

The survey of the relationship between the epistemological beliefs of teacher's with the inclination toward teaching approaches

Majid Mohammadi, Ezatollah Naderi, Ali Shariyatmadari and Maryam Seif Naraghi

Department of Human Sciences, Science and Research Branch, Islamic Azad University, Tehran, Iran

ABSTRACT

The present survey was done to investigation to the relationship between epistemological beliefs dimensions and teaching approaches. For the reason, 205 guidance school teachers of Sananadaj city using multi step clustering sampling method were taken up in the study. Schommer's Epistemological Beliefs Questionnaire and Teaching Approach Questionnaire were utilized in order to collect data. The regression analysis was applied to analyze the data. The results from regression analysis showed that the dimensions of knowledge simplicity, ability fixedness and learning quickness positively predict the executive approach. Also, knowledge simplicity positively and fixed ability dimensions and learning quickness negatively predict the facilitative approach. The knowledge simplicity and ability fixedness also anticipates negatively the liberationist approach.

Key words: Epistemological beliefs, teaching approaches

INTRODUCTION

Teacher is the most basic and fundamental factor for making appropriate opportunity in the supplementation of educational aims. He can recompense even text books defects and educational facilities, or vice versa, he can also turn the best opportunities with his own unfavorable beliefs and attitudes and ability lack into an inactive and unattractive opportunity in which the performance of students decreases noticeably. Subsequently, this causes sources and educational facilities and also students' time and lifespan to be wasted; so that they, educational system and other institutions in the society will be afflicted by its negative consequences. Hence, information, beliefs and the teacher's attitudes play a significant role in creating teaching appropriate circumstances, and also appropriate changes in students accordingly [16]. The effective factors on the process are divided into several issues which undoubtedly teacher is one of most important, and his attitudes and beliefs regarding learning, learners, content and knowledge as well. In regard to the subject, it can be stated that teacher's knowledge, viewpoints and beliefs concerning how cognition and knowledge form is one of strongly effective and predictive components about the teacher's attitude towards teaching methods and approaches. Therefore, the type of teachers' epistemological beliefs regarding the nature of knowledge and learning affects teacher's decisions concerning curriculums and teaching methods [6]. Teachers' beliefs about the structure and nature of knowledge, whether knowledge is a process which both teacher and students are active and constructive in its formation or teacher acts solely as a static circle of the process, or whether there is the possibility of changing in the class for one of the students according to both teacher's and students' capabilities and potentialities, and ultimately, whether learning is a temporal or a continuous process, are all as effective components in the selection and attitude towards preferential teaching approaches [13]. Teachers' features, viewpoints, attitudes and beliefs and also their relationships with how they behave and act in the process of teaching-learning has attracted the attention of many education scholars and researchers. Because the main part of students' learning or education effectiveness should be sought in a teaching- learning environment (i.e. classroom). So, we can say that one of the most important components of educational system includes teacher

