

Epistemological beliefs of preservice social studies teachers

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ABSTRACT

Epistemological beliefs are an individual's personal beliefs about what knowledge, knowing, and learning are. These beliefs are important for pre-service teachers since they may affect their teaching styles in the classrooms. This study aims to determine if the pre-service teachers' undergraduate education affects their epistemological beliefs comparing the epistemological beliefs of the first and the fourth grade students at the Department of Social Studies Education in a state university in terms of their epistemological beliefs. The data were analyzed using independent groups t-test to compare the scores of pre-service social studies teachers in the sub-dimensions of the epistemological beliefs questionnaire (belief that learning depends on effort, belief that learning depends on skills, and belief in a single truth) in terms of their gender and grade level. The results of the study show that, except for the third dimension of the questionnaire, the fourth graders have more sophisticated beliefs than the first graders. There is no statistically significant difference between male and female pre-service teachers regarding their epistemological beliefs.

Keywords: Epistemological beliefs, teacher education, social studies.

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INTRODUCTION

Epistemology is described as an applied philosophy that investigates the core, principles, construction, roots and source of knowledge on one hand, and methodology, validity, conditions, opportunities, and boundaries of knowledge on the other (Bakırcıoğlu, 2012). Epistemological beliefs include individual theories, and beliefs on the nature of knowledge and knowing in general (Hofer and Pintrich, 1997; Schommer-Aikins, 2002).

Epistemological development of an individual was initially modeled by Perry (1970). In his intellectual development model, he explained individual's epistemological development with nine stages. (1) Basic duality, where there is right or wrong, good or bad. (2) Multiplicity pre-legitimate, where truth is not certain. Authorities know the right answers. (3) Multiplicity subordinate where diversity and uncertainty are accepted but only when authority does not have the answer yet. (4) Multiplicity correlate or relativism subordinate, where diversity and uncertainty are accepted, either due to the influence of the authorities or similar thinking. (5) Relativism correlate, competing, or diffuse, where

knowledge is contextual and relativistic and analyzed independently. (6) Commitment foreseen, where the necessity of some form of commitment is recognized. (7) Initial commitment, in an area. Knowledge is acquired from experiences. (8) Orientation in implications of commitment, where the implications of commitment are experienced. (9) Developing commitment(s), where commitment is recognized as an ongoing, unfolding activity. After Perry, Mary Belenky and her friends constructed their model called Women's Way of Knowing (Belenky, et al., 1986) based on their studies conducted with only female participants. They explained Women's Way of Knowing with five female perspectives: (1) Silence: Knowledge comes from authorities and the self is perceived as mindless and voiceless. (2) Received knowledge: Belief that the knowledge of the authority could be received and reproduced, but could not be produced. (3) Subjective knowledge: The belief that knowledge is personal, private and intuitive. (4) Procedural knowledge: Acquisition of knowledge with objective and rational methods. (5) Constructed

knowledge: Acquisition of knowledge with both objective and subjective methods. Epistemological Reflection is another model that aimed to explain epistemological development. According to Magolda (1992), in absolute knowing, whether right or wrong, knowledge is certain and only known by the authorities. In transitional knowing, knowledge is certain partially and in certain domains. In independent knowing, knowledge is uncertain, authority is not the only source of knowledge. And in contextual knowing, knowledge is uncertain, authorities' and peers' opinions are worthy as well as the self's. In the Reflective Judgment model, King and Kitchener (1994) proposed a different scheme that included seven stages. First three stages constituted the pre-reflective level. In the first stage, knowledge is certain and objective. In the second stage, knowledge could not be observed but is still objective. In the third stage, knowledge is still objective but can be uncertain. The fourth and the fifth stages constitute the quasi-reflective level. In the fourth stage, knowledge is uncertain, and in the fifth stage, knowledge is contextual and subjective. The sixth and the seventh stages constitute the reflective level. In the sixth stage, knowledge is constructed by individual judgments. And in the seventh stage, knowledge is constructed by critical questioning. And according to the Argumentative Reasoning model (Kuhn, 1991), absolutists considered that knowledge was absolute and certain, and is acquired from the authorities and realities. Multiplists considered that knowledge does not come from authorities and realities but from opinions. In evaluative approach, knowledge includes judgments that should be supported by evidence and discussions.

