

*Full Length Research Paper*

# The effect of epistemological beliefs on teaching - learning conceptions of pre-service teachers of religion

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Teaching and learning processes are influenced by different cognitive variables including epistemological beliefs and teaching/learning conceptions. Epistemological beliefs express beliefs on the nature of knowledge and gaining knowledge (learning). Teaching/learning conceptions refer to the beliefs held by teachers about their preferred ways of teaching and learning, including the meaning of teaching and learning and the roles of teacher and students. The primary purpose of this study was to determine the relationship between epistemological beliefs and teaching/learning conceptions among pre-service teachers of religion. The working group of the study consisted of 387 students of Department of Islamic Sciences and Department of Religious Education at Muş Alparslan University in Turkey. Further analyses focused on whether teaching-learning conceptions differ based on gender, department and class-levels. Results indicated significant correlations between epistemological beliefs (Innate/Fixed Ability, Learning Effort, Learning Process - Casting Doubt on Authority / Expert Knowledge, and Certainty of Knowledge) and approaches to teaching and learning (Constructivist Conception, Traditional Conception). In addition, results showed that pre-service teachers of religion preferred constructivist approaches over more traditional approaches and their views differed based on discipline and class-level, but not on gender.

**Key words:** Epistemological beliefs, teaching – learning, pre-service teachers, religion, conceptions

## INTRODUCTION

The effect of individual beliefs on thoughts and behaviors encourages educators to consider beliefs in many categories in regard to learning and teaching processes. Various theories have highlighted these different beliefs from time to time and have made them subject of studies in educational contexts. One of these beliefs, epistemological beliefs, has critical importance and has a significant effect on behaviors and decisions of pre-service teachers. Which results are produced by such an effect has become a subject worthy of being studied.

Studies conducted on teacher education in recent years have researched behaviors, attitudes and teaching skills and strategies of teachers inside the class as well as researching their beliefs. The motivation behind this research is based on the fact that epistemological beliefs, considered as a personal diversification area, have a significant effect on learning and teaching processes and on program development, which is an integral part of these processes (Eroğlu & Güven, 2006).

Teachers' beliefs related to the nature of scientific knowledge and learning, in other words, epistemological beliefs, significantly influence teaching activities inside the classroom. For example, which teaching methods and techniques are used, how the class is governed and

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managed and what is considered as learning (Şeref, Yılmaz & Varışoğlu, 2012). Chan and Elliott (2004) noted that many studies show that there is a strong correlation between teachers' beliefs and their in-class behaviors and learning environment. Similarly, Fisher and Rush (2008) stated that the relation between epistemological beliefs and learning has been emphasized by many researchers. Meral and Çolak (2009) noted that aspects like scientific epistemological belief level and learning approaches and strategies are related to each other and they also have stated that it would be useful to study the interaction between epistemological belief level and these aspects. In addition, Önder and Beşoluk (2010) stated that if a teacher has a deep learning approach, this may influence the quality of learning outcomes of the students taught by that teacher (Şahin - Taşkın, 2012).

Epistemological beliefs express beliefs on the nature of knowledge and gaining knowledge (Schommer, 1990, 1994). Epistemological beliefs include especially, beliefs on "definition of the knowledge, construction of the knowledge, position of the knowledge and formation of the knowledge" (Hofer, 2001; as cited in Aypay, 2011). The term epistemological beliefs reflects personal views and questions like what knowledge is, how knowledge is gained, what the degree of certainty of knowledge is, what the criteria and limits for knowledge and whether knowledge is a thing which is gained outside the student or taught to the student by authority figures (i.e. experts) in the disciplinary areas (Brownlee et al., 2001; Hofer & Pintrich, 1997; Ravindran & et al., 2000; as cited in Aksan & Sözer, 2007). These and similar questions have played a significant role in understanding epistemological belief theories.

