Urban as well as rural college.
3. The mean value of scores in the Psychological base is found more than those of the earlier two tests; this may be because of familiarity of the related content included in B. Ed. Syllabus.

Acquisition of planning for teaching with Constructivist approach was measured by providing the assignments of planning for teaching with Constructivist approach was measured by providing the assignments of planning the lessons to teacher educators and student teachers. The prepared lesson plans were self evaluated by the concerned teacher educators and student teachers using self evaluation criteria check list. This check list includes 50 items. It is attached in **Appendix No. C**

The analysis of this collected data is given in the following tables.

Table No. 3.3

Mean and SD values of Teacher Educators in Achievement in Planning of teaching with activity

Sr. No.	Name of College	Mean	SD
01	Teachers educators in Karad(Urban)	42.00	5.38
02	Teachers Educators in Gargoti (Rural)	43.15	4.36
03	Student teachers in Karad(Urban)	43.03	6.48
04	Student teachers in Karad(Rural)	41.07	5.58

Observations and Interpretations

1. The performance of Teacher educators in planning for teaching is found to be satisfactory in both the colleges.
2. The performance of student teachers in planning for teaching is found to be satisfactory in both the colleges.
3. The performance of planning is almost same in both urban and rural teacher educators as well as of student teachers.

As the samples are small and selected very purposively, and not randomly the descriptive statistics only is used for analysis and further use of inferential statistics was avoided.

Secondly, this testing was used only to find out the effect of training by using CMP on Constructivism, this much statistics was sufficient for determination of effectiveness of developed CMP. The purpose was successful.

The nature of third testing was to measure the quality of comprehension of Student teachers regarding:

1. Concept of Constructivism.
2. Components of Knowledge Construction.
3. Brain based Learning.
4. Application of Constructivist teaching in concerned subject.
5. Nature of teacher tasks in Constructivist Classroom.

6. Change in role of teachers in Constructivist Classroom.

Each student teacher of the selected sample was asked to answer the questions based on the above points. Each answer is analyzed with respect to the specific points. The answers were clubbed method wise. The response frequencies and there average were calculated is given in the following tables.

Table No. 3.4
Nature of Response Given by Marathi Method Teacher Trainees Regarding Process of Knowledge Construction

Q.1	Nature of Response	Pre Test		Post Test	
		Total	Average	Total	Average
Process of Knowledge Construction	Component	43	2.2	80	4
	Sequence	22	1.1	80	4
	Correlation	15	0.8	25	1.3
	Interlinking	4	0.2	19	1
	Overall Concept Mapping	6	0.5	19	1
	Total	**93**	**4.7**	**223**	**11**

Observation and Interpretation:

It has been observed that:

1. Frequencies of the response have found to be increased in Post test rather than Pre test for Component, Sequence, Correlation, Interlinking and overall concept mapping regarding process of Knowledge Construction.
2. Frequency of the response regarding sequence has been more increased (1.1 to 4) as compared to other component from pre test to Post test.
3. Even though there is little increase in response regarding interlinking in Post test but it should be noted that it is remarkable change (0.2-1).
4. There is remarkable change (4.7 – 11) in the overall response regarding Process of knowledge Construction from Pre test to Post test.

Table No. 3.5

Nature of Response Given by Marathi Method Teacher Trainees Regarding Abilities Required for Knowledge Construction

Q. 2	Nature of Response	Pre Test		Post Test	
		Total	Average	Total	Average
Abilities required for Knowledge Construction	Checking & Preparing readiness for Children	36	1.8	64	3.2
	Attention	24	1.2	62	3.1
	Presenting Auditory/ Visual segment	18	0.9	27	1.4
	Decoding Previous Knowledge Construction	14	0.7	21	1.1
	Activation Previous Knowledge Construction	3	0.2	11	0.6
	Total	**95**	**4.8**	**185**	**9.3**

Observation and Interpretation:

It has been observed that:

1. Frequencies of the response have found to be increased in Post test rather than Pre test for Checking & Preparing readiness for Children, Attention, Presenting Auditory/ Visual segment, Decoding Previous Knowledge Construction and Activation Previous Knowledge Construction regarding abilities required for Knowledge Construction.
2. Frequency of the response regarding Checking & Preparing readiness for Children and Attention has been more increased (1.8 -3.2), (1.2 to 3.1), respectively as compared to other component from pre test to Post test.
3. Even though there is little increase in response regarding Presenting Auditory/ Visual segment, Decoding Previous Knowledge Construction and Activation Previous Knowledge Construction but it should be noted that it is remarkable change with consideration of Constructivist approach.
4. There is remarkable change (4.8 – 9.3) in the overall response regarding Abilities required for Knowledge Construction from Pre test to Post test.

Table No.3.6
Nature of Response Given by Marathi Method Teacher Trainees Regarding Teacher Tasks for Knowledge Construction of Pupils

Q. 3	Nature of Response	Pre Test		Post Test	
		Total	Average	Total	Average
Teacher Tasks for Knowledge Constructio n of Pupils	Use of Teaching material to Learning Material	16	0.8	32	1.6
	Facilitating	12	0.6	24	1.2
	Questioning	1	0.05	22	1.1
	Use of maximum Resources	0	0	22	1.1
	Creation of Learning Environment	0	0	24	1.2
	Total	**29**	**1.5**	**124**	**6.2**

Observation and Interpretation:

It has been observed that:

1. Frequencies of the response have found to be increased in Post test rather than Pre test for use of teaching material to Learning Material, Facilitating, Questioning, Use of maximum Resources and Creation of Learning Environment regarding teacher tasks for Knowledge construction of pupils.
2. Frequency of the response regarding use of teaching material to Learning Material and Facilitating has been more increased (0.8 -1.6), (0.6 to 1.2), respectively as compared to other component from pre test to Post test.
3. Even though there is little increase in response regarding Use of maximum Resources and Creation of Learning Environment but it should be noted that it is remarkable change with consideration of Constructivist approach because there is a total absence of response in Pre test by the teacher trainees.
4. There is a remarkable change in the response regarding Questioning (0.05-1.1) as compare to other component from pre test to Post test.
5. There is remarkable change (1.5 – 6.2) in the overall response regarding teacher tasks for Knowledge Construction of pupils from Pre test to Post test.

Table No.3.7

Nature of Response Given by Marathi Method Teacher Trainees Regarding Change in Role of Teacher for Knowledge Construction of Pupils

Q.4	Nature of Response	Pre Test		Post Test	
		Total	Average	Total	Average
Change in Role of Teacher	Talk in forms of Critical Questioning	16	0.8	27	1.4
	Facilitator	15	0.8	28	1.4
	Avoiding orders, threats, and Punishments	2	0.1	19	1
	Organization of Conversation	0	0	19	1
	Teaching for Understanding	0	0	13	0.7
	Total	**33**	**1.7**	**106**	**5.3**

Observation and Interpretation:

It has been observed that:

1. Frequencies of the response have found to be increased in Post test rather than Pre test for Talk in forms of Critical Questioning, Facilitator, Avoiding orders, threats, and Punishments, Organization of Conversation and Teaching for Understanding for Change in Role of Teacher
2. Frequency of the response regarding Talk in forms of Critical Questioning and Facilitator has been more increased (0.8 -1.4), (0.8 to 1.4), respectively as compared to other component from pre test to Post test.
3. Even though there is little increase in response regarding Organization of Conversation and Teaching for Understanding but it should be noted that it is remarkable change because there is a total absence of response in Pre test by the teacher trainees.
4. There is remarkable change (1.7 – 5.3) in the overall response regarding Change in Role of Teacher from Pre test to Post test.

