

Epistemological Beliefs of Teacher Trainees in Relation to their Gender and Academic Achievement: An Explorative Study

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Abstract : The main purpose of the study is to identify different levels of epistemological beliefs of primary school teacher trainees. The investigator has taken 300 primary school teacher trainees from three districts of Jammu and Kashmir by using simple random sampling technique. For collection of data the investigator has used Epistemological Belief Questionnaire (EBQ) constructed and standardized by the investigator. For analyses and interpretation of data the investigator has used t-test and Analysis of Variance (One way).

Key Words: Epistemological Belief, Innate Ability Belief, Simple Knowledge Belief, Certain Knowledge Belief

I. Introduction

The term Epistemology was coined by Scottish philosopher James Frederick Ferrier. It is a branch of philosophy which is concerned with the questions: like what is knowledge? What are its sources? How it is acquired? What is its structure, and what are its limits? As human beings, we hold implicit beliefs about knowledge and knowing, which are termed as epistemological beliefs or personal epistemology. Such set of beliefs are subjective, remains idiosyncratic to that person and does not necessary reflect the actual nature of knowledge. The study of such personal conceptions of knowledge is commonly referred as personal epistemology or epistemological beliefs. Among a number of influences on student learning and performance are students' personal epistemologies-their beliefs about the nature of knowledge. Psychologically and educationally, personal epistemology beliefs are "how individuals come to know, the theories and beliefs they hold about knowing, and the manner in which such epistemological premises influence the cognitive processes of thinking and reasoning. Person's epistemological orientation influences engagement, motivation, and academic performance.

Epistemological beliefs influence many aspects of metacognitive strategies and reading strategies environment such as comprehension, higher order thinking and problem solving. Epistemological beliefs are related to a wide variety of complex cognitive outcomes. As epistemological beliefs change and become sophisticated, thinking problem solving skills and strategies of reading and metacognitive have changed, as well. Researchers have investigated the influence of epistemological beliefs in learning strategies in normal classroom situations. The results indicate that students with naive epistemological beliefs tend to employ surface-level strategies such as collecting isolated facts and rehearsing and memorizing concepts and key terms to prepare for an exam while students with sophisticated epistemological beliefs tend to employ deep-level strategies such as elaboration and organization of knowledge (Schommer,1994). Epistemological beliefs have also been found to influence students' learning in general and students' reading and metacognitive strategies in particular. Thus, differences or changes in students' views of the nature of knowledge will lead to observable changes in the manner of reading and the use of metacognitive strategies.

Harun and Sami (2011) investigated pre-service teachers' views about teaching and the relation of those views to epistemological beliefs, gender and found that pre-service teachers preferred constructivist teaching views more than traditional teaching views and this correlated with their epistemological beliefs.

Also found that male participants preferred constructivist teaching views significantly more than female participants did. Ching et. al. (2010) conducted an online survey during the first week of nine month teacher preparation programme and at the end of programme to know the pre-service teachers' epistemological beliefs and beliefs about learning and teaching. It was found that participants exhibited a significant change in epistemological beliefs about learning and teaching. Respondents indicated more relativistic epistemological outlooks and less constructivism in beliefs about teaching, also found the participants believed less on effort learning and more in innate ability.

Epistemology as a system of beliefs is composed of more than one belief, and the beliefs within the system are more or less independent (Schommer-Aikins, 2004). There is a clear link between one's possession of the ability to consistently engage in higher-order thinking and the exhibition of a more mature or complex personal epistemology. Understanding the relationship between personal epistemology and learning is vital if the goal of developing higher-order thinking in students is to be achieved. Not only will such exploration benefit "education as a whole" a better understanding of how epistemological thinking developments will benefit society as a whole. A failure to explore further this relationship would be to ignore empirical evidence and neglect a proven tool for increasing higher order thinking. Epistemological beliefs become mature with time. Francisco (2005) reported that throughout secondary education epistemological beliefs undergo change, become more realistic and complex, and deep approach scores decline significantly. Also the epistemological beliefs influenced academic achievement directly and also indirectly via students' learning approaches.

