EPISTEMOLOGICAL BELIEFS AND METACOGNITIVE STRATEGIES OF ELT PRE-SERVICE TEACHERS IN DISTANCE AND FORMAL EDUCATION

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ABSTRACT

The epistemological beliefs in learning process have been investigated from different aspects in relation with many variables in literature. Such beliefs are defined as individuals' beliefs regarding knowledge and learning. As another related, popular concept, the metacognitive strategies are identified as the strategies used to control the process of obtaining knowledge.

Thus, it is seen that both of them are employed to make learning more effective. Within this framework, the aim of the present study was to determine the epistemological beliefs and metacognitive strategies of the pre-service teachers in the distance and formal education English Language Teaching program and to investigate whether there was any difference/ were any differences between them. To collect data, "Epistemological Belief Scale" developed by Schommer (1990) and translated and validated by Deryakulu and Büyüköztürk (2002) and "Metacognitive Strategy Inventory" which was adapted for university students by Yıldız, Akpınar and Ergin (2006) were used. Then through the descriptive method they were analyzed.

As a result of study, it was determined that there was a significant relationship between the epistemological beliefs and metacognitive strategy use of ELT pre-service teachers in both formal and distance education programs.

Keywrds: Learning, Epistemological Beliefs, Metacognitive, Metacognitive Strategy

INTRODUCTION

Recently, individuals' learning features, their ways of learning, and learning beliefs have been emphasized in the studies about the nature of learning. In this context, epistemological beliefs are handled as individual viewpoints regarding the borders and criteria for knowledge, and certainty and accuracy levels of knowledge, content of knowledge, and how it is collected (Perry, 1981).

On the other hand, metacognitive strategies are the strategies that enable individuals prepare, arrange, realize, check and improve their own learning, It has been pointed out that epistemological beliefs are related to students' comprehension level, compatibility with their goals, use of metacognitive and learning strategies, and learning environments at schools (Hofer, 2001). In the same vein, the researchers who focused on "studying approaches" and "studying methods" (Biggs, 2001; Entwisted et al, 2001; Meyer, 2000) also combined these with students' beliefs about learning and knowing. Thus, it is seen that researchers have associated epistemological beliefs with many different variables regarding learning.

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EPISTEMOLOGICAL BELIEFS

The research on epistemological beliefs started with the study conducted by Perry (1977) with undergraduate students at Harvard University. Perry identified students in terms of four main ways, namely dualism, multiplism, relativism and commitment (Brownlee, Purdie and Boulton-Lewis, 2001). Dualism refers to the assumption that all of beliefs regarding knowledge point to absolute reality (right or wrong) while multiplism refers that some of the beliefs regarding knowledge are based on absolute reality, yet some do not have certainty. On the other hand, relativism is associated with the assumption that individuals construct knowledge so epistemological thinking develops and absolute reality does not exist for a long time, whereas commitment is related to improvement of more flexible and valuable belief system. In his study, Perry obtained that majority of the students considered knowledge as simple and unchanged fact, omniscient authority in their first years at school, on the other hand, it was concluded that at the last years of their university education, students thought that knowledge was complicated and generally related to experiment and reasoning (Perry, 1977; Schommer – Aikins, 2004). On the basis of these studies, epistemological beliefs have been considered as related to what knowledge is and how it is attained (Brownlee, Purdie, Boulton – Levis, 2001). The studies started by Perry were extended by Schommer (1990) by addressing and refocusing on the studies about high school students' beliefs on mathematic learning by Schoenfeld (1983), and to students' beliefs on intelligence by Dweck and Legget (1988), Belenky et al's (1986) study investigating women's ways of knowing, and Baxter Magolda's (1992) study on the effect of gender on epistemological beliefs (Chai, Khine and Teo, 2006).

While Hofer and Pintrich (1997) stated that individuals' belief systems influence all of their decisions and behaviors, Hofer (2001) defined epistemology as the concept expressing the individuals' beliefs about knowing and knowledge; also she explained it within the framework of nature of knowledge. In this sense, epistemology includes individuals' beliefs about not only the nature of knowledge but also nature of knowing and learning. The beliefs regarding the nature of knowledge refer to individuals' beliefs about what knowledge is, while their beliefs regarding the nature of learning point to the beliefs about how an individual knows or learns (Hofer, 2004; Schommer, 1994). On the other hand, Schommer (1990) approached the issue of epistemological beliefs more holistically. Schommer (1990) posited that epistemological beliefs can be considered all together instead of dealing with it one by one as knowledge, intelligence or learning.

In other words, she underlined that epistemological beliefs are a multi-dimensional belief system. Epistemological beliefs, which are individual features, are defined as "individuals' subjective beliefs about what knowledge is, how knowing and learning happens" (Schommer, 1990; citied in. Deryakulu and Büyüköztürk, 2002).

Schommer, who defined epistemological beliefs as individuals' beliefs about knowledge and learning, developed a four-dimensional model including *"simple knowledge", "certain knowledge", "quick learning" and "innate ability (fixed ability)".* (Schommer, 1990; Brownlee, Purdie, Boulton- Lewis, 2001).

In this model, Schommer (1990) emphasized that individuals have different developmental levels regarding what knowledge is and how it is attained, also/moreover they possess beliefs which can occur all together and these beliefs influence students' learning processes. The dimension of "*simple* knowledge*" involves the structure of knowledge and it is related to individuals' belief about whether the structure of knowledge is simple or complicated.

The dimension of *"certain knowledge"* contains the beliefs regarding the certainty of knowledge and it indicates whether knowledge is certain and unchanged or it changes constantly. The dimension of "*quick learning"* consists of beliefs regarding learning process and it is related to whether learning happens fast and in time or not. On the other hand, the dimension of "*innate ability"* includes beliefs regarding learning process and it points out whether learning ability is an inherent and unchanged feature or it can be developed with effort. By means of the studies that Schommer (1994) conducted on the students with different education levels, she suggested that epistemological belief dimensions should be defined as distribution rather than continuity. Accordingly, each dimension is defined with clear distributions between developed or matured epistemological belief and undeveloped or immature epistemological belief (Schommer-Aikins and Hutter, 2002). Recently, many qualitative and quantitative studies on epistemological beliefs have been conducted.

