Epistemological Beliefs: Its Relationship with Learning Styles, Learning Approaches, and Achievement

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Abstract - *The study aimed to assess the relationship among epistemological beliefs, learning styles, learning approaches and achievement of the University students. One hundred University students participated and responded the Epistemological Belief Questionnaires (EVQ) and Learning Style Inventory (LSI), and MANOVA used to find out the relationship among the variables. It resulted that ability has significant relationship with learning styles and learning approaches, and there was significant relationship between learning styles and interest, but no significant relationship among learning approaches, interest, and achievements of students. It was also resulted that there existed no significant relationship among the epistemological beliefs, learning styles, learning approaches and achievement of the University students. Quick learning, slow learning, traditional approach, constructivist approach, and achievement have no significant relationship with ability. Similarly, interest, previous knowledge, effort, IQ, environment have no significant relationship with quick learning, slow learning, traditional approach, constructivist approach and achievement of the university students.*

Keywords: *achievement; epistemological beliefs; learning approaches; learning styles*

INTRODUCTION

An epistemological belief is a psycho-philosophical concept related with learner's belief regarding to their acquisition of knowledge and teaching learning process. There are five dimensions of epistemological beliefs, these are simple knowledge, certain knowledge, authority knowledge, quick learning, or fixed ability [1]. In fact, learners' ability, interest feelings, and perception, motivation and learning tasks are their epistemological beliefs [2]. If an individual thinks; knowledge is simple, then it may be easier to acquire. If he or she thinks knowledge is abstract; obviously, it will take time to acquire, and this belief could be created problems for the acquisition of knowledge. Epistemological beliefs are the opinion of the individual regarding teaching learning process [3]. Few students think; knowledge can be acquired by pace, and some students think; quick learning is better than slow learning and few acquisition of knowledge depends on learners' ability [4]. Students' epistemological belief and achievement are interlinked and related with their gender, attitude, source of knowledge, justification of knowledge, and development of knowledge [5]. Learners' beliefs have several dimensions, one is the learner's ability; second is learner's effort and third is existence of knowledge, and those influence teaching learning process and directly affects the achievement [6]. Turkish researchers found that epistemological belief has three factors, such as quick learning, innate ability, and certain knowledge [7]. Similarly, literature found that learners' learning style depends on their ability and motivation, in fact, learning styles relate with learner's meta-cognition and the epistemological beliefs, which are directly, affect the modes of teaching [8]. However, the epistemological beliefs directly influence the attitude of learners towards teaching learning process [9], and epistemological beliefs are the predicator of self efficacy of learning and anxiety [10],[11].

Learning Style of University Students

At the university level, mature student (e.g. age range 23-50) are coming and attending the classes, but all students have no same attitude towards the teaching learning process. However, most of them are selective regarding the methods of instruction, teachers' depth of knowledge and classroom management [12]. It is found that few students prefer lecture method because information provided by the teacher is in a single way communication. Similarly, some students prefer visual aids during instruction [13]. Many researchers found

that students prefer posture, physical model, diagram, and graphs during curriculum transaction. Not only was that but also students prefer ICT in education & some like textbooks reading during instruction [14]. It is found at the university students prefer self-learning rather than classroom learning [15]. Some students do not like to attend theory class and some are expecting more from the textbook and think to listen to a good lecture or speech is better than study materials [16].

Significance of the Study

The recent study aimed to investigate the impact of epistemological belief, learning style on the achievement of university students. Literature found that there are two kinds of belief; one is that learning depends on the effort and second is learning depends on ability [1][21]. Male students have more epistemological belief than the female students [17]. However, pre service teachers' epistemological belief directly influences achievement [18]. Similarly, high school students' scientific epistemological belief motivates in learning science and their relationship found a positive relationship [10]. Literature found that epistemological belief determined the relationship between meta-cognitive strategies in both formal and educational programs [12]. Epistemological beliefs are the significant predictors of self-efficacy in the learning biology [19]. Literature found epistemological belief, age, gender, ethnicity were directly related to achievement [11]. The relationship between students' gender and grade levels in terms of their epistemological belief and attitude found positive [9]. Epistemological beliefs don't occur in isolation but have an internal coherence [17]. However, epistemological beliefs influence educational aims, principle, and teaching learning methodology [20] where as there was a negative correlation exists between epistemological beliefs, teaching anxiety in mathematics [4]. In a study it was found that there was a positive relation between epistemological belief, simple knowledge, weak learning and learning strategies and it has a positive relationship with academic achievement [19]. There was a conflict between the beliefs of teachers and classroom practice as a result belief is not fully affected the achievement of the learner [22]. A meta-connection contributed to modify learning behavior than epistemological belief [23]. The status of research in teaching learning in relation to philosophical epistemological issues found that epistemological belief is a causal relationship between students' knowing, understanding issues[17]. Some independent variables like scientific thinking, epistemological belief leads to an increased in higher critical thinking [24]. Fifteen studies emphasized on learning style but few studies suggested students' epistemological belief influences achievement and learning style.