Until Marlene Schommer developed her scheme, researchers specified epistemological beliefs as unidimensional and sequential development systems. Schommer (1990) defined epistemological beliefs as an independent, multidimensional system. And the system included five dimensions that grade the continuum between undeveloped and developed, or between naïve and sophisticated. In the "certain knowledge" dimension, knowledge is absolute and certain, or knowledge is a developing structure that depends on experiences. In the "simple knowledge" dimension, knowledge is isolated, includes certain parts and particular events, facts, or circumstances, or interrelated concepts. In the "omniscient authority" dimension, knowledge is instructed by the authority or acquired with reasoning and evidence. In the "innate ability" dimension, learning ability is innate an unchangeable, or acquired by experiences and could be improved over time. And in the "quick learning" dimension, learning occurs quickly or gradually.

"The personal epistemology of teachers is characterized by a set of beliefs about learning and the acquisition of knowledge that drives classroom instruction" (Schraw and Olafson, 2008: 33). And "student teachers' epistemological beliefs and conceptions of teaching and learning are viewed as important since they

will influence their behavior in classroom and determine their teaching strategies" (Aypay, 2010: 2600). Tezci et al. (2016) found that pre-service teachers' epistemological beliefs predicted their teaching-learning conceptions. Thus, certain studies have been conducted on the effects of teacher training on epistemological beliefs of pre-service teachers. Tümkaya (2012), in a study conducted with students attending several colleges including the faculty of education and the same questionnaire, determined that the beliefs that learning depends on effort (BLDE) was more common among the first graders and the fourth graders when compared to third graders, the beliefs that pertain to there being only one unchanging truth (BOUT) was more common among the second graders when compared to the third and the fourth graders, while there were no significant difference between the frequency of the belief that learning depends on ability (BLDA). Sevgi and Armağan 2017 determined that there were no statistically significant differences between the epistemological beliefs of elementary education department first, second, third and fourth grade pre-service teachers on the simplicity of knowledge based on gender, department and grade level and there were no statistically significant differences between their beliefs about the certainty of knowledge based on gender and grade level. Furthermore, it was concluded that the intrinsic epistemological beliefs of pre-service teachers did not statistically significantly differ based on their department. On the other hand, intrinsic epistemological beliefs of pre-service teachers differed statistically significantly based on gender and grade level. Aslan (2017) compared the epistemological beliefs of the first and fourth grade pre-service teachers, including social studies education, and did not determine significant differences between the belief that learning depends on ability, while in the belief that learning depends on effort, the first graders were significantly better than the fourth graders and the fourth graders were significantly better than the first graders in the belief in a single truth. Topkaya (2015), on the other hand, determined that the fourth grader social studies and science pre-service teachers had more sophisticated epistemological beliefs in all three dimensions when compared to the first graders. The differences between the course content in different educational departments may lead to these differences. Thus, in the present study, only epistemological beliefs of pre-service social studies teachers were investigated. The present study aimed to determine the epistemological beliefs of pre-service social studies teachers based on grade level and gender variables.

METHOD

In the study, survey method, a descriptive research design, was employed. Survey is among the most popular research models in social sciences, and it could

be adopted to describe a past or present case. The case, individual or object that is the subject of the study is attempted to be defined as is under current conditions. No attempt is made to alter or influence the variables (Karasar, 2012).

Study group

For this study 66 pre-service social studies teachers, who were the first graders (n: 34) and the fourth graders (n: 32) in Artvin Coruh University, Faculty of Education, Social Studies Education Department, were included in the study group.