The majority of these studies focused on defining the levels of individuals' epistemological beliefs (Deryakulu, 2004). These epistemological belief studies indicated that the students with developed epistemological beliefs have effective learning habits, their academic achievement increases/ they have higher achievements, additionally, this helps them overcome any problems and achieve their goals, besides/ and they become successful in the process of checking the new knowledge (Dweck and Leggett, 1988; Schommer, 1990; Schommer, 1993; Ryan, 1984; Qian and Alvermann, 2000).

METACOGNITIVE STRATEGIES

The assumption that the students, who are aware of how they study and who can behave consciously to increase the efficiency of studying/learning, are more successful than the students, who are not aware of all these processes, is one of the main principles of effective learning (Eggen and Kauchak, 1992;Candan, 2005). This principle is based on the idea that learning is, in fact, a cognitive process and the quality of this process can be enhanced by using learning strategies. One of the main concepts handled by Knowledge Processing Theory, which explains this process, is metacognitive aimed at explaining this process is one of the main concepts tackled by Knowledge Processing Theory. The metacognitive, which is one of the directive concepts of the theory, has been named differently by many researchers. Some of these names are comprehension monitoring, superior cognition, metacognitive and executive cognition. Although there are different names, the definitions and features of the concept share similarities, and it is observed that its definitions and functions are in two forms.

Eggen and Kauchak (1992) investigated the concept of metacognitive in context of "learning strategy" by restricting it that students determine their own studying strategies. On the other hand, another term/ meaning covering this concept is higher thinking strategies. Flavell (1979), Woolfolk (1998) Caine and Caine (2002), Welton and Mallan (1999) and Gage and Berliner (1988) dealt with the concept of metacognitive within the category of "higher way of thinking" as students think on their own thinking way and control their thinking process.

Metacognitive is the individual's structure of cognition, awareness of learning features and controlling these (Flavell, 1979; Gage and Berliner, 1988). According to Stenberg (1988), metacognitive is a higher-level administrative process in which an individual uses planning, monitoring and evaluation in problem-solving (Senemoğlu, 1997).

A student with metacognitive abilities has the skills of monitoring his own mental activities, observing, and self-control on learning.

These qualities also involve the skills of being aware of learning process, planning, selecting strategies, monitoring learning process, checking the practicality of the used strategies and changing the learning method and strategies if required. Woolfolk (1988) stated that metacognitive is a process that controls the process for obtaining knowledge. This process consists of attention, regular iteration, and detailed iteration, arranging knowledge and giving details on it. The students who use metacognitive strategies can ask these questions to themselves (Özer, 1998; Senemoğlu, 1997;Şimşek, 2006):

> ➢ What is my aim to learn this subject?
> ➢ What do I know about this subject?
> ➢ How can I learn this subject most effectively?
> ➢ Do I use time efficiently?
> ➢ What should I do to overcome troubles?
> ➢ If I make a mistake, how should I find my mistake?
> ➢ Does the product that I will have at the end of all these processes satisfy my expectation; if it does not should I change my plan?
> ➢ What should I do to improve myself as a student?

When all questions are taken into account, it can be seen that there is a progress as planning for learning process, sustaining and monitoring the plan, at last evaluating it. In Figure 2 below, the stages of metacognitive process developed by King are illustrated (Hartman, 2002):
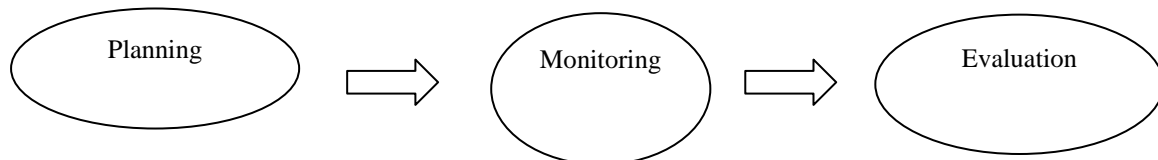

Figure: 1
The Stages of Metacognitive Process

The students who use metacognitive strategies control themselves at each stage of learning, and in case of inadequacy, they select and use the strategies that can solve that problem (Güven, 2004). Metacognitive strategies are mostly applied as internal-check. For instance; students ask themselves questions to check their comprehension of the material they study and for the chapters that they cannot answer they use new strategies to learn better (Şimşek, 2006). This increases students' awareness for longer term. There have been many studies on the use of metacognitive strategies. In these studies, it has been observed that metacognitive strategies help students know their own metacognitive structures, and thus the effectiveness in learning process is enhanced (Blank, 2000; Beeth, 1998; Paris and Myers, 1981).

EPISTEMOLOGICAL BELIEFS AND METACOGNITIVE STRATEGIES

Individuals' epistemological beliefs have important effects on learning processes. According to Schommer (1993), students' epistemological beliefs also influence the cognitive strategies and learning approaches they use in learning process directly, and thus their academic achievement is indirectly influenced (Cano, 2005; Deryakulu, 2004). This situation has been confirmed with the results of some studies.Dahl et al (2005) investigated the relationship between the university students' epistemological beliefs and learning strategies and as a result they obtained that the students who believed that knowlege is simple and inherent mostly used repetition strategies, whereas they used metacognitive and critical-thinking strategies less.

They mentioned the relationship between epistemological beliefs and learning strategies. Furthermore, Kardash and Howell (2000) examined the relationship between the university students' epistemological beliefs and cognitive strategies, and they determined that as the students' epistemological beliefs got stronger they used more different cognitive strategies.

In the same way, Ravindran et al (2005) dealt with the relationship between the pre-service teachers' epistemological beliefs, cognitive focus and learning process. They concluded that the students who believed in the simplicity of knowledge tend to use more structural strategies in learning processes. In another study, Deryakulu (2004) examined the relationship between the university students' epistemological beliefs and learning and studying strategies. As a result, it was concluded that the students who believed that learning depends on effort had more positive attitude towards school and academic tasks, and higher motivation level, also they planned for their studies beforehand, they experienced less exam anxiety, they could concentrate more on the subject they studied, they could use data processing strategies more effectively. Besides they could determine the important points in the teaching material, and they could use self-evaluation and exam strategies and supporters in learning process more efficiently. Additionally, it was found that the students, who believed that there is only one truth, used the materials supporting the permanence of learning more, also they got more motivated to be successful at school and in order to check their learning they used strategies more.