II. Dimensions of Epistemological Beliefs

The concept of epistemological beliefs was introduced by Perry and was refined by Schommer (1990) in her system of five dimensions for epistemological beliefs which are as follows:

- ❖ Certainty of Knowledge
- ❖ Simple Knowledge
- ❖ Source of Knowledge
- ❖ Quick Learning
- ❖ Innate Ability

III. Teacher's Epistemology and Student's Learning

The beliefs teachers hold will shape their perceptions, alter their judgment, and ultimately influence their behaviour in the classroom. Research has suggested that teachers with more relativistic epistemological beliefs were more likely to be effective teachers (Brownlee, 2001). Wyre (2007) established a relationship between teacher epistemology and student outcomes and suggested that adding metacognitive enrichment into certain classrooms directly influenced the maturation of personal epistemologies. Wyre (2007) added that teachers with high levels of epistemological beliefs engaged in metacognitive enrichment or critical thinking exercises that increased their students' epistemological maturity. He also concluded that, "A more mature personal epistemology meant not just increasing a student's possible test scores, but demonstrably increasing a student's ability to comprehend and apply new knowledge". Ryan (1984) drew upon Perry's epistemological research that concluded that students often fell between a continuum of fact-oriented and context-oriented. Ryan noted that fact oriented students would fall into the category of knowledge while the context-oriented group would be placed in applications and comprehension, a higher level of epistemological beliefs. His research showed that, "one's epistemological beliefs dictates one's choice of comprehension standards, and that these epistemological standards, in turn, may control the effectiveness of one's text-processing efforts". The research was fairly clear that a sophisticated level of

epistemological beliefs or, in Perry's case, a context-oriented individual, was more apt to fully understand the text and establish clear, coherent relationships between the text and relational material and situations (Perry, 1968). This being the case, the teacher's epistemological beliefs had an immense impact on his or her students' epistemology beliefs, which had been shown to increase comprehension and application of concepts and text (Schommer, 2002). This was especially pertinent to teachers with higher-order cognition and epistemological beliefs, since research evidenced that when confronted with challenges that are multi-faceted, (students') epistemological beliefs tended to change, thus teachers imparted the higher-level beliefs to their students (Schommer, 2002). In the light of increased awareness of the influence of teacher beliefs on classroom practice and pedagogical decisions, it can be argued that pre-service teachers' beliefs should be the focus of teacher preparation programs.

IV. Associations Between Epistemological Beliefs and Learning

Research has found a variety of associations between epistemological beliefs and learning. In 1985 Schoenfeld stated the importance of epistemological beliefs very well when he said "belief systems shape cognition, even when one is not consciously aware of holding those beliefs". Ryan's (1984) research provided an initial basis for using a questionnaire to measure epistemological beliefs. He used Perry's (1968) research to develop seven objective questions that classified subjects as either dualists or relativists. Dualists view knowledge as a set of facts that are either right or wrong, and relativists view knowledge as complex propositions that vary in their correctness. He then measured his subjects' comprehension monitoring strategies. His questions successfully predicted the subjects' comprehension monitoring strategies. Dualists were more likely to use a knowledge based comprehension strategy, and relativists were more likely to use an application based strategy. An application based strategy is more sophisticated and more effective.

Dweck and Leggett (1988) identified a relationship between the belief that intelligence is fixed at birth and persistence in learning. They discovered that students who believed intelligence is fixed at birth were more likely to display helpless behaviour when confronted with a difficult academic task. Schoenfeld (1983) discovered that students who do poorly in math are more likely to believe that math problems should be solved in 10 minutes or they will never be solved, and only geniuses are capable of discovering or creating mathematics. The initial research exploring the link between the Epistemological Belief System theory and learning was carried out at the end of the 1980s (Schommer, 1990). Schommer-Aikins administered the Epistemological Beliefs Questionnaire and a reading comprehension test to 117 college students. Multiple regression was used to measure the relationship between epistemological beliefs and conclusions drawn, performance on a mastery test, and comprehension monitoring. Results revealed the more students believed in quick, all-or-none learning, the more likely they were to oversimplify conclusions. The more students believed in certain knowledge, the more likely they were to write absolute conclusions. The more students believed in quick all-or-none learning, the more likely they were to perform poorly on a mastery test. Finally, the more students believed in quick, all-or-none learning, the more likely they were to overestimate their understanding of the passage. These results reveal that epistemological beliefs affect students' processing of information, monitoring of comprehension, and interpretation of knowledge. These were inspiring results for the Epistemological Belief System theory and led to further research.