Brownlee (2003) defined four different features related to epistemological beliefs adopted by pre-service teachers: dualism, multiplism, relativism and commitment. Individuals adopting dualism as a view, think that certain rights or wrongs are related to the nature of knowledge and they believe that these ideas are spread by experts or individuals, who are considered as the authority. At further stages, when individuals think about knowledge from the point of view of multiplism, they believe that some rights and wrongs cannot be known with any certainty and therefore, knowledge includes final rights along with personal beliefs. The next stage is the point of view of relativity. At this stage, a basic change occurs in the personal epistemological thinking. Individuals think that knowledge is made after the meaning is constructed, beyond personal intuitions or personal opinions. There is no more certainty because the right has become relative depending on personal comments of individuals. At the last stage, commitment, relative thinking is still a basic feature. However, certain beliefs are more important compared to others and it is believed that commitment is made in much more flexible structure (Brownlee, 2003, p. 1; as cited in Belet & Güven, 2011).

Teaching/learning conceptions refer to the beliefs held by teachers about their preferred ways of teaching and learning. These include the meaning of teaching and learning and the roles of teacher and students (Chan & Elliott, 2004). There are two basic approaches in learning and teaching (constructivist conception and more traditional conceptions) and they are in contradiction with each other. The traditional conception uses teacher focused teaching strategies in teaching because it considers the teacher as the source of knowledge and considers the student as a passive receiver of knowledge. Teachers generally provide knowledge to students didactically and expect that they answer questions (Chan and Elliott, 2004; Cheng, Chan, Tang and Cheng, 2009; Schunk, 2009).

On the other hand, in the constructivist approach, students are at the center while teachers have a guidance role, assisting students during knowledge construction processes. According to Warwick and Stephenson (2002), constructivist teachers assume that learning is a personal and active process and, in doing this, they are aware of that students generally come to the class environment with many alternative comprehensions of real scientific knowledge. It may be said that teachers have very important duties like providing assisting students in raising their cognitive activities (Canpolat & Pınarbaşı, 2002), providing learning environments suitable for students' previous experiences (Chen, Burry-Stock and Rovegno, 2000), discovering prior knowledge of students (Bağcı - Kılıç, 2001), determining students' knowledge deficiencies and conceptual misunderstandings. These beliefs may prevent students from learning further knowledge, but by eliminating them, teachers can ensure active participation of students, directing students to firsthand knowledge sources, evaluating them by using different techniques at the beginning, during and at the end of the process, and providing social learning environments in class, thereby facilitating collective learning (Evrekli, Ören & İnel, 2010).

### **Purpose of the Study**

This study was conducted to determine the epistemological beliefs and learning and teaching preconceptions of pre-service teachers of religion based on their beliefs about knowledge and to determine the relationship between these concepts. This study will be used to provide data that can guide the development of teacher education programs. The research questions were:

1. What kind of learning and teaching preconception do pre-service teachers of religion have?
2. What kind of epistemological belief do pre-service teachers of religion have?

**Table 1:** Teaching and learning conceptions depending on gender

	Gender	N	X	Std. Deviation	Sig.
Constructivist	Female	174	51.03	5.014	.887
	Male	213	50.96	4.749	
Traditional	Female	174	47.91	8.132	.763
	Male	213	48.17	8.408	

3. Do epistemological beliefs and learning and teaching conceptions of pre-service teachers of religion differ depending on gender, class-level and discipline?

## METHODOLOGY

A quantitative methodology was used to collect the data from 387 undergraduate students studying at the Department of Islamic Sciences and Department of Religious Education at Muş Alparslan University during the fall term of the academic year of 2013-2014. Two instruments were used to collect data, The Epistemological Beliefs Questionnaire (EBQ) and The Teaching and Learning Conceptions Questionnaire (TLCQ) both by Chan and Eliot (2002, 2004).

The Epistemological Beliefs Questionnaire (Chan & Eliot, 2002, 2004) has been adapted by Aypay (2009) to be used in Turkey, and was used to collect data on students' epistemological beliefs. The 30 item questionnaire was tested with a Confirmatory Factor Analysis (CFA). The results of CFA indicated a good fit (NFI 0.64, CFI 0.77, RMSEA 0 .054). Based on CFA results, the factors structure of the instrument consisted of four factors of beliefs (Innate/ Fixed Ability, Learning Effort, Learning Process/Expert Knowledge, and Certainty Knowledge). It has a five-point Likert type scaling (5=strongly agree– 1=strongly disagree). The overall reliability of the instrument was tested with Cronbach Alpha and the reliability was found as .78 (Aypay, 2011, p. 23-24).