OBJECTIVES

This study aimed to determine the relationship between epistemological beliefs and learning style of university students; examine the relationship between epistemological beliefs and learning approaches of university students; test the relationship between epistemological beliefs and achievements of university learners; and test the relationship among epistemological beliefs, learning styles, learning approaches and achievement of the university learners.

METHODS

Participants

India University students were the population of the study, and out of them, ten students of Bengali Department, Ten students of Commerce Department, twenty students of Physic Department, and forty students of Education Department, and twenty Political Science students were randomly selected.

Design of the study

A descriptive research, studied the existing status, and compared the relationship between and among the variables. In this study, epistemological beliefs, learning approaches, and learning styles were independent variables where achievement was dependant variable. This descriptive design was used to investigate the existing status to assess the effect of independent variables on dependant variables. After all, the study provided the suggestions on how to improve the achievement through learners' epistemological beliefs via learning approaches and learning style. To know the status of learner achievement with relation to their epistemological beliefs and learning approaches and learning style; the researchers have administrated Epistemological Belief Questionnaires (EVQ) and Learning Style Inventory (LSI) among the subjects. Here, one hundred university students were the participants responded these three scales and provided their valuable responses.

Tools Used

For the present study, the researchers have used three measuring tools. These were:

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Epistemological Beliefs Questionnaires (EBQ)

Epistemological beliefs questionnaires EBQ) was a five point rating scale consisted with thirty statement form sentences. Each item has five options like strongly agree (SA), Agree (A), Undecided (UD), and Disagree (DA), and strongly Disagree (SD). Each option has scored 4,3,0, 2 & 1 for strongly Agree (SA), Agree, undecided, Disagree and strongly disagree respectively.

The Epistemological beliefs questionnaires have three basic areas. The total scale has thirty items belief all the items were equally distributed among the subject areas. Belief related to learning depends on the ability (i.e. Item No 1,7,13,19, & 25); learning depends on interest (item No 2,8,14,20 & 26); learning depends on previous knowledge (item No 3,9,15,21 & 27); learning depends on effort (Item no 4,10,16,22 & 28); learning depends on IQ (item no 5,11,17,23 & 29) ; and learning depends on the environment (item no 6,12,18,24 & 30). The validity of each item was ranged from .69 to .78.

Learning Style Inventory (LSI)

Learning style inventory (LSI) was a three point rating scale having twenty-four items. All the items were statement forms having three options each and each subject has selected one option out of three. These three options were seldom, sometimes, and often weighted by one, two & three respectively. The goal of the inventory was to assess the learners' learning style.

Achievement Check List (ACL)

This Achievement Check List was one personal data sheet where participants filled their obtained mark, maximum mark, and name of the department, year of enrollment and year of semester examination. This checklist mostly used to know the learners' maximum mark and obtained mark of the recent session.

Procedure of Data Collection

The researchers randomly selected five departments (i.e. Bengali, Physics, Pol. Science, Education, and Commerce) of an Indian University, and with the concern of the head of the departments. All the participants were advised on how to response the items of EBQ. The learners responded EBQ by putting 'x' to the appropriate option and marked '0' for the LSI. After administering the EBQ, the LSI questionnaires were distributed to the participants and the total process took ten and seven minutes to the response both EBQ and LSI respectively.