Data collection instrument

Epistemological Beliefs Questionnaire, which was originally developed by Schommer (1990) as, the Schommer Epistemological Questionnaire (SEQ) and adapted to Turkish language by Deryakulu and Büyüköztürk (2005) was employed as the data collection instrument in the study. Cronbach’s Alpha values of the scale are found as 0.83 (1st factor), 0.62 (2nd factor), and 0.59 (3rd factor).

Data analysis

The study data were analyzed with the SPSS 16 software. Normality test was conducted and skewness and kurtosis values were examined to determine whether the data set exhibited normal distribution based on the gender and grade level variables. The analysis revealed that the data were normally distributed based on both gender and grade level variables. The data were analyzed with independent groups t-test to determine the variations in the scores of pre-service social studies teachers in epistemological beliefs questionnaire sub-dimensions (belief that learning depends on effort, belief

that learning depends on ability, and belief in a single truth) based on gender and seniority. The significance of the data was tested at $p < .05$ level.

RESULTS

Independent groups t-test was conducted on the scores of pre-service social study teachers in the questionnaire conducted to determine their epistemological beliefs and their belief that learning depends on effort, belief that learning depends on ability, and belief in a single truth sub-dimensions based on class and gender variables.

The results of independent groups t-test analysis conducted on the epistemological beliefs of pre-service social studies teachers based on gender are presented in Table 1.

The analysis of Table 1 revealed that the epistemological beliefs of the pre-service social studies teachers that learning depends on effort ($t_{(64)} = 1.592, p > .05$), learning depends on ability ($t_{(64)} = -.676, p > .05$) and there is a single truth ($t_{(64)} = 1.375, p > .05$) did not differ statistically based on gender. Thus, it could be suggested that there was no significant difference between the epistemological beliefs of pre-service teachers based on gender.

The analysis results on the epistemological beliefs of pre-service social studies teachers based on grade level are presented in Table 2.

The analysis of independent groups t-test results conducted on the epistemological beliefs that learning depends on effort ($t_{(64)} = -2.491, p < .05$) and learning depends on ability ($t_{(64)} = -2.182, p < .05$) differed statistically significantly based on grade level. The review of the mean participant scores in both sub-dimensions with a significant difference demonstrated that the difference favored the fourth grade pre-service teachers. In contrast, the pre-service social studies teacher scores in the sub-dimension of the belief in a single truth did not differ statistically based on the grade level ($t_{(64)} = -.181, p > .05$).

Table 1. Independent groups t-test analysis of epistemological beliefs based on gender.

Sub-dimensions	Gender	N	\bar{x}	Ss	Sd	t	p																				
Belief that learning depends on effort	Female	34	2.55	1.16	64	1.592	.116																				
	Male	32	2.19	.47				Belief that learning depends on ability	Female	34	3.00	1.29	64	-.676	.501	Male	32	3.18	.80	Belief in a single truth	Female	34	3.28	.93	64	1.375	.174
Belief that learning depends on ability	Female	34	3.00	1.29	64	-.676	.501																				
	Male	32	3.18	.80				Belief in a single truth	Female	34	3.28	.93	64	1.375	.174	Male	32	2.96	.96								
Belief in a single truth	Female	34	3.28	.93	64	1.375	.174																				
	Male	32	2.96	.96																							

Table 2. Independent groups t-test analysis of epistemological beliefs based on grade level.

Sub-dimensions	Grade level	N	\bar{x}	Ss	Sd	t	p
Belief that learning depends on effort	First grade	34	2.12	.77	64	-2.491	.015
	Fourth grade	32	2.65	.97			
Belief that learning depends on ability	First grade	34	2.81	1.00	64	-2.182	.033
	Fourth grade	32	3.38	1.10			
Belief in a single truth	First grade	34	3.11	.94	64	-.181	.857
	Fourth grade	32	3.15	.97			