The Teaching and Learning Conceptions Questionnaire (TLCQ) was used to collect data on students' teaching and learning conceptions. This instrument had 30 items. A CFA was conducted on this instrument and results indicated a good fit (GFI 0.93, AGFI 0.91, RMR0.50, RMSEA 0.54). Based on CFA results, the data confirmed the two-factor structure of the instrument (Constructivist Conception, Traditional Conception). The scaling of this instrument was also a Likert-type with (5=Strongly

Agree– 1=Strongly Disagree). The reliability of the instrument overall was Cronbach Alpha =.86 and for the reliability for both constructivist and traditional conceptions were .84 (Aypay, 2011, p. 24).

## RESULTS

### Teaching and Learning Conceptions

Average scores gained by pre-service teachers of religion in subscales of the scale of teaching and learning preconceptions were used to construct a profile of teaching and learning conceptions. The highest score, which can be obtained in the subscale of constructive conception (consisting of 12 items) was 60 while the lowest one was 12. The average of the obtained scores is 51 ( $X=51$ ). According to this finding, it may be said that pre-service teachers of religion have mostly adopted a constructive conception during the process of teaching and learning. The highest score, which can be obtained in the subscale of traditional conception (consisting of 18 items) is 90 while the lowest one is 18. The average was 48 ( $X=48$ ). This finding indicates that pre-service teachers are hesitant about the role of traditional preconceptions in the process of teaching and learning when compared to the constructivist one.

### Teaching and Learning Conceptions According to Gender, Discipline and Class Level

A T-test was conducted to determine whether or not teaching and learning preconceptions of pre-service teachers of religion significantly varies depending on gender. T-test results as seen in [Table 1](#).

Although the belief in the constructivist approach, which accounts for the first factor of the scale, did not significantly vary by gender [ $t_{(385)} = .143, p>.05$ ], female students' scores ( $X=51.03$ ) were higher than those of male students ( $X=50.96$ ). Secondly, although male students' scores ( $X=48.17$ ) in relation to beliefs in

**Table 2:** Teaching and learning conceptions depending on the department

	Discipline	N	Mean	Std. Deviation	Sig.
Constructivist	Is. Sci.	133	49.43	4.939	.000
	Re. Edu.	254	51.81	4.627	
Traditional	Is. Sci.	133	49.48	8.580	.014
	Re. Edu.	254	47.31	8.027	

**Table 3:** Descriptive values for EBQ subscales

	N	Minimum	Maximum	Mean	Std. Deviation
Doubt about knowledge	387	21	55	43.15	4.492
Innate ability	386	8	36	19.42	5.005
Learning effort	387	9	25	18.80	3.120
Certainty of knowledge	387	6	26	14.18	3.643

traditional approaches which is the second factor, were higher than those of female students ( $X=47.91$ ), the results were also not significant [ $t_{(385)} = -.301, p>.05$ ]. In sum, there was no significant correlation between beliefs in traditional approaches and gender.

A T-test was also conducted to determine whether or not the teaching and learning preconceptions varied according to the discipline in which they study. T-test results as seen in [Table 2](#).

According to the table above, scores related to beliefs in constructivist approaches, the first factor of the scale, vary significantly depending on the discipline in which students study [ $t_{(385)} = -4.692, p<.05$ ]. Constructivist beliefs of students studying in the Department of Religious Education ( $X=51.81$ ) were higher than those obtained by students studying in the Department of Islamic Sciences ( $X=49.43$ ). Similarly, beliefs in the traditional approaches, which is the second factor of the scale, varied significantly depending on the department in which students studied [ $t_{(385)} = -2.471, p<.05$ ]. Beliefs in traditional approaches ( $X=49.48$ ) obtained by students studying in the Islamic Sciences Department were higher than those obtained by students studying in the

Department of Religious Education ( $X=47.31$ ). In sum, there was a significant correlation between teaching-learning conceptions and the disciplines in which students study.