Table No.3.8

Nature of Response Given by Marathi Method Teacher Trainees Regarding Change in Teaching Approach of Their Subject for Knowledge Construction of Pupils

Q.5	Nature of Response	Pre Test		Post Test	
		Total	Average	Total	Average
Change in Teaching Approach of Your Subject	Group Activity	15	0.8	54	2.7
	Questioning	0	0	54	2.7
	Learning Resources	0	0	21	1.1
	Learning Plan	0	0	21	1.1
	Product to Process	0	0	10	0.5
	Total	**15**	**0.8**	**160**	**8**

Observation and Interpretation:

It has been observed that:

1. Frequencies of the response have found to be increased in Post test rather than Pre test for Group Activity, Questioning, Learning Resources, Learning Plan, and Product to Process for Change in Teaching Approach of Your Subject.
2. Frequency of the response regarding Questioning and Group Activity has been more increased (0 -2.7), (0.8-2.7), respectively as compared to other component from pre test to Post test.
3. Even though there is little increase in response regarding Learning Resources, Learning Plan and Product to Process but it should be noted that it is remarkable change with consideration of Constructivist approach because there is a total absence of response in Pre test by the teacher trainees.
4. There is remarkable change (0.8 – 8) in the overall response regarding change in teaching approach of your subject from Pre test to Post test.

Table No.3.9

Nature of Response given by Science Method teacher Trainees regarding Process of Knowledge Construction

Q.1	Nature of Response	Pre Test		Post Test	
		Total	Average	Total	Average
Process of Knowledge Construction	Component	49	2.5	80	4
	Sequence	29	1.5	80	4
	Correlation	17	0.9	44	2.2
	Interlinking	5	0.3	35	1.8
	Overall Concept mapping	9	0.5	33	1.7
	Total	**109**	**5.5**	**272**	**14**

Observation and Interpretation:

It has been observed that:

1. Frequencies of the response have found to be increased in Post test rather than Pre test for Component, Sequence, Correlation, interlinking and overall concept mapping regarding process of Knowledge Construction.
2. Frequency of the response regarding Component and sequence has been more increased (2.5 to 4), (1.5 to 4) respectively as compared to other component from pre test to Post test.
3. Even though there is little increase in response regarding Correlation in Post test but it should be noted that it is remarkable change (0.9-2.2).
4. There is remarkable change (5.5 – 14) in the overall response regarding Process of knowledge Construction from Pre test to Post test.

Table No.3.10

Nature of Response given by Science Method teacher Trainees regarding Abilities required for Knowledge Construction

Q.2	Nature of Response	Pre Test		Post Test	
		Total	Average	Total	Average
Abilities required for Knowledge Construction	Checking & Preparing readiness for Children	42	2.1	76	3.8
	Attention	32	1.6	44	2.2
	Presenting Auditory/ Visual segment	1	0.1	23	1.2
	Decoding Previous Knowledge Construction	13	0.7	23	1.2
	Activation Previous Knowledge Construction	3	0.2	37	1.9
	Total	**113**	**5.7**	**181**	**9.1**

Observation and Interpretation:

It has been observed that:

1. Frequencies of the response have found to be increased in Post test rather than Pre test for Checking & Preparing readiness for Children, Attention, Presenting Auditory/ Visual segment, Decoding Previous Knowledge Construction and Activation Previous Knowledge Construction regarding abilities required for Knowledge Construction.
2. Frequency of the response regarding Checking & Preparing readiness for Children has been more increased (2.1 - 3.8) as compared to other component from pre test to Post test.
3. Even though there is little increase in response regarding Attention, Presenting Auditory/ Visual segment, Decoding Previous Knowledge Construction and Activation Previous Knowledge Construction but it should be noted that it is remarkable change with consideration of Constructivist approach.
4. There is remarkable change (5.7– 9.1) in the overall response regarding Abilities required for Knowledge Construction from Pre test to Post test.