and his/her professional performance behavior, which appear in his/her teaching approach more than other components [20]. Selecting and applying teaching approach is based on the teacher's way of thinking and his knowledge of philosophy and also his/her beliefs and attitudes in regard to education. Since having no knowledge of philosophy and also learning principles and teaching techniques, a teacher is not able to fulfill his/her invaluable duty appropriately [17]. Teachers are professional merely when they ponder and reflect on teaching, and pick out an approach for their occupation which can help them with the important task of educating guidance school students. The teaching approaches are those perceptions of teaching which present the ideas of "What is teaching?" and "What should it be?" They are, moreover, like doors through which teachers perceive teaching activities, and present some categories for how they teach. Also, they can be evaluated, criticized, accepted, denied and amended [4]. Hence, evaluating a teacher's approach, we can study his/her position concerning learners, educational topics, educational aims, methods and educational content and also the role of school and society in the process of education [19]. In this research, three executive, facilitative and liberationist approaches were evaluated. In the executive approach, the main purpose is to transfer the knowledge from teacher to students. In fact, the main purpose is the very content which has been predetermined including textbooks which are the main resources for teaching and learning. The teacher is the axis of learning and is regarded as the manager of class processes controlling the process of education, where the students are just passive receivers. Accordingly, knowledge and methods is the axis of the process [3]. In the facilitative approach, however, the teacher is not merely transferor of the knowledge, but he/she plays a role as a guide or facilitative in the process of teaching. So, the students are active, being in the center of the process. Here, the teacher tries to help students to develop their aptitudes and talents, so that they would become independent and creative people and reach high levels of self-florescence. Furthermore, he pays attention to personal differences as well. In the liberationist approach, the teacher plays a role as a guide, and (considering personal differences) he emphasizes developing problem-solving skills through suggesting challenging issues. He also tries to keep the students active and provides them with critical, evaluative conditions. Consequently, he creates for them the main circumstances of discovery. What is more, he considers the students' development and growth of critical and creative thinking, the increase of their self-confidence and the ability to precisely reason and judge; so that the students get ready for managing their social and political lives. That's why, high level of the complexity and challenge of the content and also creating a relationship between various issues are emphasized [4]. One of the important and effective factors on teaching approach is the teachers' of epistemological beliefs. And man's knowledge, how it forms and also the existing viewpoints about it are among those important issues which have always been focused on by experts. Usually, some of the main problems of those researchers who have ever studied the knowledge are these that "What are the necessary, enough conditions for obtaining knowledge?", "From what kind of resources can knowledge be obtained?" and "What are its structure and limitations?" To put it another way, "How are our beliefs about knowledge, and how it can be obtained and transferred (known as epistemological beliefs)?" These beliefs are put forward as a system of relatively independent ideas of which a person probably is aware or not aware [14]. Epistemological beliefs have a striking impact on teaching-learning strategies and their results. According to structuralism, knowledge is formed by people and in social, cultural and historical contexts (based on the people's conditions). Therefore, knowledge formation is thoroughly influenced by the teacher's mentality and the students themselves [1]. In a classroom, the teacher's epistemological beliefs affect the kind of content, teaching methods, how to treat students and the whole teaching-learning setting [13]. Epistemological beliefs affect teaching-learning process at least for two reasons: firstly, on the teacher's perspective about the content, and that whether the content contains a collection of raw and irrelevant data or it is a fine-tuned and complicated structure, and whether there is any error probability in scientific findings. Secondly, on the way of presenting subjects and evaluating their results, and that whether learning takes place quickly and temporally, or it is a continuous and permanent process; and whether learning is innate, acquired and developable [9]. Hence, considering the above-mentioned, epistemological beliefs affect both teaching procedure and also the way of presenting subjects, and even the way of choosing the content. Different studies concentrate on the relationship between teachers' epistemological beliefs and their teaching behavior. They argue that these beliefs influence on the kind of teachers' decision-making in classroom, their teaching method, classroom management and learning. In their study, for example, Arrendondo & Rasensk (1996) found out that those teachers with complex epistemological beliefs apply more systematic teaching methods than those with raw epistemological beliefs. In addition, those teachers with progressive epistemological beliefs are more creative, democratic and cooperative with the learners. In contrast, those teachers with raw epistemological beliefs like to look at teaching as a transferential way, and consider them as the transferors of knowledge. The teachers having raw epistemological beliefs regard knowledge as absolute and unchangeable, arguing learners are fed through others' knowledge resources [18]. Much research has been carried out in the case. For example, in his research entitled "Teachers' Epistemological Presumptions and Their Understanding of Teaching and Learning", Chan (2003) showed that there are significant relationships between epistemological beliefs and teachers' perception of teaching and learning. In another study of theirs called "Epistemological Beliefs, Teachers' Attitude and Behavior and Their impact on Educational Planning", Knobloch and Hoop (2006) considered the epistemological beliefs as a stronger predictor than teachers' attitude and behavior in their leaning towards the philosophy of teaching and a selective teaching model. Additionally, in their research