According to the results from ANOVA analysis conducted to find whether or not teaching-learning conceptions of students vary significantly depending on class level, a significant relationship between class level and constructive conception was not observed [ $F(3-383)=1,901, p>.05$ ] and furthermore, it was seen that class level did not significantly change beliefs in traditional approaches [ $F(3-383)=1,071, p>.05$ ].

### Findings Related to Epistemological Beliefs

Average scores gained in subscales of the scale of epistemological beliefs reflect a profile of tendencies related to epistemological beliefs. Minimum, maximum and average scores obtained from subscales of the scale as seen in [Table 3](#).

Average score for "learning process/doubt about expert's knowledge", the first belief subscale of the scale was  $X=43$ . This indicates that pre-service teachers of religion

**Table 4:** Correlations between EBQ and TLCQ factors

	Doubt about knowledge	Innate ability	Learning effort	Certainty of knowledge
Constructive	.355**	.041	.139**	.015
	.000	.419	.006	.766
Traditional	.017	.221**	.214**	.346**
	.737	.000	.000	.000

have a tendency to believe that the process of gaining knowledge is important in learning and that knowledge of experts must be queried. The average score for “innate/fixed ability”, which is the second subscale of the scale, was  $X=19$ . This finding indicates that pre-service teachers of religion are hesitant about whether or not ability is innate or it is fixed or variable. The average score for “learning effort”, which is the third subscale of the scale, was  $X=19$ . This finding indicates that pre-service teachers of religion have a tendency to think that effort is important in learning. Finally, average score for “certainty of knowledge”, which is the fourth subscale of the scale, was  $X=14$ . This finding indicates that pre-service teachers are hesitant whether or not knowledge is constant and certain.

#### Epistemological Beliefs According to Gender, Department and Class Level

A t-test, was conducted to find whether or not students' epistemological beliefs vary by gender and discipline in which the student studies the results indicate the variable of gender does not significantly affect subscales of doubt about expert's knowledge, learning effort and certainty of knowledge ( $p>.05$ ). However, it does significantly change the subscale of innate ability ( $p<.05$ ) while the variable of the discipline in which the student studies does not cause any variation in any of the subscales ( $p>.05$ ). According to these findings, it may be said that the variables of gender and the discipline in which the student studies do not predict epistemological beliefs of the students.

According to results of the ANOVA analysis, which was conducted to find whether or not the variable of class level changed epistemological belief tendencies, students' tendencies do not vary by class level in the subscales of doubt about expert's knowledge, innate ability and learning effort ( $p>.05$ ). However, they vary in the subscale of certainty of knowledge significantly [ $F_{(3, 383)} = 2,67, p<.05$ ]. According to the conducted Scheffe test, it was found that such significant relation occurred between 2<sup>nd</sup> and 3<sup>rd</sup> grade students.

#### Effect of Epistemological Beliefs on Teaching-Learning Conceptions

Pearson Moment multiplication correlation analysis was conducted to determine the relationship between subscales (learning process-doubt about authority/expert knowledge, innate/fixed ability, learning effort and certainty of knowledge) of Epistemological Beliefs Questionnaire (EBQ) and subscales (constructive conception, traditional conception) of Teaching and Learning Conceptions Questionnaire (TLCQ). Results are summarized in Table 4.

As seen in Table 4, there are significant correlations between constructivist beliefs and the belief of learning process/doubt about expert's knowledge at a moderate level and in a positive direction ( $r= 0.355, p<.01$ ). However, these are at low level and in the positive direction in the case of the belief of learning effort ( $r= 0.139, p<.01$ ). According to these results, a constructive belief increases as the beliefs of that the process is important in learning and that expert's knowledge must be queried and the belief that effort is important in learning increase while constructive conception in learning and teaching decreases as the belief of that knowledge is certain and constant increases. There are significant relationships between traditional beliefs and the beliefs of innate/fixed ability, learning effort and certainty of knowledge at moderate levels and in the positive direction ( $r= 0.221, p<.01$ ;  $r= 0.214, p<.01$ ;  $r= 0.346, p<.01$ ). According to these results, traditional beliefs about learning and teaching increases as the tendencies of innate/fixed ability, learning effort and certainty of knowledge increase.