Research continues to reveal associations between the Epistemological Belief System theory and learning and academic performance. One study was carried out in the early 1990s with 69 high school students (Schommer, 1997). The Epistemological Beliefs Questionnaire was administered and regression analysis was used to compare their results to their GPAs. The results revealed that the less students believed in

quick learning, the better GPAs they earned. Another study explored students' attitude toward school (Schommer, 1997).

Objectives of the Study

- ❖ To explore the differences in epistemological beliefs of primary school teacher trainees in terms of their gender.
- ❖ To study the differences in epistemological beliefs of primary school teacher trainees in terms of their academic achievement.

Hypotheses of the Study

- ❖ Male and female primary school teacher trainees do not differ significantly with each other in epistemological beliefs.
- ❖ There is no significant difference in epistemological beliefs of primary school teacher trainees in terms of their academic achievement.

Methodology

Keeping in view the objectives and hypotheses of the study, descriptive survey method has been used by investigator. The descriptive research attempts to describe, explain an interpret conditions of present. The sampling frame of the study comprises all primary school teacher trainees of three districts of Jammu and Kashmir namely Anantnag, Budgam and Pulwama. The investigator has selected 300 primary school teacher trainees as sample from six teacher training institutions by using simple random sampling technique with equal proportion of male and female.

Tools Used

For the data collection the investigator has used: Epistemological Belief Questionnaire (EBQ): constructed and standardized by investigator in 2011.

Statistical Techniques Used

Following statistical techniques have been used for data analyses and for interpretation of results:

- ❖ t-test
- ❖ Analysis of Variance (ANOVA-one way)

Result Analysis and Main Findings

Results pertaining to the Difference in Epistemological Beliefs of Primary School Teacher Trainees in terms of Gender

To find the differences among male and female primary school teacher trainees in epistemological beliefs t-ratio has been calculated and the results are presented in table no.1

Table No. 1
Difference in Epistemological Belief of Primary School Teacher Trainees in terms of Gender

Major Dimensions of Epistemological Belief	Male N=150		Female N=150		SEd	t-Value	Significance
	Mean	SD	Mean	SD			
Simple Knowledge	73.51	5.27	71.55	6.21	0.67	2.93	P<0.01
Certain Knowledge	18.29	2.95	18.00	2.76	0.32	0.91	NS
Quick Learning	15.37	2.97	15.28	2.95	0.32	0.28	NS
Innate Ability	13.59	2.95	13.26	2.73	0.31	1.06	NS
Epistemological Belief in Total	120.76	8.78	118.05	8.32	0.98	2.76	P<0.01

(t-ratio at 0.05 and 0.01 Levels of Significance are 1.97 and 2.59 respectively)

The table no.1 reveals that the calculated t-ratio of simple knowledge of male and female primary school teacher trainees is 2.93 which is significant at both the levels. Therefore it can be interpreted that male and female primary school teacher trainees differ significantly on simple knowledge dimension of epistemological belief. While comparing the mean scores of male and female primary school teacher trainees on Simple Knowledge, male teacher trainees possess mature beliefs as compared to female teacher trainees.