RESULT

Table 1 reveals the pellais multivariate analysis (MANOVA), F (df=7 2.045 <.05) was significant at .05 level. Similarly Wilks F (df 7 .795<.05) was significant at 0.05 level. Therefore, there existed significant relationship between the epistemological beliefs variable and learning approaches of University student. Table 2 was the actual listing of canonical correlation. This is a strategy to combine the epistemological beliefs variables with the latent factors like learning approaches. The canonical correlation .452 was related to maximize the association between two sets of variables. The square correlation .205 is the percentage of variability in all the dependant variables. Table 3 reveals the regression analysis among the epistemological beliefs and learning style. Ability and interest variable have significant relationship with learning style. The adjusted R square ability and interest of 0.91 and 0.92 with F value 11.02 and 11.07 respectively were significant. Hence, there existed significant relationship between epistemological beliefs and learning style (F=6.65) of university student. Table 4 was the actual listing of canonical correlation. This is a strategy to combine the epistemological beliefs variables with the latent factors like learning approaches. The first canonical correlation .563 is largest because it was related to maximize the association between two sets of variables.

Table 1. Multivariate Analysis of Variance for epistemological beliefs and learning style of university students.

Test Name	Value	Exact F	df	Sig. of F
Pillais	.20457	3.38004	7.00	.003
Hotellings	.25718			
Wilks	.79543			
Roys	.20457			

Table 2. Eigenvalues and Canonical Correlations for epistemological beliefs and learning style of university students.

Root No.	Eigenvalue	Pct.	Cum. Pct.	Canon Cor.	Sq. Cor
1	.257	100.000	100.000	.452	.205

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Table 3. Regression Univariate F-tests for epistemological beliefs and learning style of university students.

Variable	Sq. Mul. R	Adj. R-sq.	Hypoth. MS	Error MS	F	P
Ability	.10114	.09197	77.44000	7.02245	11.02749	.001
Interest	.10153	.09236	98.01000	8.85000	11.07458	.001
Previous knowledge	.01662	.00659	54.76000	33.05306	1.65673	.201
Effort	.00048	.00000	.49000	10.31122	.04752	.828
IQ	.00524	.00000	16.81000	32.59367	.51574	.474
Environment	.01171	.00163	15.21000	13.09898	1.16116	.284
Learning Style	.06360	.05404	166.41000	25.00102	6.65613	.011

Table 4. Standardized canonical coefficients for variables

Variable	**Function No. 1**
Ability	.563
Interest	.344
Previous knowledge	.067
Effort	-.004
IQ	.109
Environment	-.240
Learning Style	-.549

Table 5 Regression analyses between variables of epistemological beliefs and learning style of university students.

	B	Beta	Std. Err.	t-Value	Sig.
Ability: *QL/SL*	1.76000	.31803	.530	3.321	.001
Interest: *Ql/SL*	1.98000	.31864	.595	3.32	.001
Previous Knowledge: *QL/SL*	-1.48000	-.12894	1.150	-1.287	.201
Effort: *QL/SL*	.14000	.02202	.642	.218	.828
IQ: *QL/SL*	.82000	.07235	1.142	.718	.474
Environment: *QL/SL*	-.78000	-.10821	.724	-1.078	.284
Learning style: *QL/SL*	-2.58000	-.25219	1.000	2.580	- .011

**QL=Quick Learning *SL=Slow Learning * IQ=Intelligent Quotient*

Table 6. Multivariate Analysis of Variance for epistemological belief and learning approaches

Test Name	Value	Exact F	Hypoth. DF	Error DF	Sig. of F
Pillais	.17896	2.86473	7.00	92.00	.009
Hotellings	.21797				
Wilks	.82104				
Roys	.17896				

Note: F statistics are exact.

Table 7. Eigen values and Canonical Correlations of epistemological belief and learning approaches

Root No.	Eigenvalue	Pct.	Cum. Pct.	Canon Cor.	Sq. Cor
1	.218	100.000	100.000	.423	.179

Table 5 shows the regression analysis between learning style (quick learning and slow learning) with ability. The model ability β (.318 p<.05) and t – value (3.32 < .05) has significant relationship with learning style. Similarly, the relations between learning style with interest has (β = 3.18 t= 3.32 p<.05 significant). The previous knowledge and learning style model (β = -.128 t=-1.28 p>.05) were not significant. The co-variate like learning style was not related with effort, IQ and environment like epistemological beliefs. Similarly, environment is negatively related with learning style. The epistemological beliefs like environment have no significant relationship with learning style.