#### DISCUSSION

The major finding of this study indicates that pre-service teachers believe in constructive ideology rather than a

traditional ideology. This finding confirms results of the other studies conducted on students of different disciplines in the teachers' faculty (teaching in elementary school, pre-school teaching, science, English, geography and BÖTE) (Aypay, 2011; Oğuz, 2011). It is believed that this may have resulted from a systematic educational reform made in the Turkish education system in recent times, which has emphasized constructivist approaches as a base in preparation of educational programs and learning and teaching activities of all teachers in Turkey. According to this new reform, teachers are expected to act according to a traditional approach but they are expected to provide guidance to their students using a constructive approach. Therefore, this finding is quite important for 'growing' teachers, who are able to arrange and manage constructive learning environments.

These results are similar to results from studies in Hong Kong. In a study conducted on pre-service teachers in Hong Kong (Chan and Eliot, 2004) students did not adopt any constructivist or traditional conceptions while it was observed in another study (Cheng et al., 2009) that students did mostly adopt a constructivist approach. Cheng et al. (2009) explains the difference between the two findings as the effects of the reforms, which have been made in recent times in all sectors of the Hong Kong education system and especially in universities and institutes graduating teachers intended for working in a constructivist environment (Aypay, 2011). In this way, the findings of this study reflect these same findings.

In this current study, constructivist beliefs of pre-service teachers of religion in learning and teaching did not vary by gender significantly. This finding does not verify findings of Aypay (2011) and Oğuz (2011) who noted that there is a significant correlation between traditional conception scores and the variable of gender. It was found in the aforementioned studies that male pre-service teachers adopt traditional ideas at a higher level compare to female pre-service teachers. However, in the current study, male and female pre-service teachers have the same beliefs. This finding supports finding of Ellez and Sezgin'in (2002) and Oğuz (2011). Chan (2003) determined in his study conducted on pre-service teachers in Hong Kong that surface, deep and successful learning approaches do not vary by gender. On the other hand, Aypay (2011) found a significant correlation between the constructive approach and the variable of gender in his study. Hence, previous findings are inconclusive in regard to the impact of gender as a variable on this construct.

According to findings of this study, learning and teaching conceptions of pre-service teachers of religion vary significantly by the discipline in which the student studies. Accordingly, it may be said that students of the Department of Religious Education at this university believe in a constructivist approach at a higher level compared to those studying in the Department of Islamic Sciences at this university. However, students studying

in the Department of Islamic Sciences adopted traditional ideas in learning and teaching more strongly than those studying in the Department of Religious Education. This may be a result of taking pedagogical courses taking place in their program. In the study conducted by Oğuz (2011), beliefs in traditional approaches of pre-service teachers studying science were found to be higher than those of pre-service teachers studying social disciplines (such as the arts). Oğuz believes that this has resulted from different course schedules applied in science and social disciplines, attitudes and behaviors of lecturers and their different educational approaches (Oğuz, 2011).

In this current study teaching and learning conceptions of pre-service teachers of religion do not vary significantly by class-level in both of the subscales. It may be said that based on this finding, time spent in university does not have an effect on students' teaching and learning beliefs. Because the increased learning experiences of students are expected to raise their beliefs in constructivist approaches, the fact that any significant variation does not happen, is important. However, previous studies in the literature also reveal this variation. Chan (2003) observed that learning conceptions, except deep learning approaches (surface and success) are independent of age. However, he also observed that students prefer learning processes by understanding versus learning by memorizing as they get older. Rodriguez and Cano (2007) observed that students at the final grade believe, as compared to first grade students, believe in the fact that knowledge is not certain and it develops while the ability for learning is not constant but may vary. It was observed in the same study that deep learning approach scores of the last grade students are higher while their surface learning approach scores are lower (Aypay, 2011: 20). Aypay (2011) observed in his study that beliefs in traditional approaches of students get lower as the class level increases.

Findings about epistemological beliefs in this study indicate that pre-service teachers of religion have a tendency to believe that gaining knowledge is important in learning, experts' knowledge must be queried and effort is important in learning. However, their beliefs in the fact that ability is innate and fixed and knowledge is certain and constant, are not strong. This finding supports the research of Aypay (2011). According to Eroğlu and Güven (2006), pre-service teachers' beliefs in the fact that learning depends on effort and ability are lower while their beliefs in the fact that there is only one right, are higher. In a study conducted on pre-service elementary school teachers (Şahin-Taşkın, 2012) it was found that pre-service teachers believe in the fact that learning depends on effort but they do not believe in the fact that it depends on ability while they are hesitant about existence of only one right.