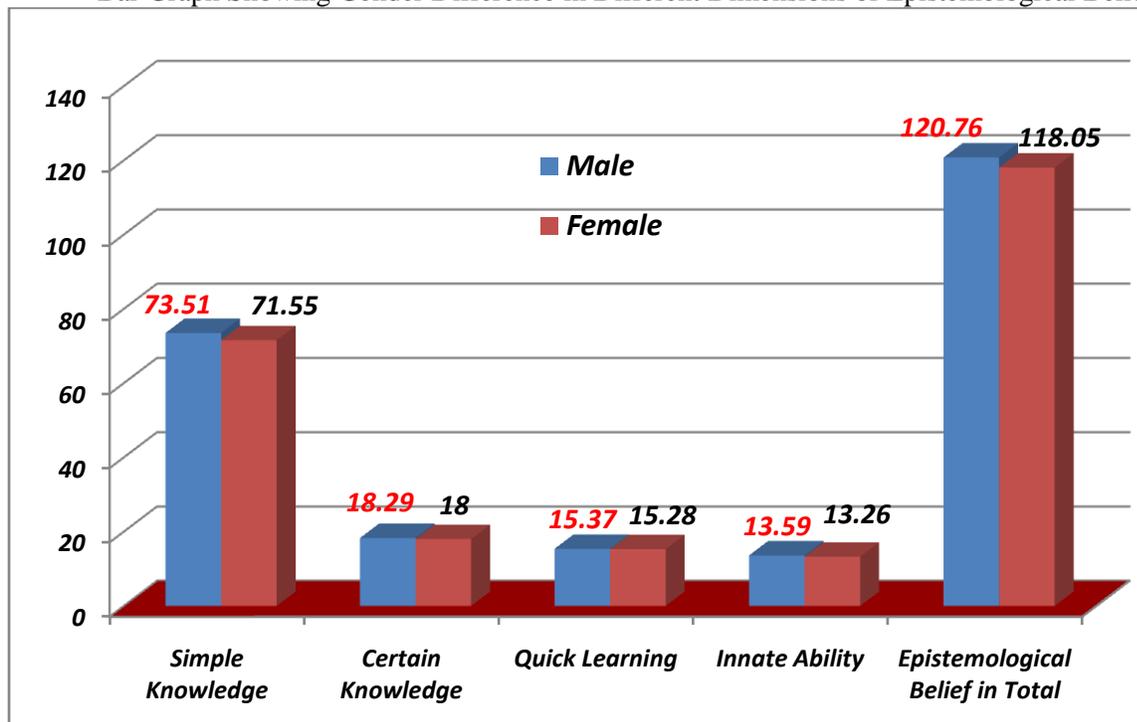
The table no.1 also shows that the calculated t-ratio on certain knowledge of male and female teacher trainees is 0.91 which is not significant at both the levels. This indicates that there exists no significant difference between male and female primary school teacher trainees on certain knowledge dimension of epistemological belief.

The table no.1 also reveals that calculated t-ratio on quick learning of male and female teacher trainees is 0.28 which is not significant at both the levels. This shows that male and female teacher trainees do not differ significantly on quick learning dimension of epistemological belief.

So for as innate ability is concerned, the calculated t-ratio of male and female teacher trainees is 1.06 which is not significant at both the levels. Therefore male and female teacher trainees do not differ significantly with each other on innate ability dimension of epistemological belief.

The above table also reveals that the calculated t-ratio of primary school teacher trainees on epistemological belief in total is 2.76 which is significant at both the levels. Therefore it can be interpreted that there exists a significant difference between male and female teacher trainees on epistemological belief in total. On comparing the mean scores of male and female primary school teacher trainees on epistemological belief in total, male teacher trainees possess more mature epistemological beliefs than female teacher trainees. It has been presented below:

Figure No.1
 Bar Graph Showing Gender Difference in Different Dimensions of Epistemological Belief



Results Pertaining to the Difference in Epistemological Beliefs of Primary School Teacher Trainees in terms of their Academic Achievement

In order to find out the differences in epistemological beliefs of three groups of primary school teacher trainees in terms of their academic achievement ANOVA (One way) has been used and significant F-ratio has been followed by post hoc procedure.

Results Pertaining to Differences in “Simple Knowledge Belief” among Primary School Teacher Trainees in terms of their Academic Achievement

To find out the differences in the “Simple Knowledge Belief” of three groups of primary school teacher in terms of their academic achievement, Analysis of Variance (one way ANOVA) has been used and the result has been shown in table no. 2

Table No. 2
 Summary of ANOVA with respect to Simple Knowledge

Source of Variation	Sum of Squares	df	Mean Square Variance	F-ratio	Significance
Between Groups	629.47	2	314.74	9.80	P<0.01
Within Groups	9539.31	297	32.12		
Total	10168.79	299			

(F-ratio at 0.05 and 0.01 levels of significance are 3.03 and 4.68 respectively)

Table no. 2 reveals the F-ratio of primary school teacher trainees with respect to Simple Knowledge. Since the calculated F-ratio (9.80) exceeds the table value at both the levels, there exists a significant difference between the groups on simple knowledge which has been determined by post hoc procedure in which all possible pairs of groups have been taken into account as shown in table no. 3

Table No. 3
 Post hoc Comparisons Between three Pairs of Groups on Simple Knowledge

S. No	Groups	N	M	SD	SEd	df	t-value	Significance
1	Group-A and Group-B	66	68.83	5.67	0.12	297	27.25	P<0.01
		153	73.10	5.67				
2	Group-B and Group-C	153	73.10	5.67	0.11	297	4.90	P<0.01
		81	73.64	5.67				
3	Group-A and Group-C	66	68.83	5.67	0.16	297	23.81	P<0.01
		81	73.64	5.67				

(t-ratio at 0.05 and 0.01 levels of significance are 1.97 and 2.59 respectively)

Table no. 3 reveals that the calculated t-ratio of teacher trainees of group-A and group-B i.e. first pair on simple knowledge dimension of epistemological belief is 27.25 which is significant at both. This indicates that the two groups differ significantly with each other on simple knowledge. While comparing their mean scores, the primary school teacher trainees of group-B more mature belief about simple knowledge than group-A.