Table No.3.11

Nature of Response given by Science Method teacher trainees regarding teacher tasks for Knowledge Construction of pupils

Q.3	Nature of Response	Pre Test		Post Test	
		Total	Average	Total	Average
Teacher Tasks for Knowledge Construction of Pupils	Use of Teaching material to Learning Material	28	1.4	49	2.5
	Facilitating	10	0.4	54	2.7
	Questioning	1	0.05	45	2.25
	Use of maximum Resources	0	0	2	0.1
	Creation of Learning Environment	0	0	26	1.3
	Total	**39**	**2**	**176**	**8.8**

Observation and Interpretation:

It has been observed that:

1. Frequencies of the response have found to be increased in Post test rather than Pre test for use of teaching material to Learning Material, Facilitating, Questioning, Use of maximum Resources and Creation of Learning Environment regarding teacher tasks for Knowledge construction of pupils.
2. Frequency of the response regarding Facilitating has been more increased (0.4 -2.7) as compared to other component from pre test to Post test.
3. Even though there is little increase in response regarding use of teaching material to Learning Material, Questioning, Use of maximum Resources and Creation of Learning Environment but it should be noted that it is remarkable change with consideration of Constructivist approach.
4. There is a remarkable change in the response regarding Questioning (0.05-2.25) as compare to other component from pre test to Post test.
5. There is remarkable change (2 – 8.8) in the overall response regarding teacher tasks for Knowledge Construction of pupils from Pre test to Post test.

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Table No.3.12

Nature of Response given by Science Method teacher Trainees regarding Change in Role of Teacher for Knowledge Construction of Pupils

Q.4	Nature of Response	Pre Test		Post Test	
		Total	Average	Total	Average
Change in Role of Teacher	Talk in forms of Critical Questioning	18	0.9	25	1.3
	Facilitator	12	0.6	65	3.3
	Avoiding orders, threats, and Punishments	2	0.1	41	2.1
	Organization of Conversation	0	0	25	1.3
	Teaching for Understanding	0	0	33	1.7
	Total	**32**	**1.6**	**189**	**9.5**

Observation and Interpretation:

It has been observed that:

1. Frequencies of the response have found to be increased in Post test rather than Pre test for Talk in forms of Critical Questioning, Facilitator, Avoiding orders, threats, and Punishments, Organization of Conversation and Teaching for Understanding for Change in Role of Teacher
2. Frequency of the response regarding Facilitator and Avoiding orders, threats, and Punishments, has been more increased (0.6 -3.3), (0.1 to 2.1), respectively as compared to other component from pre test to Post test.
3. Even though there is little increase in response regarding Organization of Conversation and Teaching for Understanding but it should be noted that it is remarkable change with consideration of Constructivist approach because there is a total absence of response in Pre test by the teacher trainees.
4. There is remarkable change (1.6 – 9.5) in the overall response regarding Change in Role of Teacher from Pre test to Post test.

Table No.3.13

Nature of Response given by Science Method teacher Trainees regarding Change in Teaching Approach of Your Subject for Knowledge Construction of Pupils

Q.5	Nature of Response	Pre Test		Post Test	
		Total	Average	Total	Average
Change in Teaching Approach of Your Subject	Group Activity	15	0.8	80	4
	Questioning	3	0.2	66	3.3
	Learning Resources	0	0	37	1.9
	Learning Plan	0	0	2	0.1
	Product to Process	0	0	18	0.9
	Total	**18**	**0.9**	**203**	**10**

Observation and Interpretation:

It has been observed that:

1. Frequencies of the response have found to be increased in Post test rather than Pre test for Group Activity, Questioning, Learning Resources, Learning Plan, and Product to Process for Change in Teaching Approach of Your Subject.
2. Frequency of the response regarding Group Activity and Questioning has been more increased (0.8 - 4), (0.2- 3.3), respectively as compared to other component from pre test to Post test.
3. Even though there is little increase in response regarding Learning Resources, Learning Plan and Product to Process but it should be noted that it is remarkable change with consideration of Constructivist approach because there is a total absence of response in Pre test by the teacher trainees.
4. There is remarkable change (0.9 – 10) in the overall response regarding change in teaching approach of your subject from Pre test to Post test.