According to the findings found in this study, the variable of gender does not significantly influence epistemological beliefs of pre-service teachers of religion

in the subscales of doubt about expert's knowledge, learning effort and certainty of knowledge, although it caused a significant variation in the subscale of innate ability. Although there are findings in the literature indicating that epistemological beliefs vary by gender, different findings were obtained about which belief scales vary by gender. Oğuz (2008) revealed in a study conducted on Turkish university students that female students, in comparison to males, believe that learning is more dependent on effort than it is dependent on ability. Chai, Khine and Teo (2006) and Aypay (2011) determined that belief scores of male students about "learning process/doubt about expert's knowledge" are higher than those of female students. Paulsen and Wells (1998) determined in a study conducted on students studying in a state university in America that female students' belief about the fact that learning ability is constant and learning is faster is lower compared to male students; however, the belief of female students about the fact that knowledge is learned is higher compared to male students.

Despite such findings, Chan (2003) determined in his study conducted on university students studying teaching in a university in Hong Kong that epistemological beliefs do not vary by gender (Aypay, 2011). According to the study conducted by Biçer, Er & Özel (2013), female pre-service teachers believe that learning more depends on effort while male pre-service teachers believe that learning depends on ability and there is only one right.

In this current study the variable of the discipline in which the student studies does not significantly affect epistemological tendencies of pre-service teachers of religion. According to this finding, it may be said that students studying in the Department of Islamic Sciences and those studying in the Department of Religious Education have similar epistemological tendencies. According to results of the study of Eroğlu & Güven (2006), any significant variation was not observed between the groups in the subscales of the belief that learning depends on effort and it depends on ability while a significant finding was found in case of the belief in existence of only one right. For example, students studying in the departments of Turkish and English believe more strongly in the fact that there is only one right compared to those studying in Computer Teaching and Technologies' Training Department. On the other hand, in the study of Aypay (2011), students studying in the departments of Elementary School Teaching, pre-school Teaching, Science Teaching and BÖTE believe that knowledge is certain and constant compared to those studying in the geography discipline.

According to findings of this current study, epistemological tendencies of students do not vary by class level in the subscales of doubt about expert's knowledge, innate ability and learning effort while it is varied significantly between 2<sup>nd</sup> and 3<sup>rd</sup> class students in the subscale of certainty of knowledge. In the study of

Eroğlu & Güven (2006), epistemological belief level of 1<sup>st</sup> grade students and 4<sup>th</sup> grade students were compared and found that there is no significant variation between the groups in the subscale that learning depends on effort while significant variations were found between the groups in the belief subscales that learning depends on ability and there is only one right. According to Aypay's (2011) study, lower grade students (1<sup>st</sup>, second and 3<sup>rd</sup> grade) believe in the fact that knowledge is certain and constant compared to higher grade students (4<sup>th</sup> and 5<sup>th</sup> grade). According to Aypay (2011), this finding suggests that education provided at university influences belief about certainty of knowledge. According to study of Biçer, Er & Özel (2013), pre-service teachers believe that learning depends on effort when they begin the university while 4<sup>th</sup> grade students believe that learning depends more on ability.

Findings obtained in the study about relations between epistemological beliefs and learning and teaching conceptions support Aypay's (2011) conclusions. Thus, constructivist beliefs increase as beliefs that understanding process is important in learning increases. In addition, beliefs that expert's knowledge must be queried and effort is important in learning increase while constructivist beliefs in learning and teaching decreases when the belief that knowledge is certain and constant increases. On the other hand, traditional beliefs in learning and teaching increase when the beliefs that ability is innate and fixed, effort is important in learning and knowledge is certain and constant, increase (Aypay, 2011). Thus, it may be said that the reforms in Turkish education, which have been made since the year 2000 to make constructivist ideology dominant in elementary and secondary curriculum of religion, have produced the desired effect on pre-service teachers of religion.