As a result of all these studies, it has been revealed that the more developed epistemological beliefs students have, the more effectively they use metacognitive strategies and they become more successful. In other words, the students' beliefs influence their use of learning strategies and self-control strategies, and thus their academic achievement is also influenced (Paulsen and Feldman, 1999; Paulsen and Gentry, 1995; Pintrich and Schrauben, 1992).

AIM OF THE STUDY

There are many studies on the pre-service teachers' epistemological beliefs. Researchers and educators have often discussed the concepts referring to teachers' beliefs and value systems, also the learning strategies they use and class applications, especially teaching strategies and their classroom performances have been examined (Cheng, Chan, Tang and Cheng, 2008). Pre-service teachers' beliefs, particularly beliefs about learning, are important factors that influence their classroom performances (Lawrance, 1992; Pajares, 1992; Renne; 1992; Richardson Anders, Tidwell and Lloyd, 1991; Shaver, 1992; Wilson, 1990). Out of teachers' beliefs, the ones related to the nature of knowledge and learning, in other words; the epistemological beliefs substantially influence teachers' in-class teaching activities such as which teaching method and techniques to be used, how to manage the class, what to focus in teaching (Eroğlu and Güven, 2006). In addition, the findings of the studies related to epistemological beliefs also emphasized that students' metacognitive activities and motivation for learning are related to their epistemological beliefs (Paulsen and Feldman, 1999; Chan, 2003). Thus, it is quite crucial to focus on epistemological beliefs and use of metacognitive strategies on the purpose of learning improvement in teacher education programs (Brownlee, Purdie, Boulton-Levis, 2001;Öztürk, 1995).

Considering teacher education programs, Brownlee (2003) claimed that teacher educators should focus on pre-service teachers' personal epistemological beliefs if teacher educators are accepted to help pre-service teachers develop such sophisticated beliefs.

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However, teacher education programs do not often facilitate this development although many teacher educators widely agree on the significance of helping students develop these beliefs. Moreover, according to Qian and Alvermann (2000), many researcher and educators have emphasized the need for students to develop effective strategies in order to mature/develop their beliefs. (Carey et al., 1989; Hammer, 1995; Solomon et al., 1994; Spiro, Vispoel, Schmitz, Samarapungavan, &Boerger, 1987). From this perspective, it can be claimed that epistemological beliefs and factors influencing learning process should be emphasized in teacher education program, no matter in which context (formal or distance) it is carried out.

Teachers have significant effects on their students. Therefore, to determine their epistemological beliefs and use of metacognitive strategies, which contribute to learning process and learning outcomes, will provide clues about the learning environments that these teachers will prepare for their students in the future. In other words, any knowledge about the pre-service teachers' epistemological beliefs and metacognitive strategy use will make teaching-learning environment more effective and functional and as a result they will be more beneficial for their further students.

In Turkey, primary and secondary school teacher education is given as four-year formal education at education faculties. Along with eight-year compulsory education started in 1997, the need for English teachers increased and the number of teachers trained at Education faculties could not satisfy this need. Thus, distance education program for English Language teachers started in 2000-2001 academic years as a result of cooperative study between Anadolu University and Ministry of Education in order to meet the requirement for English Language teachers.

English Language Teaching Undergraduate Program is a quadrennial program within Distance Education Faculty of Anadolu University. This program, which started as a result of protocol signed by Ministry of Education and Anadolu University on 28.02.2000, is an equivalent program to the formal undergraduate education program of English Language Teaching at Education Faculties. The first two years of the Distance English Language Teaching Undergraduate Program are carried out as a formal education (face to face education) while the last two years are conducted through complete distance education system.

The main goal of Distance English Language Teaching Undergraduate Program is to contribute to training sufficient number of qualified English Language teachers that Turkey needs, without making any concessions. The main learning materials of Distance English Language Teaching students are course books. The *course books* are designed as appropriate to the levels of students and it contains suggestions for studying, memory notes, discussion questions and references to related sources. Additionally, *television broadcasts* related to courses are included in the program to support the course books.

Television used at Distance Education system of Anadolu University is one of the most important means that supports the written materials. It is possible to train larger population under equal conditions by using visual and audio components together. Furthermore, students can benefit from *e-learning* applications through internet support.

These e-learning services are presented to the students in this program in order to facilitate learning strategically by gathering the several advantages of individual equipments such as book, television, computer etc in one learning environment. In addition to this, the students enrolled in both distance education programs carry on their teaching practices at schools (http://iolp.anadolu.edu.tr/egitim.htm).

The studies on the distance education students' epistemological beliefs are limited. However, Kember (2001) referred to this issue by investigating the epistemological beliefs of the university students in Open University in Hong Kong and revealed the difference between the epistemological beliefs of the students who just started to university education and the ones at the end of the first year at the university. This difference was explained with the development of epistemological beliefs at the end of the first year at university

As the motivation for the study, firstly the differences in learning environments of formal and distance education students and the effect of such difference on the pre-service teachers' epistemological beliefs and use of metacognitive strategies are taken into account since there is a need for a study that can address this issue. Additionally, considering the gap in literature, the relationship between epistemological beliefs and metacognitive strategy use of ELT pre-service teachers in distance and formal education, in other words, the relationship between the pre-service teachers' beliefs towards learning and controlling and monitoring learning processes are examined. It should be highlighted that there is not any study conducted in Turkey that investigates both the relationship and difference between pre-service teachers' epistemological beliefs and use of metacognitive strategies of ELT pre-service teachers in formal and distance education programs.