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Table 8. Univariate F-tests of epistemological belief and learning approaches

Variable	Sq.Mul.R	Adj.R-sq.	Hypoth. MS	Error MS	F	P
Ability	.10114	.09197	77.44000	7.02245	11.02749	.001
Interest	.10153	.09236	98.01000	8.85000	11.07458	.001
Previous knowledge	.01662	.00659	54.76000	33.05306	1.65673	.201
Effort	.00048	.00000	.49000	10.31122	.04752	.828
IQ	.00524	.00000	16.81000	32.59367	.51574	.474
Environment	.01171	.00163	15.21000	13.09898	1.16116	.284

Table 9. Standardized canonical coefficients for dependent variables

Variable	Function No. 1
Ability	.596
Interest	.426
Previous knowledge	-.351
Effort	-.053
IQ	.220
Environment	-.284
Learning Approach	-.088

Table 10. Regression analysis for epistemological belief and learning approaches

	B	**Beta**	**Std. Err.**	**t-Value**	**Sig. of t**
Ability: *TA/CA*	1.76000	.31803	.530	3.321	.001
Interest: *TA/CA*	1.98000	.31864	.595	3.328	.001
Previous Knowledge: *TA/CA*	-1.48000	-.12894	1.150	-1.287	.201
Effort: *TA/CA*	.14000	.02202	.642	.218	.828
IQ: *TA/CA*	.82000	.07235	1.142	.718	.474
Environment: *TA/CA*	.78000	-.10821	.724	-1.078	.284
Learning approaches: *TA/CA*	-.48000	-.07745	.624	-.769	.444

**QL=Quick Learning *SL=Slow Learning * IQ=Intelligent Quotient*

Table 6 reveals Wilk's MANOVA F (df =7 0.821 <.05) was significant at 0.05 level. So, there existed significant relationship among the epistemological beliefs variable and learning approaches of University students. Table 7 was the actual listing of canonical correlation. Eigenvalues and Canonical Correlation strategy helps to combine the epistemological beliefs variables with the latent factors like learning approaches. The first canonical correlation .423 was related to maximize the association between two sets of variables. The square correlation .179 is the percentage of variability in all the dependant variables. Table 8 reveals the regression analysis among the epistemological beliefs and learning approaches. Ability and interest variable have significant relationship with learning approaches. The adjusted R square ability and interest of 0.91 and 0.92 with F value 11.02 and 11.07 respectively were significant. Therefore, there existed significant relationship between epistemological beliefs and learning style (F=.59) of university student. Table 9 was the actual listing of canonical correlation. This is a strategy to combine the epistemological beliefs variables with the latent factors like learning approaches. The first canonical correlation .596 is largest because it was related to maximize the association between two sets of variables.

Table 10 shows the regression analysis between learning approaches (traditional approach and constructivist approach) with ability. The model ability β (.318 p<.05) and t – value (3.32 < .05) has significant relationship with learning approach. Similarly, the relations between learning approach with interest has (β = 3.18 t= 3.32 p<.05 significant). The previous knowledge and learning approach model (β = -.128 t=-1.28 p>.05) were not significant. The co-variate, learning style was not related with effort, IQ and environment like epistemological beliefs. Similarly, environment is negatively related with learning approaches. The epistemological beliefs like environment have no significant relationship with learning approaches.

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Table 11. Multivariate Analysis of Variance for epistemological belief and achievements of university learners

Test Name	Value	Exact F	Hypoth. DF	Error DF	Sig. of F
Pillais	.07433	1.24470	6.00	93.00	.291
Hotellings	.08030				
Wilks	.92567				
Roys	.07433				

Table 12. Eigen values and Canonical Correlations for epistemological belief and achievements of university learners

Root No.	Eigen value	Pct.	Cum. Pct.	Canon Cor.	Sq. Cor
1	.080	100.000	100.000	.273	.074

Table 13. Univariate F-test for epistemological belief and achievements of university learners

Variable	Sq. Mul.	R Adj. R-sq.	Hypoth. MS	Error MS	F	P
Ability	.00001	.00000	.00768	7.81257	.00098	.975
Interest	.02238	.01240	21.60174	9.62968	2.24325	.137
Previous Knowledge	.02682	.01689	88.33269	32.71048	2.70044	.104
Effort	.02066	.01067	20.88817	10.10308	2.06750	.154
IQ	.00613	.00000	19.67559	32.56443	.60421	.439
Environment	.00059	.00000	.76063	13.24642	.05742	.811

Table 14. Standardized canonical coefficients for dependent variables

Variable	**Function No. 1**
Ability	-.174
Interest	.659
Previous knowledge	-.530
Effort	-.508
IQ	-.199
Environment	.035

Table 15. Regression analysis for epistemological belief and achievements of university learners