entitled "Analyzing Relationships between Hong Kong Teachers' Epistemological Beliefs and Teaching and Learning Concept", Chan and Elliott (2004) showed that there is a significant correlation between believing in the fixation of learning ability, the knowledge of references and knowledge certainty and traditional teaching approach. Further, there is a significant correlation between learning through attempt and teaching constructivism approach. The data confirmatory factor analysis, moreover, indicates the possibility of causal effects between epistemological beliefs and teaching and learning concept. In their research entitled "Epistemological Beliefs and Their Relationship with Educational Programs, Level of Education and Gender", Mason et al (2006) concluded that teachers considering students' ability as fixed accomplish a monotonous educational program in the class. Kang (2008) investigated how teachers' personal epistemological perspectives affect their teaching aims. The results showed that there is a relationship between teachers' epistemological beliefs and their teaching behavior. Moreover, in his research called "Epistemology, Class Activities and Learning Approaches", Billet (2009) concluded that the activities students do in the class and how the teachers treat them can affect the level of their learning. He stated, also, that those teachers who believe learning is a continuous and gradual process let students participate in learning educational materials collectively in the class. So, most research supports the background that teachers' understanding of teaching and learning originates from their epistemological beliefs. In this study also it was investigated whether there is any relationship between teachers' epistemological beliefs and teaching approaches.

MATERIALS AND METHODS

Research type

This study is a descriptive or non-experimental one, and its design is correlative in which the relationship between predictive variable and criterion is measured. Since the degree of tendency towards teaching approaches is predicted based on the type of epistemological beliefs, the research design is a correlative (regressive) one [11].

The examinable, sample and sampling method

All of the guidance school teachers of Sanandaj city in the educational year 2011-2012, who are 435 teachers. From the community, 205 teachers were picked out as the sample based on Morgan Table. In order to select the sample volume, the multi-stage clustering sampling was used; so that firstly, 20 schools were selected from all of the guidance schools in Sanandaj city. Thus, 205 sample people were selected. Then, the research was carried out on them.

Introducing the research tools

In the research in order to measure the teachers' epistemological beliefs, Schommer's Questionnaire was utilized. And for measuring their attitudes towards teaching approaches, the researcher's questionnaire was used.

Schommer's Questionnaire

This questionnaire includes 63 questions, measuring four of people's beliefs in regard to the nature of knowledge and learning (contains 12 subsections). In the questionnaire, half of the questions indicate raw or naive beliefs and the other half indicate progressive or sophisticated beliefs. Therefore, in scoring, reverse scores of the scores of those questions which contradict with people's raw beliefs have been considered in Likert's five-degree scale. Reliability coefficient of the epistemological beliefs questionnaire is based on Schommer (1990) 0.74. Following revising the mentioned questionnaire in 1993, Schommer reported the obtained permanent coefficient ranging from 0.45 to 0.71. Also, Marzouqi (1997), Imami (1998), Sha'bani (1993) and Sha'baniVerkiand Hussein QuliZadeh (2004) reported the questionnaire in Iran as 0.76, 0.85, 0.79 and 0.63, respectively. In the research, the obtained reliability coefficient was 0.78. In order to determine validity of the epistemological beliefs questionnaire based on Schommer (1993), the construct validity was used according which factor analysis with varimax rotation was used for the four main components constructing epistemological beliefs.

In the analysis, using varimax rotation, the twelve components entitled consumption factors considering the particular value 1 as cut point for each subsection of the four main factors was obtained [16].

The researcher-made questionnaire of teaching approaches

Investigating into related resources as well as taking advantages of experts' ideas, some factors were known by which 40 question were picked out for three teaching approaches as executive, facilitative and liberationist. Then, using preliminary studies on 30 people, the questions with high correlation or meaningless for teachers were excluded. At last, 18 questions were inserted in the questionnaire. The questionnaire has been made in Likert scale. And 6 questions are devoted to each approach. So, the maximum score of a person in each approach is 30. In order to reliability calculate the questionnaire, Cronbach alpha was used. The Cronbach alpha for the whole questionnaire was 0.79, and for liberationist, facilitative and executive were 0.76, 0.80, and 0.78, respectively, which was an acceptable alpha.

RESULTS

The relationship between epistemological dimensions (simplicity, certainty, innateness, quickness) as the predictive variables and teaching approaches (executive, facilitative and liberationist) as criteria variable was evaluated using the simultaneous regression analysis. Since there are three various approach, the regression analysis tests are presented separately for each approach as follows: At the first place, the relationship between epistemological dimensions as the predictive variables with the executive approach and the criteria variable was evaluated. The variance analysis results related to the executive approach regression on epistemological dimensions are shown in Table 1.