In this study, it was attempted to determine the epistemological beliefs and metacognitive strategy use of English Language Teaching (ELT henceforth) pre-service teachers in distance and formal education, also to define whether there is any difference between them. On this purpose, the following research questions were addressed:

> What are the
  - epistemological beliefs
  - metacognitive strategy use
  - the effect of epistemological beliefs on use of metacognitive strategies of ELT pre-service teachers in distance education program?
> What are the
  - epistemological beliefs
  - metacognitive strategy use
  - the effect of epistemological beliefs on use of metacognitive strategies of ELT pre-service teachers in formal education program?
> Are there any differences between the epistemological beliefs of ELT pre-service teachers attending in distance and formal education?
> Are there any differences between the metacognitive strategy use of ELT pre-service teachers attending in distance and formal education?

METHOD

Research Model
In this study, a descriptive method was used to determine the epistemological beliefs and metacognitive strategy use of ELT pre-service teachers in distance and formal education programs, and to define any differences between them.

Population and Sampling Group
The population of the study comprises the students studying at the department of English Language Teaching at Education Faculty and Faculty of Open University in Anadolu University.

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However, due to the larger population enrolled at Faculty of Open University, a sampling group was selected for this study. This sampling group involves all of the students enrolled at Department of English Language Teaching at Faculty of Education and only the distance education English Language Teaching program students who lived in Eskisehir. In this context, 157 students in formal education and 224 distance education students, totally 381 English Language Teaching pre-service teachers participated in the study.

Demographic knowledge of the participants in this study is that 70.3% (268) of the pre-service teachers were female while 29.7% (113) were male. Additionally, 26.2% (100) of them were freshmen the first grade, 36.5% (139) were second grade students, 23.1% (88) were third grade and 14.2% (54) were the fourth grade students. According to the means of their academic achievement 23.6% (90) of them were average, 36.7% (140) were good and 39.6% (151) were very good. When the pre-service teachers' parents' education levels were examined, it was seen that 45.1% (172) had low, 33.9% (129) had average and 21.0% (80) had high education level. Out of the pre-service teachers participated in the study, 20.9 % of them were 20 years and younger, 53.8 % of them were in between 21-25 years, while 10.2 % of the participants were in 26-30 years, and 5.1% of them were 31 years and elder. These pre-service teachers participated in the study from different cities in Turkey.

Data Collection
In this study, to investigate the distance and formal education ELT pre-service teachers' epistemological beliefs and use of metacognitive strategies, and the differences between them, a data collection instrument which consists of three sections, namely "personal knowledge" section, "Epistemological Belief Scale" and "Metacognitive Inventory" was used.

In this study, four questions (gender, grade, academic achievement, and parent education level) were asked to determine the personal features of the participants.

Epistemological Belief Scale
"Epistemological Belief Scale" was developed by Schommer (1990) and translated into Turkish and validated by Deryakulu and Büyüköztürk (2002). This scale has three-factor structures. Under the first factor of the scale, *"The belief that learning depends on effort"*, there are 18 items, for the second factor *"The belief that learning depends on ability"*, there are 9 items; lastly 8 items are included for *"The belief that there is only one truth"*. In the scale, the participants' agreement levels to the statements were ranged as "Strongly Disagree (1), Disagree (2), No Idea (3), Agree (4), and Strongly Agree (5)". Some of the example items in the scale are as in the following;

> ➢ If he cannot comprehend something soon he should keep making an effort to comprehend
> ➢ (The belief that learning depends on effort)
> ➢ You should take what teachers tell for granted even if you do not understand exactly (The belief that learning depends on ability)
> ➢ Scientists can find the reality (truth) about almost everything if they make enough effort (The belief that there is only one truth)

In the study, low means of scores obtained from the factors were interpreted as developed/matured epistemological beliefs; high means were explained as undeveloped/immature epistemological beliefs (Schommer-Aikins, Mau, Brookhart and Hutter, 2000, Deryakulu, 2004).

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The reliability study was again conducted on Epistemological Belief Scale and Cronbach alpha coefficient was found as .73, in detail; for the first factor it was .64, for the second factor, .65 and for the third factor .60.

Metacognitive Strategy Inventory

In this study, in order to determine the pre-service teachers' use of metacognitive strategies, "Metacognitive Strategy Inventory" which was developed and validated by Çetinkaya and Erktin (2002) for the preadolescence children, and adapted to university students by Yıldız, Akpınar and Ergin (2006) was used. This inventory had a four-factor structure. The first factor, named as Cognitive Strategy", has totally 5 items, the second factor "Awareness" has 4 items, under the third factor "Self-control", there are totally 6 items, lastly the fourth factor "Self-evaluation" there are 5 items. In the inventory, a four- point scale ranging as "Never (1), Sometimes(2), Often(3), Always(4) was used to determine the participants' agreement levels. Some example items and factors were given in the following;

I try to understand whether the exam questions are related to the subject I know (Cognitive Strategy)
I am aware that I use certain methods to solve the questions in the exam (Awareness)
While answering a question I check how I do (Self-control)
I can accurately guess my success in the exam (Self-evaluation)

The reliability of the inventory was recalculated and it was found that Cronbach alpha coefficient for the instrument was .90, for the first factor .65, the second factor, .65, the third factor .74, and for the last factor it was again .74.

The data collection instrument was sent to 400 distance education students via mail. In the envelope that the participants received, there were data collection instrument, return envelope (with stamp and address) and a memo about the due date.

The participants' addresses were obtained from Anadolu University Data Processing Unit. Out of 400 students, 242 participants answered the instrument and sent it back.

From these instruments, the ones which were uncompleted or wrongly completed were excluded and finally the instruments collected from 224 participants were included in the data analysis.

However, the instruments were delivered to students studying at the formal education by the researcher.

In order to motivate the pre-service teachers about the study, the pre-service teachers in formal education were informed orally about the significance and necessity of the study while the distance education students were informed in written.

Data Analysis

In data analysis procedure, mean, standard deviation values were used to determine the pre-service teachers' epistemological beliefs and metacognitive strategy use, to investigate the effect of epistemological beliefs on metacognitive strategy use, multilinear regression analysis was used.

Additionally, to find out the differences between the groups, paired group comparisons (formal and distance education programs), "independent t-test" were used.

The significance level for the statistical analysis in the study was accepted as .05. The statistical analysis was carried out through SPSS (Statistical Package for the Social Sciences) package program.