	B	Beta	Std. Err.	t-Value	Sig. of t
Ability: Achievement	.00132	.00317	.042	.031	.975
Interest : Achievement	.07000	.14959	.047	1.498	.137
Previous Knowledge: Achievement	.14155	.16376	.086	1.643	.104
Effort: Achievement	.06883	.14374	.048	1.438	.154
IQ: Achievement	.06680	.07828	.086	.777	.439
Environment: TA/CA	.01313	.02420	.055	.240	.811

Table 11 reveals the pellais multivariate analysis (MANOVA) F (df 7 0.74 p>.05) was not significant at .05 level. Similarly wilks MANOVA (df 7 .92 p>.05) was not significant at 0.05 level; So, there existed no significant relationship among the epistemological beliefs variables and achievement of University student. Table 12 was the actual listing of canonical correlation. This is a strategy to combine the epistemological beliefs variables with the latent factors like achievement. The canonical correlation .273 was largest because it was related to maximize the association between two sets of variables. The square correlation .074 was the percentage of variability in all the dependant variables. Table 13 reveals the regression analysis among the epistemological beliefs and achievement. Ability variable has no significant relationship with achievement. The adjusted R square ability and interest of 0.00 with F value .00 was not significant. Therefore, there existed no significant relationship between epistemological beliefs and achievement (F=.057) of university student. Table 14 was the actual listing of canonical correlation. This is a strategy to combine the epistemological beliefs variables with the latent factors like learning

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approaches. The second canonical correlation .659 was largest because it was related to maximize the association between two sets of variables.

Table 15 shows the regression analysis between achievements with ability. The model ability β (.003 p>.05) and t – value (.031 > .05) has no significant relationship with achievement. Similarly, the relations between achievement with interest has (β = .149 t= 1.49 p>.05)was not significant. The previous knowledge and achievement model (β = .163 t=1.63 p>.05) were not significant. Here, the co-variate achievement was not related with effort, IQ and environment like epistemological beliefs. Similarly, environment is not related with achievement. The epistemological beliefs like ability, interest, previous knowledge, effort, IQ and environment have no significant relationship with achievement.

Table 16. Multivariate Analysis of Variance for epistemological belief learning styles, learning approaches and achievement of the learners

Test Name	Value	Exact F	Hypoth. DF	Error DF	Sig. of F
Pillais	.21382	2.71968	9.00	90.00	.008
Hotellings	.27197				
Wilks	.78618				
Roys	.21382				

Table 17 Eigen values and Canonical Correlations for epistemological belief learning styles, learning approaches and achievement of the learners

Root No.	Eigen value	Pct.	Cum. Pct.	Canon Cor.	Sq. Cor
1	.272	100.000	100.000	.462	.214

Table 18. Univariate F-tests for epistemological belief learning styles, learning approaches and achievement of the learners

Variable	**Sq. Mul. R**	**Adj. R-sq.**	**Hypoth. MS**	**Error MS**	**F**	**P**
Ability	.10114	.09197	77.44000	7.02245	11.02749	.001
Interest	.10153	.09236	98.01000	8.85000	11.07458	.001
Previous Knowledge	.01662	.00659	54.76000	33.05306	1.65673	.201
Effort	.00048	.00000	.49000	10.31122	.04752	.828
IQ	.00524	.00000	16.81000	32.59367	.51574	.474
Environment	.01171	.00163	15.21000	13.09898	1.16116	.284
Learning Style	.06360	.05404	166.41000	25.00102	6.65613	.011
Learning Approach	.00600	.00000	5.76000	9.73878	.59145	.444
Achievement	.00311	.00000	13.69000	44.84918	.30525	.582

Table 19. Standardized canonical coefficients for dependent variables

Variable	**Function No. 1**
Ability	.534
Interest	.373
Previous knowledge	.009
Effort	-.036
IQ	.120
Environment	-.236
Learning style	-.499
Learning Approach	-.050
Achievement	.208

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Table 20. Regression analysis for epistemological belief learning styles, learning approaches and achievement of the learners