DISCUSSION

The first result in the present study, where the epistemological beliefs of pre-service social studies teachers were measured, was that their epistemological beliefs did not differ significantly based on the gender variable. This study finding was consistent with several studies in the literature (Langcay et al., 2019; Sapancı, 2012; Tanrıverdi, 2012; Eren, 2007; Terzi, 2005; Conley et al., 2004; Strobel, et al., 2004; Kuhn et al., 2000; Schommer, 1993; Kuhn, 1991). In studies by Ismail et al. (2013), Aksan and Sözer (2007), Chai et al. (2006), Mason et al. (2006), Hofer (2000), Bendixen et al. (1998), Paulsen and Wells (1998) and Schommer (1993), it was determined that women had more sophisticated epistemological beliefs when compared to men, while Karataş and Erden (2012), Chan (2003) and King and Kitchener (1994) reported opposite findings.

In a study conducted by Eroğlu and Güven (2006) with pre-service teachers, female participants displayed more sophisticated results in the BLDA dimension when compared to males, while in BLDE and BOUT dimensions, the differences were not significant, similar to the present study. Similarly, in a study by Can and Arabacıoğlu (2009), there was no significant difference between epistemological beliefs of male and female pre-service teachers in BLDE and BOUT dimensions, while the beliefs of the males in BLDA dimension were more naïve. In other words, while female participants believed that the role of ability decreased as the role of effort increases in learning, male participants are of the opinion that ability were still significant even though learning required effort. In the present study, the beliefs of male and female participants did not differ in this context.

The study findings demonstrated that the fourth graders had more sophisticated epistemological beliefs when compared to the first graders. This finding was true for the first and the second epistemological belief dimensions analyzed in the present study. In the literature, interesting findings were reported by different studies that employed the same questionnaire. In a study conducted by Eroğlu and Güven (2006) with pre-service teachers attending various departments, no significant difference was reported between BLDE based on grade

level, while it was observed that the first graders had more naïve sophisticated beliefs in BLDA and BOUT dimensions when compared to the fourth graders. The authors suggested that this was due to the higher experience and knowledge levels of the fourth graders. While the present study findings were consistent with the above-mentioned study only in the second dimension, they were completely different from those reported by Tümkaya (2012). In her study, the first graders were better than the third graders and the fourth graders in the BLDE dimension, the second graders had more sophisticated epistemological beliefs in BOUT dimension when compared to the third and the fourth graders. There was no significant difference in the BLDA dimension. Aslan (2017) did not report any significant difference between the first graders and the fourth graders in the BLDA dimension, and concluded that the first graders had more sophisticated beliefs in the BLDE dimension, similar to the study by Tümkaya. In contrast, it was determined that the fourth graders had more sophisticated beliefs in BOUT dimension. In these studies, it was observed that college students always prioritized the role of ability in learning throughout their education life; however, their beliefs about the role of effort in learning changed with their grade level. Another study with contradicting findings for the BLDE and BLDA dimensions was conducted by Çağlayan and Mehtap (2010) with college students in sports-related departments including pre-service physical education teachers and reported no significant difference between their epistemological beliefs based on the grade level variable. A research with similar results and the same measurement instrument was conducted by Topkaya (2015), and reported that the epistemological beliefs of the first grade pre-service teachers were more sophisticated when compared to the first graders in all three dimensions. However, the results of a study by Aypay's (2011) were consistent with those of the current study. In a study conducted with participants attending several undergraduate and graduate departments in an education faculty, it was concluded that the first, second and the third graders believed that knowledge was final and constant when compared to the fourth graders and graduate students; thus, university education changed

the belief in the certainty of knowledge towards more sophisticated levels. The present study, on the other hand, investigated the epistemological beliefs of only pre-service social studies teachers based on the grade level variable and determined that teacher training significantly improved epistemological beliefs. The qualifications of teachers, which are among the factors that directly affect the effectiveness of education, influence the development of desired behavior in students. Thus, the present study findings could suggest that the pre-service social studies teachers could train students with high epistemological beliefs in the future.

In the future, longitudinal studies could be conducted on different variables that affect the epistemological beliefs of various study groups including pre-service and in-service teachers.