FINDINGS

The Distance Education ELT Pre-Service Teachers' Epistemological Beliefs And Metacognitive Strategy Use And The Relationship Between Them

Epistemological Beliefs

By means of the first research question of the study, it was attempted to determine the epistemological beliefs of the ELT pre-service teachers in distance education. The scores that the participants obtained from the sub-scales were presented in Table: 1.

Table: 1
The Epistemological Beliefs of the ELT Pre-service Teachers
in Distance Education Program

Factor	N	The Lowest Score	The Highest Score	Mean	Standard Deviation
The belief that learning depends on effort	224	20	82	34.95	6.55
The belief that learning depends on ability	224	9	37	19.37	4.49
The belief that there is only one truth	224	13	39	27.35	4.68
Total	224	51	116	81.46	9.75

As seen in Table: 1, the distance education ELT teachers obtained different means of scores from the sub-scales. The means of the scores that the ELT pre-service teachers got from the first factor *"The belief that learning depends on effort"* was 34.95, for the second factor *"The belief that learning depends on ability"*, it was 19.37, for the last factor *"The belief that there is only one truth"*, it was 27.35. The mean of the scores that the participants got from the entire instrument was 81.46. Considering the highest scores that the participants got from the scale, it might be interpreted that the ELT pre-service teachers in distance education had undeveloped epistemological beliefs.

When the distance education pre-service teachers' epistemological beliefs were examined according to factors, considering the number of questions, it was observed the pre-service teachers had lower means of scores from the dimension of *"The beliefs that learning depends on effort"* than other two factors. According to this, it can be claimed that the pre-service teachers had developed/matured beliefs about this dimension. Additionally, these findings share similarities with the findings/those of the studies conducted in literature such that Schommer- Aikins, Duell and Barker (2003), Chan (2003), Vural and Gömleksiz (2007), Oğuz (2007) and Deryakulu and Büyüköztürk (2002, 2005). In these studies majority of the students were found to believe that learning depends on effort.

The pre-service teachers' score means from the second factor *"The belief that learning depends on ability"* were higher than their means from the first factor *"The belief that learning depends on effort"*. Thus, this finding may point out that the pre-service teachers' beliefs about this dimension were less developed/ matured.

This finding was compatible with the findings of other studies; Brownlee, Purdie and Boulton-Lewis (2001, Chan and Elliot (2002) and Deryakulu and Büyüköztürk (2002,

2005) obtained the similar results and claimed that the students had less developed/matured beliefs that learning depends on ability.

Finally, related to the third factor; "*The belief that there is only one truth*", the pre-service teachers had very high means of scores. Considering this, it can be claimed that the pre-service teachers had less developed/matured beliefs about this factor. In fact, the studies conducted by Chan and Elliot (2002), Deryakulu and Büyüköztürk (2002, 2005) and Öngen (2003) also found similar results. However, it is widely accepted that it is important to change the pre-service teachers' beliefs that there is only one truth/ to develop the pre-service teachers' beliefs that *there is only one truth* is quite important. Therefore, it is essential to make questioning, critical and research-based arrangements in teacher education programs.

Metacognitive Strategy Use
Within the framework of the first research question of the study, secondly the metacognitive strategy use of the pre-service teachers enrolled in the distance education program was examined. The means of scores that the participants got from the entire scale and subscales were given in Table:2.

Table:2
The Metacognitive Strategy Use of the ELT Pre-service Teachers
in Distance Education Program

Scale	N	The Lowest Score	The Highest Score	Mean	Standard Deviation
Cognitive Strategy	224	5	19	11.79	2.88
Awareness	224	4	16	9.14	2.56
Self-control	224	6	24	14.05	3.65
Self-evaluation	224	4	16	9.05	2.59
Total	224	20	77	46.22	10.75

As indicated in Table: 2, the pre-service teachers in distance education program had different means of score form the entire scale and sub-scales. From the entire scale, the participants' mean of scores was 46.22, from the cognitive strategy sub-scale, they got 11.79, from awareness sub-scale 9.14, but from self-control sub-scale it was 14.05, and finally they obtained 9.05 means of score from self-evaluation. When this finding was evaluated considering the number of questions, the highest and lowest scores from the scale, it could be explained that the pre-service teachers mostly used metacognitive strategies, then they used awareness, self-control strategies. However, it was seen that they used self-evaluation strategies less. When the entire scale was taken into account it can be claimed that the pre-service teachers used metacognitive strategies almost averagely.

Consequently, it was seen that the pre-service teachers in distance education program used cognitive and awareness strategies more, whereas they used self-control and self-evaluation strategies less. This finding can be explained in a way that the participants were at the higher education level and they were mature enough to arrange their own learning activities. The reason why the participants used self-control and self-evaluation strategies less can be interpreted that their self-control and self-evaluation mechanisms were not developed enough. This situation can be explained with the fact that the pre-service teachers do not involve/are not involved in a detailed process developing self-control and self-evaluation.

Additionally, the finding that the pre-service teachers used metacognitive strategies almost averagely can be explicated that the participants need training for learning to learn process.

In this sense, it is quite important to emphasize and involve the issue of how to develop metacognitive strategies in distance teacher education program, besides it is significant to develop the students' these qualities through the on-line courses, in case of necessity. In fact, it is also highlighted in literature that the pre-service teachers should be helped to develop their metacognitive strategies and epistemological beliefs (Brownlee, Purdie and Boultan –Lewis, 2001).

The Effect of Epistemological Beliefs on Use of
Metacognitive Strategies of ELT Pre-Service Teachers in Formal Education Program

Thirdly the effects of distance education ELT preservice teachers' epistemological beliefs on the use of metacognitive strategies were investigated in the first group of research questions. The results of the analysis were given in Table: 3.