	B	Beta	Std. Err.	t-Value	Sig. of t
Ability					
LSS1	1.76000	.31803	.530	3.321	.001
LSS2	.00000	.00000	.000		
Interest					
LSS1	1.98000	.31864	.595	3.328	.001
LSS2	.00000	.00000	.000		
Previous Knowledge					
LSS1	-1.48000	-.12894	1.150	-1.287	.201
LSS2	.00000	.00000	.000		
Effort					
LSS1	. 14000	.02202	.642	.218	.828
LSS2	.00000	.00000	.000		
IQ					
LSS1	.82000	.07235	1.142	.718	.474
LSS2	.00000	.00000	.000		
Environment					
LSS1	-.78000	-.10821	.724	-1.078	.284
LSS2	.00000	.00000	.000		
Learning Style					
LSS1	-2.58000	-.25219	1.000	-2.580	.011
LSS2	.00000	.00000	.000		
Learning approaches					
LSS1	-.48000	-.07745	.624	-.769	.444
LSS2	.00000	.00000	.000		
Achievement					
LSS1	.74000	.05572	1.339	-.552	.582
LSS2	.00000	.00000	.000		

*LA-Learning Approach *LS=Learning Style.

Table 16 reveals the pellais multi various analysis (MANOVA) (df 9 .213 p<.05) was significant at .05 level. Similarly, Wilks MANOVA (df 9 .786 p<.05) was significant at 0.05 level; So, there existed significant relationship among the epistemological beliefs variable, learning styles and learning approaches of University students. Table 17 was the actual listing of canonical correlation. This is a strategy to combine the epistemological beliefs variables with the latent factors like learning approaches. The first canonical correlation .462 was largest because it was related to maximize the association between two sets of variables. The square correlation .214 was the percentage of variability in all the dependant variables. Table 18 reveals the regression analysis among the epistemological beliefs and learning style. Ability and interest variable have significant relationship with learning style. The adjusted R square ability and interest of 0.91 and 0.92 with F value 11.02 and 11.07 respectively were significant. Table 19 Was the actual listing of canonical correlation. This is a strategy to combine the epistemological beliefs variables with the latent factors like learning approaches. The first canonical correlation .534 was largest because it was related to maximize the association between two sets of variables.

Table 20 shows the regression analysis between learning style (quick learning and slow learning), learning approaches (traditional approach and constructivist approach), and achievement with ability. The model ability β (.318 p<.05) and t – value (3.32 < .05) has significant relationship with learning style. The model ability β (.003 p>.05) and t – value (.031 > .05) has no significant relationship with learning approach. The model ability β (.003 p>.05) and t – value (.031 > .05) has no significant relationship with achievement. Similarly, the relations between learning style with interest has (β = 3.18 t= 3.32 p<.05 significant. But, the relations between learning approach with interest has (β = .149 t= 1.49 p>.05) was not significant. Similarly, the relations between achievement with interest has (β = .149 t= 1.49 p>.05) was not significant. The previous knowledge and learning style model (β = .128 t= 1.28 p>.05), and learning approach

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model (β = .163 t=1.63 p>.05) were not significant. Similarly, the previous knowledge and achievement model (β = .163 t=1.63 p>.05) were not significant. The co-variate like learning style, learning approaches and achievement were not related with effort, IQ and environment like epistemological beliefs. Similarly, environment was negatively related with learning style. The epistemological beliefs like environment have no significant relationship with learning style.

DISCUSSION

Ability and interest has the significant relationship with learning style whereas environment factor has no significant relationship with learning style of university students. Out of two learning styles (i.e. quick learning and slow learning); Quick learning of the learners was significantly related with ability than that of slow learning style. Similarly, quick learning has significant relationship with interest. Previous knowledge, effort, IQ and environment have no significant relationship with learning style (quick learning than slow learning). It was found that epistemological belief has no significant relationship with the learning styles of university students because all the epistemological beliefs were philosophical and psychological traits, and those have no such impact on learning style [4],[10],[20], but few researchers were not corroborated the result but opposed [7],[9],[6]. It was also found that epistemological beliefs have significant relationship with learning approaches. Ability and interest variables have significant relationship with learning approaches. Out of two learning approaches (i.e. traditional and constructivist approach), traditional approach was significantly related with ability whereas constructivist approach was more related with interest. Traditional approaches were more related with previous knowledge, but constructivist approach was more related with effort of the learners. Contrast to this point, traditional approach was more related with IQ and constructivist approach was highly related with environment. Similarly, it was found that epistemological beliefs have no significant relationship with learning approaches [8],[19],[11] but literature found that few researchers' findings were not supported to this result [24],[25],[17],[23]. Ability variable has no significant relationship with achievement. Interest, previous knowledge, effort, IQ, and environment have no significant relationship with achievement of the university students. Here, achievement was not directly related with interest, previous knowledge, effort, IQ and environment. With reference to objective-III, it was found that epistemological beliefs have no relationship with achievement of university students [10],[2],[15],[25]. Ability has significant relationship with learning styles and learning approaches but it has no significant relationship with achievement. Similarly, the relations between learning styles with interest have significant. However, the relation between learning approach with interest was not significant. Similarly, the relationship between achievements with interest was not significant. There existed no significant relationship among the epistemological belief, learning style, learning approaches and achievement of the university learners. Quick learning, slow learning, traditional approach, constructivist approach and achievement have no significant relationship with ability. Similarly, interest, previous knowledge, effort, IQ, environment have no significant relationship with quick learning, slow learning, traditional approach, constructivist approach and achievement of the university students. Similar there was no significant relationship between epistemological beliefs, learning style, learning approaches and academic achievement of university students and this result was corroborated with other researchers **[**26],[6], however, few researchers findings were not similar with the recent study[3],[13],[18].