According to results of the study researching the relation between epistemological beliefs and problem solving skills of university students (Aksan & Sözer, 2007), students, who believe that learning depends on effort strongly (happens in the course of time), adopt more thoughtful and evaluative approach during the process of problem solving. More clearly, they think about what the problem is, which methods are used in solving the problem and which results are produced from this method and they compare the obtained result and the expected result. Because the thinking ability of students adopting relativity about knowledge and learning are more developed, their problem solving skills are higher. These students can more think about the problems, which are encountered by them, in a more flexible way to produce versatile solutions for the problem by spending more time and effort. However, because students adopting underdeveloped epistemological beliefs have a tendency to give up rather than spending effort or thinking about the encountered difficult and complex problems, this affects their academic success (Aksan & Sözer, 2007).

## CONCLUSION AND RECOMMENDATIONS

Teaching/learning conceptions refer to the beliefs held by teachers about their preferred ways of teaching and learning. These include the meaning of teaching and learning and the roles of teacher and students. Teachers' beliefs related to the nature of scientific knowledge and learning, in other words, epistemological beliefs, significantly influence teachers' teaching and education media and activities inside the classroom, specifically, which teaching methods and techniques are used, how the class is governed and managed and what is considered in learning.

Two basic approaches have been adopted in the curriculum of religion developed since the year 2000, for the entire elementary and secondary educational system. These are to make the student active in learning and knowledge production processes and to make the area of religious culture supported by scientific criteria (MEB, 2006). There is no doubt that the most important factor in achieving the target in both of these approaches is teachers. Findings from our study conducted to reveal learning and teaching conceptions and epistemological beliefs of pre-service teachers of religion and the relation between them and recommendations developed depending on these findings are summarized below.

Pre-service teachers of religion have adopted constructivist approaches more strongly than traditional approaches. Constructivist and traditional beliefs do not vary by gender and class level while they vary significantly by the discipline in which the student studies. In other words, it may be said that constructivist beliefs of students from the Department of Religious Education are higher compared to those studying in the Department of Islamic Sciences while students of Department of Islamic Sciences have adopted traditional concepts more strongly compared to those studying in the Department of Religious Education. Although the fact that class level does not affect learning and teaching conceptions of pre-service teachers deserves attention, this finding should be further tested via the same research method employing a larger sampling.

Findings obtained in the study about epistemological beliefs indicate that pre-service teachers of religion have a tendency to believe that the process of gaining knowledge is important in learning, that knowledge of experts must be queried and that effort is important in learning while their beliefs in the fact that ability is innate and fixed and knowledge is certain and constant are poor. It was seen in this study that the variable of gender does not affect epistemological tendencies of students in subscales of doubt about expert's knowledge, learning effort and certainty of knowledge significantly but it changes the subscale of innate ability significantly.

Furthermore, it was noted that the variable of class level does not affect epistemological tendencies of students in subscales of doubt about expert's knowledge, innate ability and learning effort significantly but it changes certainty of knowledge between tendencies of 2<sup>nd</sup> and 3<sup>rd</sup> grade students. However, the variable of the discipline in which the student studies does not significantly affect epistemological tendencies of students. This study found that students studying in the Department of Islamic Sciences and those studying in the Department of Religious Education have similar epistemological tendencies. The finding that students studying in the department of Divinity and those studying in the Department of Religious Education have similar epistemological tendencies is unexpected because educational programs of Department of Religious Education include pedagogical formation courses.

Findings of this study about the relationships between epistemological beliefs and teaching and learning conceptions are in line with constructivist ideals and philosophy. Thus, constructivist beliefs increase as the beliefs that understanding process is important in learning, expert's knowledge must be queried and effort is important in learning increase while constructive conception in learning and teaching decreases when the belief in that knowledge is certain. On the other hand, traditional beliefs in learning and teaching increase when the beliefs of that ability is innate and fixed, effort is important in learning and knowledge is certain and constant increase. Depending on this significant correlation between epistemological beliefs and the adopted teaching and learning conceptions, it may be believed that if courses like philosophy of knowledge take place in undergraduate programs of pre-service teachers, this may be useful for developing, supporting and strengthening constructivist conceptions.

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