Table: 3
The Effect of Distance Education English Language Teaching Program Pre-service Teachers' Epistmological Beliefs on their Metacognitive Strategy Use

Variable	B	Standart Error	ß	T	P	Pair r	Partial r
Stable	98.951	2.653	-	37.303	.000	-	-
Cognitive Strategy	0.022	0.326	0.028	0.295	.768	0.330	0.020
Awareness	0.779	0.367	0.205	2.123	.035	0.405	0.142
Self-control	0.544	0.264	0.204	2.062	.040	0.403	0.135
Self-evaluation	0.424	0.329	0.113	1.288	.199	0.352	0.087
R=0.442	R²=0.195						
F(4, 219)=13.302	P=.000						

When the figures in Table 3 are examined, it can be seen that the total scores of the pre-service teachers' epistemological beliefs, together with cognitive strategy, awareness, self-control and self-evaluation variables gives significant relationship at average level (R=0.442, R²=0.20, P<.05). The metacognitive strategies explain approximately 20 percentage of total variance of epistemological beliefs.

According to standardized regression coefficient (ß) the relative significance order of predictor variables on epistemological beliefs are; awareness, self-control, self-evaluation and cognitive strategies. When the results of t test are examined, related to the significance of the regression analysis, it is noticed that awareness and self-control variables are significant predictors on the epistemological beliefs, however, cognitive strategies and self-evaluation variables do not have any significant effects.

According to regression analysis results, the regression equity related to epistemological beliefs is as follows;

EPISTEMOLOGOCAL BELIEFS =98.951+0.022 COGNITIVE STRATEGY+0.779AWARENESS +0.554 SELF-CONTROL +0.424 SELF-EVALUATION.

Consequently, it can be claimed that the epistemological beliefs of the pre-service teachers in distance education are important predictors on their use of metacognitive strategies

**The Epistemological Beliefs and Metacognitive Strategy Use of The ELT
Pre-Service Teachers in Formal Education Programs And The Relationship Between Them**

Epistemological Beliefs

For the second research question of the study, the epistemological beliefs of the ELT pre-service teachers in formal education were examined. The obtained means of scores were presented in Table: 4.

Table: 4
**The Epistemological Beliefs of the ELT Pre-service Teachers
in Formal Education Program**

Factor	N	The Lowest Score	The Highest Score	Mean	Standard Deviation
The belief that learning depends on effort	157	19	53	33.37	6.31
The belief that learning depends on ability	157	9	36	19.52	5.00
The belief that there is only one truth	157	12	39	24.47	5.26

As seen in Table: 4, the ELT pre-service teachers in formal education program had different means of scores from the sub-scales. The mean of scores that the participants obtained from the first factor; *"The belief that learning depends on effort"* was 33.37, for the second factor; *"The beliefs that learning depends on ability"* it was 19.52, finally for the third factor; *"The belief that there is only one truth"*, the mean was 24.47.

The mean of the scores that the pre-service teachers got from the entire scale was 77.36.

Considering the possible scores of the scale, it was observed that although the epistemological beliefs of the formal education pre-service teachers were developed/ matured to some extent, some of them needed to be improved. The ELT pre-service teachers in formal education had low means of scores from the first factor *"The belief that learning depends on effort"*.

This finding indicated that the pre-service teachers' beliefs about the first factor were quite developed/ matured. Although the participants had low means of scores from the second factor *"The belief that learning depends on ability"* and the third factor *"The belief that there is only one truth"*, they showed development in these dimensions to a certain extent.

The finding that the developed epistemological beliefs of ELT pre-service teachers in formal education about *"learning depends on effort"* can be associated with the significant developments in teacher education programs regarding effective learning or students' learning responsibility. Moreover, the findings that the participants had less developed beliefs about the dimensions that *"learning depends on ability"* and *"there is only one truth"* can be caused by their commitment to traditional learning processes or habits in the previous learning environments. It will be very influential to provide training for the pre-service eteachers to compensate for their inadequacy in these issues.

Metacognitive Strategy Use
For the second group of research question, secondly the metacognitive strategy uses of the ELT pre-service teachers enrolled in the formal education program were examined. The obtained findings as a result of data analysis were given in Table 5.

Table: 5
The Metacognitive Strategy Use of the ELT Pre-service Teachers
in the Formal Education Program

Scale	N	The Lowest Score	The Highest Score	Mean	Standard Deviation
Cognitive Strategy	157	5	20	13.07	2.84
Awareness	157	4	16	10.40	2.52
Self-control	157	6	24	15.93	3.37
Self-evaluation	157	4	16	10.78	2.54
Topple	157	20	80	52.79	10.18

As illustrated in Table: 5, the participants had different means of scores from the entire instruments and its sub-scales. The means of the scores that the pre-service teachers got from the entire scale was obtained as 52.79, from cognitive strategy sub-scale, it was 13.07, from awareness sub-scale they got 10.40, and from self-control sub-scale, it was 15.93, finally, the means of the scores from the last sub-scale, self-evaluation, it was 10.78. On the basis of these findings and considering the number of questions and maximum/minimum scores, it can be interpreted that the formal education ELT pre-service teachers in this study mostly used cognitive strategies, it was followed with self-control and awareness strategies, however, the participants used self-evaluation strategies less. When the findings related to the entire of scale were taken into account, it can be claimed that the pre-service teachers used metacognitive strategies at average level.

Consequently, it can be seen that the ELT pre-service teachers in the formal education program used cognitive, self-control and awareness strategies more, while they used self-evaluation strategies less. These findings can be explained considering the fact that these students are at the higher education level and they are mature enough to arrange their own studies like the students in the distance education. However, the finding that they had less self-evaluation pointed out the fact that the pre-service teachers need to improve their critical and questioning viewpoints, thus it is considered that it will be beneficial to design training related to the strategies in this issue. In general term, the results indicated that ELT pre-service teachers in the formal education used the metacognitive strategies at average level. This finding supported the idea that the pre-service teachers should be informed about metacognitive strategies because the pre-service teachers' effective use of metacognitive strategy will help them train and direct their students in this issue in the future. Thus, the students that will be trained by these pre-service teachers will be component about learning to learn.

The Effect of Epistemological Beliefs on Use of Metacognitive Strategies
of ELT Pre-Service Teachers in Formal Education Program?
In the second research question, thirdly, the effects of formal education ELT pre-service teachers' epistemological beliefs on metacognitive strategy use were examined.