Table 1. The Variance Analysis Related to Executive Approach Regression on Epistemological Beliefs

Variance Resource	Total Sq	Df	Sq M	F	Sig	R	R^2	SE
Regression	1169.308	4	292.327	11.501	0.001	0.432	0.187	5.041
Difference	5083.648	200	25.418					
Total	5083.648	204						

According to the results, the observed degree of F (11.501) in the level ($p \leq 0.001$) is significant, and 19% of the variance related to the executive approach is described by the epistemological dimensions ($R^2=0.187$). Given that the executive approach regression on the epistemological dimensions is significant, the coefficients relevant to the prediction equation are given in Table 2.

Table 2. The Prediction Equation Coefficients of Executive Approach Using Epistemological Dimensions

Model	B Coefficients	Standard Error	Beta Standard Coefficients	T	Sig
Fixed Degree	9.292	2.477		3.752	0.000
Knowledge Simplicity	1.010	0.419	0.154	2.409	0.017
Knowledge Certainty	-0.328	0.556	-0.038	-0.590	0.556
Ability Innateness	2.659	0.554	0.316	4.798	0.000
Learning Quickness	0.992	0.378	0.173	2.662	0.009

The regression coefficients of each of the four predictive variables indicate that simplicity ($p \leq 0.05$) and innateness and quickness ($p \leq 0.01$) can explain the executive approach variance. Furthermore, effectiveness coefficient of simplicity ($B=0.154$) according to the t statistic indicates that the simplicity with 95% of confidence can predict the changes relevant to the executive approach. This effectiveness coefficient is positive, meaning if one unit is added to the simplicity rate, 1.01 will be added, in the executive approach, to the person's score as well. Additionally, the effectiveness coefficient of innateness variable ($B=0.316$) based on the t statistic shows the innateness variable with 99% confidence can predict the changes relevant to the executive approach. This effectiveness coefficient is positive, meaning if one unit is added to the innateness rate, 2.65 will be added, in the executive approach, to the person's score as well. More, the effectiveness coefficient of the quickness variable ($B=0.173$) according to the t statistic indicates that the quickness variable with 99% confidence can predict the changes relevant to the executive approach. This effectiveness coefficient is positive, meaning if one unit is added to the quickness rate, 0.99 will be added, in the executive approach, to the person's score as well.

In addition, the relationship between the epistemological dimensions (as predictive variables) with the facilitator approach (as criteria variable) was investigated using the regression analysis. Results of the variance analysis relevant to the facilitator approach regression on epistemological beliefs are presented in Table 3-1.

Table 3. The Variance Analysis Relevant to the Facilitator Approach Regression on Epistemological Beliefs

Variance Source	Total Squares	Df	Squares Mean	F	Significant level	R	R^2	SE
Regression	343.879	4	85.970	4.993	0.001	0.301	0.091	4.149
Difference	3443.272	200	17.216					
Total	3783.151	204						

According to the results, the observed degree of F (4.993) is significant ($p \leq 0.01$) and 0.09% of the variance relevant to the facilitator approach is explained by the epistemological dimensions ($R^2=0.091$). Given that the executive approach regression on the epistemological dimensions is significant, the coefficients relevant to the prediction equation are given in Table 4-1.

Table 4. The Coefficients of Predictive Equation of the Facilitator Approach Using Epistemological Beliefs

Model	Coefficients	Standard Error	Standard Coefficients	T	Sig
Fixed Degree	23.119	2.038		11.342	0.000
Simplicity	0.911	0.345	0.179	2.641	0.009
Certainty	-0.235	0.458	-0.035	-0.514	0.608
Innateness	-0.939	0.456	-0.143	-2.059	0.041
Quickness	-0.830	0.311	-0.186	-2.667	0.008

The regression coefficients of each of the four predictive variables show that simplicity ($p \leq 0.01$), innateness ($p \leq 0.05$) and quickness ($p \leq 0.01$) can explain the facilitator approach variable variance as significant. The effectiveness coefficient of simplicity ($B=0.179$) according to the t statistic indicates that the simplicity with 99% of confidence can predict the changes relevant to the executive approach. This effectiveness coefficient is positive, meaning if one unit is added to the simplicity rate, 0.911 will be added, in the executive approach, to the person's score as well. Additionally, the effectiveness coefficient of innateness variable ($B= -0.143$) based on the t statistic shows the innateness variable with 95% confidence can predict the changes relevant to the executive approach. This effectiveness coefficient is negative, meaning if one unit is added to the innateness rate, -0.939 will be eliminated, in the executive approach, from the person's score as well. More, the effectiveness coefficient of the learning quickness variable ($B= -0.186$) according to the t statistic indicates that the quickness variable with 99% confidence can predicts the changes relevant to the executive approach. This effectiveness coefficient is negative, meaning if one unit is added to the quickness rate, -0.830 will be eliminated, in the executive approach, from the person's score as well. In addition, the relationship between the epistemological dimensions (as predictive variables) with the liberationist approach (as criteria variable) was investigated using the regression analysis. Results of the variance analysis relevant to the liberationist approach regression on epistemological beliefs are presented in Table 5.