Table No.3.14

Nature of Response given by History Method teacher Trainees regarding Process of Knowledge Construction

Q.1	Nature of Response	Pre Test		Post Test	
		Total	Average	Total	Average
Process of Knowledge Construction	Component	42	2.1	79	4
	Sequence	26	1.3	73	3.7
	Correlation	9	0.5	17	0.9
	Interlinking	6	0.3	10	0.5
	Overall Concept Mapping	2	0.1	23	1.2
	Total	**85**	**4.3**	**202**	**10**

Observation and Interpretation:

It has been observed that:

1. Frequencies of the response have found to be increased in Post test rather than Pre test for Component, Sequence, Correlation, interlinking and overall concept mapping regarding process of Knowledge Construction.

2. Frequency of the response regarding Component and sequence has been more increased (2.1 to 4), (1.3 to 3.7) respectively as compared to other component from pre test to Post test.
3. Even though there is little increase in response regarding Interlinking in Post test but it should be noted that it is remarkable change (0.3-0.5).
4. There is remarkable change (4.3 – 10) in the overall response regarding Process of knowledge Construction from Pre test to Post test.

Table No.3.15

Nature of Response given by History Method teacher Trainees regarding Abilities required for Knowledge Construction

Q.2	Nature of Response	Pre Test		Post Test	
		Total	Average	Total	Average
Abilities required for Knowledge Construction	Checking & Preparing readiness for Children	26	1.3	64	3.2
	Attention	15	0.8	28	1.4
	Presenting Auditory/ Visual segment	1	0.1	7	0.4
	Decoding Previous Knowledge Construction	12	0.6	23	1.2
	Activation Previous Knowledge Construction	14	0.7	31	1.6
	Total	**71**	**3.6**	**153**	**7.7**

Observation and Interpretation:

It has been observed that:

1. Frequencies of the response have found to be increased in Post test rather than Pre test for Checking & Preparing readiness for Children, Attention, Presenting Auditory/ Visual segment, Decoding Previous Knowledge Construction and Activation Previous Knowledge Construction regarding abilities required for Knowledge Construction.
2. Frequency of the response regarding Checking & Preparing readiness for Children has been more increased (1.3 - 3.2) as compared to other component from pre test to Post test.
3. Even though there is little increase in response regarding Attention, Presenting Auditory/ Visual segment, Decoding Previous Knowledge Construction and

Activation Previous Knowledge Construction but it should be noted that it is remarkable change with consideration of Constructivist approach.

4. There is remarkable change (3.6– 7.7) in the overall response regarding Abilities required for Knowledge Construction from Pre test to Post test

Table No.3.16

Nature of Response given by History Method teacher trainees regarding teacher tasks for Knowledge Construction of pupils

Q.3	Nature of Response	Pre Test		Post Test	
		Total	Average	Total	Average
Teacher Tasks for Knowledge Construction of Pupils	Teaching material to Learning Material	8	0.4	24	1.2
	Facilitating	26	1.3	58	2.9
	Questioning	14	0.7	43	2.15
	Use of maximum Resources	2	0.1	8	0.4
	Creation of Learning Environment	3	0.2	22	1.1
	Total	**53**	**2.7**	**155**	**7.8**

Observation and Interpretation:

It has been observed that:

1. Frequencies of the response have found to be increased in Post test rather than Pre test for use of teaching material to Learning Material, Facilitating, Questioning, Use of maximum Resources and Creation of Learning Environment regarding teacher tasks for Knowledge construction of pupils.
2. Frequency of the response regarding Facilitating has been more increased (1.3 -2.9) as compared to other component from pre test to Post test.
3. Even though there is little increase in response regarding use of teaching material to Learning Material, Questioning, Use of maximum Resources and Creation of Learning Environment but it should be noted that it is remarkable change with consideration of Constructivist approach.