The findings obtained from the data analysis were presented in Table: 6

Table: 6
The Effect of Formal Education English Language Teaching Program
Pre-service Teachers' Epistmological Beliefs on their Metacognitive Strategy Use

Variable	B	Standart Error	ß	T	p	Pair R	Partial R
Stable	93.121	5.246	-	17.752	.000	-	-
Cognitive Strategy	0.973	0.496	0.222	1.962	.042	0.252	0.157
Awareness	0.009	0.610	0.003	0.021	.983	0.180	0.002
Self-control	0.002	0.450	0.024	0.199	.843	0.174	0.016
Self-evaluation	0.426	0.524	0.087	0.812	.418	0.193	0.066
R=0.261	R²=0.068						
F(4, 152)=2.768	P=.029						

As seen in Table 6, the total scores of the pre-service teachers' epistemological beliefs together with cognitive strategy, awareness, self-control, and self-evaluation variables indicate significant relationship but at low level (R=0.261, R^2=0.07, P<.05). Moreover, the metacognitive strategies explain 07 percentage of the total variance in epistemological beliefs.

The results of t test pointed out that cognitive strategies are significant predictors on epistemological beliefs, on the other hand, awareness, self-control and self-evaluation variables do not have significant effect.

EPISTEMOLOGICAL BELIEFS =
93.121+0.973COGNITIVE+0.009AWARENESS+0.002SELF-CONTROL+0.426SELF-EVALUATION

As a consequence, it can be stated that the epistemological beliefs of the formal education pre-service teachers also have deterministic effect at certain level on their use of metacognitive strategies

The Differences between the Epistemological Beliefs of the ELT Pre-service Teachers in Distance and Formal Education Programs
In this study, the differences between the epistemological beliefs of the distance and formal education ELT pre-service teachers were examined. The obtained results were presented in Table 7 below.

Table: 7
Means of Distance and Formal Education ELT Pre-service Teachers'
Epistemological Beliefs

Factor	Type of Education	N	X	SS	t	Sd	P
The belief that learning depends on effort	Formal Education	157	33.37	6.31	2.356	379	P<.05 =.01
	Distance Education	224	34.95	6.55			
The belief that learning depends on ability	Formal Education	157	19.52	5.00	.300	379	P>.76 =.70
	Distance Education	224	19.37	4.49			
The belief that there is only one truth	Formal Education	157	24.47	5.26	5.611	379	P<.05 =.00
	Distance Education	224	27.35	4.68			
Total	Formal Education	157	77.36	12.48	3.593	379	P<.05 =.00
	Distance Education	224	81.46	9.75			

Table: 7 illustrated that the participants enrolled in distance and formal education programs had different means of scores from the epistemological belief scale and its sub-scales. In this context, the means of the scores that both distance and formal education students got from the dimension of *"The belief that learning depends on effort"* and *"The belief that there is only one truth"* were different, however, they got close means of scores from the dimension of *"The belief that learning depends on ability"*. Additionally, the means of total scores that the distance and formal education ELT pre-service teachers obtained were different from each other. The students in distance education programs received higher means of scores from the dimension that *"The belief that learning depends on effort"* and *"The belief that there is only one truth"* than the students in formal education. In the same way, there is a difference between the pre-service teachers' means of total scores related to the epistemological beliefs.

In order to check whether the difference between the means of the scores that the distance and formal education students got from the sub-scale was significant or not, t-test was applied. It was detected that there were significant differences between the distance and formal education pre-service teachers' beliefs about the first factor; *"The belief that learning depends on effort"* and third factor; *"The belief that there is only one truth"* and the total scores from the entire Epistemological Belief Scale.

Additionally, it was detected that the difference between the means of the scores that the formal and distance education students got from the sub-scale of the second factor; *"The belief that learning depends on ability"* was not significant.

On the basis of these results, it can be claimed that the pre-service teachers in formal education had more developed / matured beliefs about *"learning depends on effort"* and *"there is only one truth"* than the pre-service teachers in distance education.

This finding can be explained with the qualities of the program that the pre-service teachers attend. Particularly, the formal education pre-service teachers' more developed/matured beliefs about the first factor; *"The belief that learning depends on effort"* and third factor; *"The belief that there is only one truth"* can be interpreted with the fact that they are directed to be active in learning environments and to use libraries, also there are activities based on researching and inquiring especially in teaching profession courses, besides they receive suggestions about how to attain knowledge and their studies in their education may lead to such results.

Moreover, some student-centered approaches such as cooperative approach used in classroom environment, problem-solving approach or whole learning can change or influence students' beliefs about learning. In addition to this, some of the factors to explain these findings are different teaching-learning processes that the distance education students experience, no certain obligation to be active in these processes, also inadequate internal and external motivation levels.

In this regard, it is significant to take into account such factors in teacher training process through distance education.

The Difference between the Metacognitive Strategy Use of the ELT Pre-service Teachers in Formal and Distance Education

Through the fourth research question of the study, it was examined whether there was a difference between the metacognitive strategy use of ELT pre-service teachers in formal and distance education programs.

The related findings were given in Table 8.

Table: 8
Means of Distance and Formal Education ELT Pre-service Teachers'
Metacognitive Strategy Use

Factor	Type of Education	N	X	SS	t	Sd	P
Cognitive Strategy	Formal Education	157	13.07	2.84	4.290	379	P<.05 =.00
	Distance Education	224	11.79	2.88			
Awareness	Formal Education	157	10.40	2.52	4.766	379	P<.05 =.00
	Distance Education	224	9.14	2.56			
Self-control	Formal Education	157	15.93	3.37	5.096	379	P<.05 =.00
	Distance Education	224	14.05	3.65			
Self-evaluation	Formal Education	157	10.78	2.54	6.445	379	P<.05 =.00
	Distance Education	224	9.05	2.59			
Total	Formal Education	157	52.79	10.18	6.002	379	P<.05 =.00
	Distance Education	224	46.22	10.75			

As given in Table: 8, the means of the scores that the participants had from the scale were different. In this context, the students in the formal education had higher means of the scores from the scale than the distance education students. Additionally, it was seen that the means of the scores that the formal and distance education students got were clearly different from each other. When it was examined whether the detected difference was significant or not, the results of t-test test indicated that there were significant differences between the formal and distance education pre-service teachers' means of scores. To sum up, it can be stated that the ELT pre-service teachers in formal education program used metacognitive strategies more than the distance education students in the same department.