CONCLUSION

Epistemological belief is a philosophical as well as psychological trait among the learners. There are six major factors or variables were undertaken, out of different epistemological beliefs. These were ability, interest, effort, previous knowledge, IQ, and environment. These variables were independent variables and resulted that epistemological beliefs have no significant relation with other variables. Nevertheless, literature found that there was a significant relationship between epistemological belief and other dependent variables like achievement, and attitude [1]. In his study, the author found that epistemological beliefs were significantly related with other dependant variables. In the recent study, only previous knowledge has a significant relationship with other dependent variables. Overall, other epistemological beliefs have no significant relation with achievement. Similarly, learning approaches have no significant relation to all the epistemological belief. Academic achievement was a dependant variable and it was significantly related with learning approaches but no relationship with learning and epistemological belief. Overall the researcher has concluded that epistemological beliefs have no significant relationship

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with learning style, learning approaches and achievement of university students.

However, the researchers have suggested the following educational implications and recommended to conduct further research. Epistemological beliefs are the philosophical and psychological tendency of the individual. Individual beliefs like ability, interest, effort, previous knowledge, IQ, Environment are not equal among the world of community and epistemological beliefs have no significant relationship with learning style. That's why learners should not believe in ability, interest, previous knowledge like variables related to learning style. They should maintain own space and strategy to achieve the knowledge. No special learning approaches linked with epistemological belief. That's why learners should believe on the approaches but should not try to believe on epistemological beliefs. Achievement is a dependant variable and learner should follow any method, any strategy to acquire the knowledge. They should apply their own space and strategy to increase their achievement. Effect of epistemological beliefs on the gender of the students needs further investigation. Academic achievement, learning styles, and learning approaches are co-related, but no study has been conducted yet, in relations to creativity, personality, epistemological beliefs, and achievement. Similarly, no study has been conducted to find out the relationship between academic achievement, learning styles, and learning approaches need further research.

REFERENCES

[1] Schommer, A.M.(2004). Explaining the Epistemological Belief System: Introducing the Embedded Systemic Model and Coordinated Research Approach. Educational Psychologist, 39(1),19-29.

[2] Kingsley, P.(2011). The Socratic Dialogue in Asynchronous Online Discussions: Is Constructivism Redundant? Campus-Wide Information Systems, 28(5), 320-330.

[3] Fortney, B. S.(2009). This study The Impact of Japanese Lesson Study on Preservice Teacher Belief Structures about Teaching and Learning Science. ProQuest LLC, Ph.D. Dissertation,The University of Texas at Austin.

[4] Ertekin, E.; Dilmac, B.; Yazici, E.; Peker, M.(2010). The purpose of this studyThe Relationship between Epistemological Beliefs and Teaching Anxiety in Mathematics. Educational Research and Reviews, 5(10),631-636.

[5] Conley, A. M.; Pintrich, P. R.; Vekiri, I.; Harrison, D.(2004). Changes in Epistemological Beliefs in Elementary Science Students. Contemporary Educational Psychology, 29(2),186-204.

[6] Tumakaya, S.(2012). The Investigation of the Epistemological Beliefs of University Students According to Gender, Grade, Fields of Study, Academic Success and Their Learning Styles. Educational Sciences: Theory and Practice, 12(1),88-95.

[7] Cam, A.; Topcu, M. S.; Sulun, Y.; Guven, G.; Arabacioglu, S.(2012).The purpose of this study Translation and Validation of the Epistemic Belief Inventory with Turkish Pre-Service Teachers. Educational Research and Evaluation, 18(5), 441-458.