4. There is a remarkable change in the response regarding Questioning (0.05-2.25) as compare to other component from pre test to Post test.
5. There is remarkable change (2.7 – 7.8) in the overall response regarding teacher tasks for Knowledge Construction of pupils from Pre test to Post test.

Table No.3.17

Nature of Response given by History Method teacher Trainees regarding Change in Role of Teacher for Knowledge Construction of Pupils

Q.4	Nature of Response	Pre Test		Post Test	
		Total	Average	Total	Average
Change in Role of Teacher	Talk in forms of Critical Questioning	9	0.5	27	1.4
	Facilitator	15	0.8	52	2.6
	Avoiding orders, threats, and Punishments	9	0.5	24	1.2
	Organization of Conversation	0	0.1	4	0.2
	Teaching for Understanding	16	0.8	47	2.4
	Total	**50**	**2.5**	**154**	**7.7**

Observation and Interpretation:

It has been observed that:

1. Frequencies of the response have found to be increased in Post test rather than Pre test for Talk in forms of Critical Questioning, Facilitator, Avoiding orders, threats, and Punishments, Organization of Conversation and Teaching for Understanding for Change in Role of Teacher
2. Frequency of the response regarding Facilitator and Teaching for Understanding, has been more increased (0.8 -2.6), (0.8 to 2.4), respectively as compared to other component from pre test to Post test.
3. Even though there is little increase in response regarding Talk in forms of Critical Questioning, Avoiding orders, threats, and Punishments Organization of Conversation but it should be noted that it is remarkable change with consideration of Constructivist

approach because there is a total absence of response in Pre test by the teacher trainees.

4. There is remarkable change (2.5 – 7.7) in the overall response regarding Change in Role of Teacher from Pre test to Post test.

Table No.3.18

Nature of Response Given by History Method Teacher Trainees Regarding Change in Teaching Approach of Their Subject for Knowledge Construction of Pupils

Q.5	Nature of Response	Pre Test		Post Test	
		Total	Average	Total	Average
Change in Teaching Approach of Your Subject	Group Activity	29	1.5	80	4
	Questioning	22	1.1	66	3.3
	Learning Resources	10	0.5	27	1.4
	Learning Plan	1	0.2	8	0.4
	Product to Process	3	0.2	14	0.7
	Total	**68**	**3.4**	**195**	**9.8**

Observation and Interpretation:

It has been observed that:

1. Frequencies of the response have found to be increased in Post test rather than Pre test for Group Activity, Questioning, Learning Resources, Learning Plan, and Product to Process for Change in Teaching Approach of Your Subject.
2. Frequency of the response regarding Group Activity and Questioning has been more increased (1.5 - 4), (1.1- 3.3), respectively as compared to other component from pre test to Post test.
3. Even though there is little increase in response regarding Learning Resources, Learning Plan and Product to Process but it should be noted that it is remarkable

change with consideration of Constructivist approach because there is a total absence of response in Pre test by the teacher trainees.

4. There is remarkable change (3.4 – 9.8) in the overall response regarding change in teaching approach of your subject from Pre test to Post test.

Table No.3.19

Comparative Nature of Response given by Marathi, Science and History Method teacher Trainees regarding Knowledge Construction of Pupils

Questions	Nature of Response	Marathi				Science				History			
		Total		Average		Total		Average		Total		Average	
		Pre	Post	Pre	Post	Pre	Post	Pre	Post	Pre	Post	Pre	Post
01	Process of Knowledge Construction	93	4.7	223	11	109	5.5	272	14	85	4.3	202	10
02	Abilities required for Knowledge Construction	95	4.8	185	9.3	113	5.7	181	9.1	71	3.6	153	7.7
03	Teacher Tasks for Knowledge Construction of Pupils	29	1.5	124	6.2	39	2	176	8.8	53	2.7	155	7.8
04	Change in Role of Teacher	33	1.7	106	5.3	32	1.6	189	9.5	50	2.5	154	7.7
05	Change in Teaching Approach of Your Subject	15	0.8	160	8	18	0.9	203	10	68	3.4	195	9.8

Observation and Interpretation:

It has been observed that:

1. Frequencies of the response regarding Process of Knowledge Construction found to be more of Science method teacher trainees than that of Marathi and History method teacher trainees in post test.