The table no 3 also shows that the calculated t-ratio of group-B and group-C teacher trainees is 4.90 which exceeds the table value at both the levels. It reveals that the two groups differ significantly with each other on simple knowledge dimension of epistemological belief. On comparing the mean scores of these two groups, the teacher trainees of group-C possess more mature beliefs about simple knowledge than group-B teacher trainees.

The above table also depicts that the calculated t-ratio of group-A and group-C teacher trainees on simple knowledge is 23.81 which is significant at both the levels. Therefore it can be interpreted that the two groups differ significantly with regard to their beliefs about simple knowledge. While comparing their mean scores, teacher trainees of group-C have more sophisticated belief than group-A about simple knowledge.

It can be inferred from the above discussion that among the three groups of teacher trainees, the trainees of group-C possess most sophisticated epistemological beliefs on Simple Knowledge dimension and group-A teacher trainees have least sophisticated beliefs on Simple Knowledge while as group-B respondents possess more mature beliefs than group-A but less mature beliefs than group-C on the same dimension.

Results Pertaining to Differences in the Certain Knowledge Belief among Primary School Teacher Trainees in terms of their Academic Achievement

To know the differences in the “Certain Knowledge Belief” among three groups of primary school teacher in terms of their academic achievement, ANOVA (Way one) has been used and the results have been shown in table no. 4

Table No. 4
Summary of ANOVA with respect to Certain Knowledge

Source of Variation	Sum of Squares	df	Mean Square Variance	F-ratio	Significance
Between Groups	83.97	2	41.98	5.31	P<0.01
Within Groups	2349.58	297	7.91		
Total	2433.55	299			

(F-ratio at 0.05 and 0.01 levels of Significance are 3.03 and 4.68 respectively)

The above table no.4 shows that the calculated F-ratio (5.31) exceeds the table value at both the levels of significance. This reveals that there exists a significant difference among the group on “Certain Knowledge” which has been determined by post hoc procedure in which three pairs of groups have been compared separately and the results have been shown in table no.5

It can be inferred from table no.5 that the t-ratio of group-A and group-B teacher trainees is 10.00 which is significant at both the levels. Therefore it can be interpreted that teacher trainees of these two groups differ significantly with each other on certain knowledge dimension of epistemological belief. On comparing their mean scores, group-B respondents have more mature beliefs on Certain Knowledge as compared to group-A respondents.

Table No. 5
Post hoc Comparisons Between three Pairs of Groups on Certain Knowledge

S. No	Groups	N	M	SD	SEd	df	t-value	Significance
1	Group-A and Group-B	66	17.44	2.81	0.06	297	10.00	P<0.01
		153	18.04	2.81				
2	Group-B and Group-C	153	18.04	2.81	0.05	297	17.00	P<0.01
		81	18.93	2.81				
3	Group-A and Group-C	66	17.44	2.81	0.08	297	18.63	P<0.01
		81	18.93	2.81				

(t-ratio at 0.05 and 0.01 levels of significance are 1.97 and 2.59 respectively)

Table no. 5 also reveals that the t-ratio group-B and group-C teacher trainees on certain knowledge dimension of epistemological belief is 17.00 which exceeds table value at both the levels of significance. Thus the two groups show significant difference about certain knowledge while comparing their mean scores; group-C respondents possess more mature beliefs on certain knowledge dimension of epistemological belief than the respondents of group-B.

In the last pair of comparison, the t-ratio is 18.63 which exceeds the table value at both the levels. This indicates that the two groups differ significantly on certain knowledge dimension. While comparing their mean scores, group-C possess more sophisticated beliefs as than group-A.