[8] Lin, T. ; Deng, F. ; Chai, C. S. ; Tsai, C.(2013). This study High School Students' Scientific Epistemological Beliefs, Motivation in Learning Science, and Their Relationships: A Comparative Study within the Chinese Culture. International Journal of Educational Development, 33(1), 37-47

[9] Onen, A. S. (2011). Investigation of Students' Epistemological Beliefs and Attitudes towards Studying. Hacettepe University Journal of Education, 40 (300-309).

[10] Koksal, M. S. (2011). Epistemological Predictors of "Self Efficacy on Learning Biology" and "Test Anxiety Related to Evaluation of Learning on Biology" for Pre-Service Elementary Teachers. Journal of Science Teacher Education, 22(7),661-677.

[11] Sheehan, M. D.; Johnson, R. B. (2012). Philosophical and Methodological Beliefs of Instructional Design Faculty and Professionals. Educational Technology Research and Development, 60(1),131-153.

[12] Guven, M. (2012). Epistemological Beliefs and Metacognitive Strategies of ELT Pre-Service Teachers in Distance and Formal Education. Turkish Online Journal of Distance Education, 13(2),346-369.

[13] Kaynar, D.; Tekkaya, C.; Cakiroglu, J. (2009). This study Effectiveness of 5E Learning Cycle Instruction on Students' Achievement in Cell Concept and Scientific Epistemological Beliefs. Hacettepe University Journal of Education, 37, 96-105.

[14] Liu, P.-H.(2009). History as a Platform for Developing College Students' Epistemological Beliefs of Mathematics. International Journal of Science and Mathematics Education, 7(3), 473-499.

[15] Magno, C. (2010).The present study Looking at Filipino Pre-Service Teachers' Value for Education through Epistemological Beliefs about Learning and Asian Values. Online Submission, Asia-Pacific Education Researcher 19(1),61-78.

[16] Mayuzumi, K. (2009). Unfolding Possibilities through a Decolonizing Project: Indigenous Knowledge and Rural Japanese Women. International Journal of Qualitative Studies in Education (QSE), 22(5),507-526.

[17] Smith, M. U.(2010). Current Status of Research in Teaching and Learning Evolution: I. Philosophical/

Epistemological Issues. Science & Education, 19 (6-8),523-538.

[18] Vamvakeros, X.; Pavlatou, E. A.; Spyrellis, N.(2010). Exploring Views of Scientists on Current Trends in Chemistry Education. Science & Education, 19 (2),119-145.

[19] Mc Beth, M.(2010). The Relationship between Epistemological Beliefs, Learning Strategies and Achievement in Higher Education. ProQuest LLC, Ed.D. Dissertation, Northern Illinois University.

[20] Nowrozi, R. A.; Ardakani, S. H. H.; Shiri, A. S.(2012). Suhrawardi's Epistemological Point of View and Its Educational Outcomes. Religious Education, 107(3), 281-294.

[21] Bennett, W. D.; Park, S.(2011). Epistemological Syncretism in a Biology Classroom: A Case Study. Journal of Science Education and Technology, 20(1),74-86.

[22] Yilmaz-Tuzun, O.; Topcu, M. S.(2010). Investigating the Relationships among Elementary School Students' Epistemological Beliefs, Metacognition, and Constructivist Science Learning Environment. Journal of Science Teacher Education, 21(2), 255-273.

[23] Cokluk, O.(2010). The main focus of logistic regression analysis is classification of individuals in different groups. Educational Sciences: Theory and Practice, 10(3), 1397-1407.

[24] van Frank, J. R.(2011). Learning to Be in Graduate School: The Interconnections of Academic Work, Scholarly Identity Formation, and Lived Experience. ProQuest LLC, Ed.D. Dissertation, University of Pennsylvania.

[25] De Brabander, C. J.; Rozendaal, J. S.(2007). Epistemological Beliefs, Social Status, and School Preference: An Exploration of Relationships. Scandinavian Journal of Educational Research, 51(2),141-162.

[26] Ozkal, K.; Tekkaya, C.; Cakiroglu, J.; Sungur, S. (2009). This study A Conceptual Model of Relationships among Constructivist Learning Environment Perceptions, Epistemological Beliefs, and Learning Approaches. Learning and Individual Differences, 19(1),71-79.

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