2. Frequencies of the response regarding abilities required for Knowledge Construction found to be more of Marathi method teacher trainees than that of Science and History method teacher trainees in post test.

3. Frequencies of the response regarding teacher tasks for Knowledge Construction of pupils found to be more of Science method teacher trainees than that of Marathi and History method teacher trainees in post test.

4. Frequencies of the response regarding Change in Role of Teacher found to be more of Science method teacher trainees than that of Marathi and History method teacher trainees in post test.

5. Frequencies of the response regarding change in teaching approach of your subject found to be more of Science method teacher trainees than that of Marathi and History method teacher trainees in post test

3.2 CONCLUSIONS

There are four objectives of the present study as follows. Among them Objective No. 1 To identify the abilities essentially to be developed among student-teachers for using constructivism in teaching-learning process, Objective No. 2 To develop a Computer Multimedia package for enhancing Constructivist Approach among Student teachers and Teacher Educators. Out of these the first three objectives are procedural one and hence, only the conclusions related to the last Objectives are given in this Chapter.

1. The Computer Multimedia Package (CMP) was found to be effective for Acquisition of Theoretical base of Constructivism among teacher educators.

2. The Computer Multimedia Package (CMP) was found to be effective for Acquisition of Theoretical base of Constructivism among student teachers.

3. The Computer Multimedia Package (CMP) was found to be effective for Acquisition of Planning of teaching using Constructivist approach among teacher educators.

4. The Computer Multimedia Package (CMP) was found to be effective for Acquisition of Planning of teaching using Constructivist approach among student teachers.

5. The Computer Multimedia Package (CMP) was found to be equally effective for Urban and rural teacher educators.

6. The Computer Multimedia Package (CMP) was found to be equally effective for Urban and rural student teachers.

7. The Computer Multimedia Package was found to be effective for enhancing the process of Knowledge Construction process and comprehending the concept of abilities required for Knowledge Construction among Marathi method student teachers.

8. The Computer Multimedia Package was found to be effective for understanding the teacher tasks and Change in role of teacher in Constructivist teaching among Marathi method student teachers.

9. The Computer Multimedia Package was found to be effective for enhancing the process of Knowledge Construction process and comprehending the abilities required for Knowledge Construction among Science method student teachers.

10. The Computer Multimedia Package was found to be effective for understanding the teacher tasks and Change in role of teacher in Constructivist teaching among Science method student teachers.

11. The Computer Multimedia Package was found to be effective for enhancing the process of Knowledge Construction process and comprehending the concept of abilities required for Knowledge Construction among History method student teachers.

12. The Computer Multimedia Package was found to be effective for understanding the teacher tasks and Change in role of teacher in Constructivist teaching among History method student teachers.

13. The level of Comprehension of Process of Knowledge Construction and of Components of Knowledge Construction found to be higher in Science method student teachers than those of Marathi and History method student teachers in post test.

14. The level of Comprehension of abilities required for Knowledge Construction found to be higher in Marathi method student teacher than those of Science and History method student teacher in post test.

15. The level of Comprehension of teacher tasks for Knowledge Construction among pupils found to be higher in Science method student teachers than those of Marathi and History method student teachers in post test.

16. The level of Comprehension of Change in Role of Teacher in Constructivist teaching was found to be higher in Science method student teacher than those of Marathi and History method student teacher in post test.

17. The level of Comprehension of change in teaching approach of concerned subject was found to be higher of Science method student teachers than those of Marathi and History method student teachers in post test.

Thus it can be concluded that the developed Computer Multimedia Package (CMP) is effective for developing the acquisition of theoretical base of Constructivism, Planning activities required for teaching with Constructivist approach and also understanding the nature of changed teacher tasks and teacher roles in Constructivist Classroom.