REFERENCES

- Aksan, N., and Sözer, M. A. (2007).** Üniversite öğrencilerinin epistemolojik inançları ile problem çözme becerileri arasındaki ilişkiler. *Ahi Evran Üniversitesi Kırşehir Eğitim Fakültesi Dergisi*, 8(1): 31-50.
- Aslan, C. (2017).** Examining epistemological beliefs of teacher candidates according to various variables. *Eurasian Journal of Educational Research*, 67: 37-50.
- Aypay, A. (2010).** Teacher education student's epistemological beliefs and their conceptions about teaching and learning. *Procedia-Social and Behavioral Sciences*, 2(2): 2599-2604.
- Aypay, A. (2011).** Epistemolojik inançlar ölçeğinin Türkiye uyarlaması ve öğretmen adaylarının epistemolojik inançlarının incelenmesi. *Eskişehir Osmangazi Üniversitesi Sosyal Bilimler Dergisi*, 12(1): 1-15.
- Bakırcıoğlu, R. (2012).** Ansiklopedik Eğitim ve Psikoloji Sözlüğü. Ankara: Anı Yayıncılık.
- Belenky, M. F., Clinchy, B. M., Goldberger, N. R., and Tarule, J. M. (1986).** Women's ways of knowing: The development of self, voice, and mind. New York: Basic Books.
- Bendixen, L. D., Schraw, G., and Dunkle, M. E. (1998).** Epistemic beliefs and moral reasoning. *Journal of Psychology: Interdisciplinary and Applied*, 132(2): 187-200.
- Çağlayan, S. H., and Mehtap, B. (2010).** Üniversite bayan futbol takımı sporcularının epistemolojik inançlarının bazı değişkenler açısından incelenmesi. *Niğde Üniversitesi Beden Eğitimi ve Spor Bilimleri Dergisi*, 4(1): 37-47.
- Can, B., and Arabacıoğlu, S. (2009).** The observation of the teacher candidates' epistemological beliefs according to some variables. *Procedia-Social and Behavioral Sciences*, 1(1), 2799-2803.
- Chai, C. S., Khine, M. S., and Teo, T. (2006).** Epistemological beliefs on teaching and learning: a survey among pre-service teachers in Singapore. *Educational Media International*, 13(4): 285-298.
- Chan, K. W. (2003).** Hong Kong teacher education students' epistemological beliefs and approaches to learning. *Research in Education*, 69(1): 36-50.
- Conley, A. M., Pintrich, P. R., Vekiri, I., and Harrison, D. (2004).** Changes in epistemological beliefs in elementary science students. *Contemporary Educational Psychology*, 29(2): 186-204.
- Deryakulu, D., and Büyükköztürk, Ş. (2005).** Epistemolojik inanç ölçeğinin faktör yapısının yeniden incelenmesi: Cinsiyet ve öğrenim görülen program türüne göre epistemolojik inançların karşılaştırılması. *Eğitim Araştırmaları*, 18: 57-70.
- Eren, A. (2007).** Examining the differences among undergraduate students' epistemological beliefs. *Eğitim ve Bilim-Education and Science*, 32(145): 71-84.
- Eroğlu S. E., and Güven K. (2006).** Üniversite öğrencilerinin bilimsel epistemolojik inançlarının bazı değişkenler açısından değerlendirilmesi. *Selçuk Üniversitesi Sosyal Bilimler Enstitüsü Dergisi*, 16: 295-312.
- Hofer, B. K. (2000).** Dimensionality and disciplinary differences in personal epistemology. *Contemporary Educational Psychology*, 25: 378-405.
- Hofer, B. K., and Pintrich, P.R. (1997).** The development of epistemological theories: Beliefs about knowledge and knowing and their relation to learning. *Review of Educational Research*, 67(1): 88 – 140.
- Ismail, H., Hassan, A., Muhamad, M. M., Ali, W. Z. W., and Konting, M. M. (2013).** Epistemological belief and learning approaches of students in higher institutions of learning in Malaysia. *International Journal of Instruction*, 6(1).
- Karasar, N. (2012).** Bilimsel araştırma yöntemi [Scientific research method]. Ankara: Nobel Yayınları.