It may be concluded that on “Certain Knowledge” dimension of epistemological belief, the teacher trainees of group-C possess most sophisticated epistemological beliefs and group-A teacher trainees have least sophisticated beliefs. However, group-B respondents possess more mature beliefs than the group-A respondents but less mature beliefs than group-C participants with regard to Certain Knowledge dimension of Epistemological Belief.

Results pertaining to Differences in the Quick Learning Belief among Primary School Teacher Trainees in terms of their Academic Achievement

To study the differences in the Quick Learning Belief among three groups of primary school teacher trainees in terms of their academic achievement, ANOVA (One way) has been used and the results have been shown in table 6

Table No. 6
Summary of ANOVA with respect to Quick Learning

Source of Variation	Sum of Squares	df	Mean Square Variance	F-ratio	Significance
Between Groups	36.98	2	18.49	2.13	NS
Within Groups	2578.66	297	8.68		
Total	2615.64	299			

(F-ratio at 0.05 and 0.01 levels of significance are 3.03 and 4.68 respectively)

The calculated F-ratio (2.13) is not significant at both the levels. This indicates that the difference between the mean scores is not significant and therefore, there is no need for further testing with the help of post hoc procedure.

Results pertaining to the Differences in the Innate Ability Belief among Primary School Teacher Trainees in terms of their Academic Achievement

To know the differences in the “Innate Ability Belief” of three groups of primary school teacher in terms of their academic achievement, one way ANOVA has been used and the results have been shown in table no. 7

Table No. 7
Summary of ANOVA with respect to Innate Ability

Source of Variation	Sum of Squares	df	Mean Square Variance	F-ratio	Significance
Between Groups	57.72	2	28.86	3.63	P<0.05
Within Groups	2360.86	297	7.95		
Total	2418.57	299			

(F-ratio at 0.05 and 0.01 levels of significance are 3.03 and 4.68 respectively)

The calculated F-ratio (3.63) exceeds the table value (3.03) at 0.05 level of significance. This reveals that there exists a significant difference between the groups on innate ability at 0.05 level of significance which has been determined with the help of post hoc procedure as shown in table no. 8 in which all possible comparisons have been taken into account.

Table No. 8
Post hoc Comparisons Between three Pairs of Groups on Innate Ability

S. No	Groups	N	M	SD	SEd	df	t-value	Significance
1	Group-A and Group-B	66	12.59	2.82	0.06	297	16.50	P<0.01
		153	13.58	2.82				
2	Group-B and Group-C	153	13.58	2.82	0.05	297	3.00	P<0.01
		81	13.73	2.82				
3	Group-A and Group-C	66	12.59	2.82	0.08	297	14.25	P<0.01
		81	13.73	2.82				

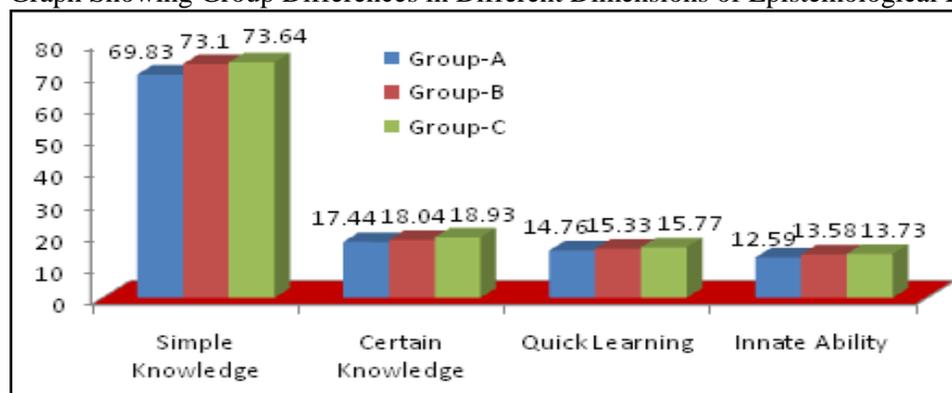
(Table value at 0.05 and 0.01 levels of significance are 1.97 and 2.59 respectively)

On perusing table no. 3.19 it is inferred that the calculated t-ratio of all the three pairs of groups exceeds the critical t-value at both the levels. Thus there exists a significant difference between the groups in each pair of comparisons. While comparing the mean scores of groups in first pair, group-B respondents possess comparatively more mature beliefs on innate ability than group-A respondents. In the second pair of comparison, group-C respondents have more mature beliefs as compared to group-B respondents and in the last comparison the respondents of group-C have more sophisticated beliefs than group-A participants with regard to innate ability.