Table 5. The Variance Analysis Relevant to the Liberationist Approach Regression on Epistemological Beliefs

Variance Source	Total Squares	Df	Squares Mean	F	Significant level	R	R^2	SE
Regression	292.089	4	73.022	4.284	0.002	0.281	0.079	4.128
Difference	3409.160	200	17.046					
Total	3701.249	204						

According to the results, the observed degree of F ($F= 4.284$) is significant ($p \leq 0.01$) and %8 of the variance relevant to the liberationist approach is explained by the epistemological dimensions ($R^2= \%079$). Given that the liberationist approach regression on the epistemological dimensions is significant, the coefficients relevant to the prediction equation are given in Table 6-1.

Table 6. The Coefficients of Predictive Equation of the Liberationist Approach Using Epistemological Beliefs

Model	Coefficients	Standard Error	Standard Coefficients	T	Sig
Fixed degree	27.071	2.028		13.374	0.000
simplicity	-0.889	0.343	-0.179	-2.619	0.009
certainty	0.025	0.456	0.004	0.055	0.956
Innateness	-0.908	454	-0.140	2.001	0.047
Quickness	-0.520	0.310	-0.118	-1.680	0.095

The regression coefficients of each of the four predictive variables show that simplicity ($p \leq 0.01$) and innateness ($p \leq 0.05$) can explain the liberationist approach variable variance as significant. The effectiveness coefficient of simplicity ($B=0.179$) according to the t statistic indicates that the simplicity with 99% of confidence can predict the changes relevant to the liberationist approach. This effectiveness coefficient is negative, meaning if one unit is added to the simplicity rate, 0.899 will be eliminated, in the executive approach, to the person's score as well. Additionally, the effectiveness coefficient of innateness variable ($B= -0.140$) based on the t statistic shows the innateness variable with 95% confidence can predict the changes relevant to the liberationist approach. This effectiveness coefficient is negative, meaning if one unit is added to the innateness rate, -0.908 will be eliminated, in the executive approach, from the person's score as well.

DISCUSSION AND CONCLUSION

The study of different perspectives regarding epistemology shows that people's belief about knowledge and knowing can be drawn as a spectrum on a continuum of certainty and relativism (from simple to complex). The

studies also show that we can generally classify the main structure of teacher's beliefs about learning and teaching into two main fields: knowledge nature and knowing process nature. Knowledge nature is defined based on two dimensions:

1. The "certainty" and "relativism" of knowledge;
2. The process of knowing based on the two dimensions "rapidity of learning process" and "fixation or innateness of learning ability".

In this regard, the beliefs and offered discussions possess a close relationship with recognition, meta-recognition and attitude. This research investigated into teachers' epistemological beliefs in the dimensions of knowledge simplicity and certainty, fixation/innateness of learning ability, learning quickness, and also the effect (s) of these beliefs on teaching approach. The findings from regression analysis show that there is a significant relationship between type of teachers' epistemological beliefs and their teaching approaches, and that dimensions of epistemological beliefs can predict teaching approaches. Based on the research results, there is a relationship between the dimensions of epistemological beliefs and executive approach, so that these dimensions can predict the approach. Moreover, the dimensions of knowledge simplicity, fixation/innateness of learning ability, and learning quickness could positively predict the approach. These findings are corresponding to the previously done researches such as Chan and Elliot (2004) and Mason (2006). This result is also corresponding to the theoretical background which, in the executive approach, aims to merely transfer knowledge from teacher to students, and gives attention to teaching efficacy in transferring knowledge as quick as possible. Therefore, in order to achieve aims, distinct and simple issues are selected. Additionally, since a monotonous method (generally as a direct presentation) is used, limited educational materials and educational programs are totally monotonous. So, personal differences are not noted. Furthermore, the activation conditions and involving students are not prepared so that their abilities and skills increase and also their talents get flourished in different fields. Accordingly, they regard learning ability as fixed. So, it is generally logic for them to consider knowledge as simple, learning as quick, and learning as fixed [3]. In addition, there is relationship between epistemological dimensions and facilitator approach. And the regression results indicated that these dimensions can predict the facilitator approach. In this regard, knowledge simplicity and ability of learning fixedness and quickness predict this approach positively and negatively, respectively.