- Karataş H., and Erden, M. (2012).** Profiling individual differences in undergraduates' epistemological beliefs: gender, domain and grade differences. *Procedia-Social and Behavioral Sciences*, 31: 738-744.
- King, P. M., and Kitchener, K. S. (1994).** Developing reflective judgment: Understanding and promoting intellectual growth and critical thinking in adolescents and adults. San Francisco: Jossey-Bass.
- Kuhn, D. (1991).** The skills of argument. Cambridge, UK: Cambridge Univ. Press.
- Kuhn, D., Cheney, R., and Weinstock, M. (2000).** The development of epistemological understanding. *Cognitive Development*, 15(3): 309-328.
- Langcay, M., Gutierrez, J. P., Valencia, M. M., and Tindowen, D. J. (2019).** Epistemological beliefs of pre-service teachers. *Journal of Social Sciences and Humanities*, 5(2): 37-45.
- Magolda, M. B. B. (1992).** Knowing and reasoning in college: Gender-related patterns in students' intellectual development. San Francisco: Jossey Bass.
- Mason, L., Boldrin, A., and Zurlo, G. (2006).** Epistemological understanding in different judgment domains: Relationships with gender, grade level, and curriculum. *International Journal of Educational Research*, 45: 43-56.
- Paulsen, M. B., and Wells, C. T. (1998).** Domain differences in the epistemological beliefs of college students. *Research in Higher Education*, 39(4): 365-384.
- Perry, W. G. (1970).** Forms of intellectual and ethical development in college years: A scheme. New York: Holt, Rinehart and Winston.
- Sapancı, A. (2012).** Öğretmen adaylarının epistemolojik inançları ile bilişüstü düzeylerinin akademik başarıyla ilişkisi. *Celal Bayar Üniversitesi Sosyal Bilimler Dergisi*, 10(1): 311-331.
- Schommer, M. (1990).** Effects of beliefs about the nature of knowledge on comprehension. *Journal of Educational Psychology*, 82: 498-504.
- Schommer, M. (1993).** Comparisons of beliefs about the nature of knowledge and learning among postsecondary students. *Research in Higher Education*, 34(3): 355-370.
- Schommer-Aikins, M. (2002).** An evolving theoretical framework for an epistemological belief system. In B. K. Hofer & P. R. Pintrich (Eds.), *Personal epistemology: The psychology of beliefs about knowledge and knowing* (103 – 118). Mahwah, NJ: Erlbaum.
- Schraw, G. J., and Olafson, L. J. (2008).** Assessing teachers' epistemological and ontological worldviews. In *Knowing, knowledge and beliefs* (25-44). Springer: Netherlands.
- Sevgi, S., and Armağan, F. Ö. (2017).** Turkish elementary pre-service teachers' epistemological beliefs. In *International Congress of Eurasian Social Sciences (ICOESS) Special Issue*.
- Strobel, J., Cernusca, D., and Jonassen, D. H. (2004).** Different majors-different epistemological beliefs? *Academic Exchange Quarterly*, 12: 208-211.
- Tanrıverdi, B. (2012).** Pre-service teachers' epistemological beliefs and approaches to learning. *Procedia-Social and Behavioral Sciences*, 46: 2635-2642.
- Terzi, A. R. (2005).** Üniversite öğrencilerinin bilimsel epistemolojik inançları üzerine bir araştırma. *Sosyal Bilimler Dergisi*, 298-311.
- Tezci, E., Erdener, M. A., and Atici, S. (2016).** The effect of pre-service teachers' epistemological beliefs on teaching approaches. *Universal Journal of Educational Research*, 4(n12A): 205-215.
- Topkaya, Y. (2015).** Examining social studies and science and technology preservice teachers' epistemological beliefs regarding

different variables. *Educational Research and Reviews*, 10(18): 2550-2557.

Tümkiye, 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.

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