It may be reasoned out that on innate ability dimension of epistemological belief, the teacher trainees of group-C possess most sophisticated epistemological beliefs and group-A teacher trainees have least sophisticated beliefs. But the teacher trainees of group-B possess more mature beliefs than group-A but less mature than the teacher trainees of group-C with regard to innate ability dimension of epistemological belief.

Figure No. 2

Bar Graph Showing Group Differences in Different Dimensions of Epistemological Belief



V. Main Findings

Differences in epistemological beliefs in terms of gender

- ❖ There exists a significant difference on simple knowledge among male and female primary school teacher trainees. Male teacher trainees possess more mature beliefs as compared to female teacher trainees. The reason may be that the female primary school teacher trainees believe that knowledge is a series of unrelated facts on the other hand male teacher trainees may believe that knowledge consists of interrelated ideas and facts.
- ❖ Male and female primary school teacher trainees do not differ significantly on certain knowledge dimension of epistemological belief. Both male and female teacher trainees may be of the opinion that truth is ever changing, each day new ideas or scientific knowledge emerges and what is true today, tomorrow that may be delusive.
- ❖ There exists no significant difference among male and female teacher trainees on quick learning. Both may perceive that learning process is something that is gradual.
- ❖ No significant difference was found among male and female teacher trainees on innate ability. Both may believe that ability to learn is not fixed at birth.
- ❖ So far as epistemological belief in total is concerned, male and female primary school teacher trainees differ significantly. Male teacher trainees possess more mature epistemological beliefs as compared to female teacher trainees. It may be because of partial attitude of parents and they may be more painful towards the studies of their sons than daughters.

Difference in epistemological beliefs in terms of academic achievement

- ❖ So far as the difference in epistemological in terms of academic achievement is concerned, significant differences were found among teacher trainees on simple knowledge dimension of epistemological belief. The teacher trainees with high academic achievement possess more sophisticated epistemological beliefs on simple knowledge than the teacher trainees with low academic achievement. It may be because that the teacher trainees with high academic achievement believe that knowledge consists of interrelated ideas and they try to understand the information and concepts and make connections among different concepts and ideas while as the participants with low academic achievement see knowledge as a series of unrelated facts. They do not attempt to link ideas together and keep each concept isolated.
- ❖ A significant difference was found among teacher trainees on certain knowledge dimension of epistemological belief in terms of their academic achievement. The teacher trainees with high academic possess more mature beliefs about certain knowledge dimension than teacher trainees with low academic achievement. It may be because the respondents with high academic achievement believe that knowledge is changing. It is evolving and there is no absolute certainty. However, the respondents with low academic achievement believe that knowledge is absolute, certain and never changing.
- ❖ There exists no significant difference among primary school teacher trainees on quick learning in terms of academic achievement of teacher trainees. All teacher trainees may be of the opinion that learning is a painstaking process and show persistence with the task.
- ❖ A significant difference was found among teacher trainees on innate ability dimension of epistemological belief in terms of their academic achievement. It was observed that high achievers possess most mature epistemological beliefs than low achievers. It may be because the high achieving respondents may be of the opinion that ability to learn is not fixed at birth rather it improves with experience and over time. They may be thinking that learning is always evolving and it depends on our efforts, surroundings, the people around us and the things we

come into contact with every day. On the other hand teacher trainees with low achievement may believe that ability to learn is innate and fixed. They do not make much efforts to learn because they believe that their success is related to their lack of ability.(Schommer-1993)

VI. Suggestions for further research

The following suggestions for future research that could be conducted by prospective researchers are:

- ❖ The present study was conducted on pre-service primary school teacher trainees, a similar study can be conducted on in-service and B. Ed. Teacher trainees.
- ❖ In this study epistemological beliefs of respondents were studied with respect to gender and academic achievement. The further study can be conducted with respect to socio-economic status of family, location, grade level of respondents and level of education of parents.
- ❖ In this study, data were collected by using questionnaires only. In further study, qualitative data can be gathered by interviewing the respondents.
- ❖ The data was collected from three districts of Jammu and Kashmir namely district Anantnag, Budgam, and Pulwama. A similar study can be conducted in other districts of Jammu and Kashmir and other parts of India.

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