These findings are corresponding to Chan and Elliot (2004) 's and Billet (2009) 's research. These results also confirm the theoretical issues regarding the facilitator approach, because in this approach, knowledge is not by itself an aim, but a means for facilitating growth, flourishing aptitude and increasing students' abilities. Also, approach is more emphasized than yield. Thus, a simple content compatible with this process is taken into account. In this approach, having relationships with students and paying attention to their characteristics are focused on. And since personal differences are given attention to, various educational programs are prepared. Teachers try to develop and flourish their abilities and talents, granting them the opportunity to be active; so that they themselves learn and be brought up independently. More, teachers regard learning relevant to students' attempts. So, they do not regard learning ability as fixed. They consider learning as a gradual and continuous process [4, 5]. In liberationist approach, the regression analysis results showed that the dimensions of simple knowledge and fixed ability predict this approach negatively, which is corresponding to Mason's (2006) and Seif and Marzoughi (2009) 's results. Since personal differences are paid attention to, developing and flourishing students' abilities and talents are emphasized using various educational methods and resources, and reinforcing critical thinking, creativity, self-reliance, reasoning ability and correct judgment are notices, this approach does not regards learning ability as fixed, but changeable and progressive. For the reason, teachers put forward challenging issues, provide them with discovery conditions and believes that in this process the content should be complex and challenging and there should be a relation between different topics. The regarded aims of the approach are, therefore, obtained. So, it is logic for them to regard knowledge structure as complex [12].

REFERENCES

- [1] Billett S, Personal Epistemologies, *Edu Res Rev*, **2009**, 4, 210-219.
- [2] Chan K, Robert GE, *Teach Teach Edu*, **2004**, 20, 817-831.
- [3] FathiAzar E, *Methods and techniques of Teaching*, Tabriz University press, **2008**.
- [4] Fenstermacher G, Soltis F, *Approaches to Teaching*, New York, **2004**.
- [5] GolafrouzShahri H, KhaqaniZade M, *Edu Strat J*, **2009**, 2, 4, 161-166.
- [6] Jacobson HJ, So Timothy T, June L, *Computers & Education*, **2010**, 55, 1694-1706.
- [7] Kang HN, *Teacher Edu*, **2008**, 24, 478-498.
- [8] Knobloch NA, Hoop SE, MA thesis, Ohio University, (Ohio, USA, **2006**).
- [9] Kurt F, Investigation student's Epistemological Beliefs through Gender, grad level, **2009**.
- [10] Mason L, BoldrinA, Zurlo G, *J Edu Res*, **2006**, 45, 43-56.

- [11] Naderi E, seifNaraqi M, Research Methods, Tehran, **2009**.
- [12] Savery J, Duffy T, *Problem Based Learning*, New Jersey, **1996**.
- [13] Schommer M, *Research in Higher Education*, **1994**, 34(3), 355-370.
- [14] Schommer M, Walker K, *J Edu Psych*, **1995**, 87(3), 424-432.
- [15] Seif D, Marzouqi R, *Sci Res of Shahed Uni*, **2009**, 15, 33.
- [16] Sha`bani H, Methods and Techniques of Teaching, Tehran, **2009**.
- [17] Sha`baniVerki B, HosseinQoliZade R, *Sci Res of Shahed Uni*, **2007**, 14, 34, 23-38.
- [18] Tickle Emmal J, BrownleeDi N, *J Manage Develop*, **2005**, 24, 706-719.
- [19] Yarmohammadian MH, Educational Planning Principles, Tehran, **2009**.
- [20] Zolfaqar M, MehrMohammadi M, *Sci Res of Shahed Uni*, **2004**, 11, 6, 17-28.