This finding can be explained with the differences in the learning environments of the distance education students have. The ELT pre-service teachers attending to formal education programs can be informed about the metacognitive strategy by the instructors and see examples of metacognitive strategy use in group works, also receive feedback through assessments such as "quiz", besides they are encouraged to behave more consciously.

In addition to this, the factors that increase the motivation levels of the students are more prominent in formal education. For instance, the students can find and use any environment for learning process (library, computer lab...etc). On the other hand, the students in the distance education programs lack some opportunities, especially they experience deficiency of "lecturers", who have important effects on formal education students since lecturers are valuable knowledge sources with their explanations which are not included in the course books.

Moreover, the distance education students have many different responsibilities except being a student because some students attending the distance education programs can work at the same time, thus they may not allocate enough time and effort to improve their metacognitive strategies. In this regard, it is essential to include or emphasize the components related to use of metacognitive strategies in the course books for the distance education.

CONCLUSION AND DISCUSSION

Along with knowledge age, individuals' needs for learning and their learning beliefs have received considerable interest.

It is essential to train individuals on the issues of attaining, using and producing knowledge, also about the beliefs regarding knowledge in order to enable them to reach fast growing and changing knowledge, processing, taking over and working on knowledge.

This is quite important to make an individual effective in learning process. The student who can learn effectively can control and direct himself easily. In this process, teachers have the biggest responsibility. Teachers can direct their students accurately depending on how efficient learning skills they have and how developed/matured epistemological beliefs they possess. The teacher education programs have also important effects on this process. The quality of training that teachers have in pre-service education influences the development of these features. The pre-service teachers in distance education programs receive more different education than the students in formal education in terms of learning environments: The students in distance education mostly used course books and in this environment, the teacher-student interaction was not intense. This situation is one of the rationale for the present study, thus it was attempted to determine the epistemological beliefs and use of metacognitive strategies of the pre-service teachers and the differences between them.

As a result, relational different findings were obtained. One of the findings of the study indicated that the epistemological beliefs of ELT pre-service teachers in distance education were not so developed / matured. Additionally, it was determined that the pre-service teachers had lower means of scores from the dimension of *"The belief that learning depends on effort"* considering other two dimensions. This finding pointed out that the pre-service teachers had more developed / matured beliefs in this dimension.

Moreover, it was found that the distance education ELT pre-service teachers used metacognitive strategies approximately at average level, and they used cognitive and awareness strategies more than self-control and self-evaluation strategies. Another important finding of the study was that there was a low level but significant relationship between the distance education pre-service teachers' epistemological beliefs and use of metacognitive strategies. As discussed in literature, epistemological beliefs have significant effects on learning process. The more developed epistemological beliefs lead to the more metacognitive strategy use and thus the more successful they will become.

Furthermore, related to the ELT pre-service teachers in formal education programs, it was obtained that although they generally had high epistemological beliefs, their beliefs related to the dimension that *"there is only one truth"* were found as lower. Besides, it was observed that their metacognitive strategy use was above average level. It was detected that they used respectively cognitive, self-control and awareness strategies, while they used self-evaluation strategies less. It was revealed that the epistemological beliefs of the pre-service teachers in formal education had certain effects on the metacognitive strategies they used. However, in the study, the epistemological beliefs of pre-service teachers in the distance education were found to have more definite effect. This finding can be explained by the fact that the students attending to the distance education have to be more effective in managing their own learning process. Nevertheless, both formal and distance education students should be supported more about their epistemological beliefs.

In this context, according to Schommer (1993), the students' epistemological beliefs have direct effects on the cognitive strategies or learning approaches used in learning process and this causes indirect effect on academic success (Cano, 2005; Deryakulu, 2004). Therefore, to prioritise this issue in teacher education program is essential.

Moreover, it was found that the ELT pre-service teachers in the formal education had more developed/matured epistemological beliefs than the ELT pre-service teachers in the distance education. This finding indicated that the pre-service teachers should improve their epistemological beliefs.

In this respect, it can be suggested to provide training about the nature of knowledge and to arrange the programs to help students reach knowledge from different sources.

Consequently, in the study it was seen that the pre-service teachers in formal education used metacognitive strategies more than the students in the distance education.
Thus, this finding revealed the necessity to support the distance education ELT pre-service teachers to use metacognitive strategies through academic counseling services, course books and television programs.

Thus, it can be claimed that if the determined differences between the epistemological beliefs and metacognitive strategy use of the students in distance and formal education decrease, the contribution of the pre-service teachers to their students will be increased. The differences between the distance and formal education will diminish depending on to the extent the epistemological beliefs and metacognitive strategy use of the students in distance education gets better. In fact, the finding that the epistemological beliefs of the pre-service teachers in distance education have more important effects on the metacognitive strategy use than the ones in formal education can be presented as an indicator for this. However, it should be emphasized that the average level of the formal education students' epistemological beliefs and metacognitive strategy use also reveal the necessity to handle these concepts more effectively in teacher education programs. In fact, it is essential to give these issues to the students in an integrated way. One of the important findings of this study is that it is essential to focus on the epistemological beliefs in teacher education program and to contribute to the development of the metacognitive strategies.

Moreover, Brownlee, Purdie-Lewis (2001) citied from Rokeach (1968) and explained explicit awareness as such beliefs become 'controvertible because the believer has learned that some of his reference persons and groups do not share his belief'.

Distance education is an important means to satisfy teachers' needs. However, it is inevitable to encounter problems or experience some differences while training teachers through distance education since even in formal education some problems related to teacher education are common.

Thus, it is essential to carry out academic studies on developing distance education students' epistemological beliefs especially during 1st and 2nd year, during which they have face to face education. Besides, particularly teaching profession courses should be included to the face to face courses and in these courses informing about epistemological beliefs and metacognitive strategies would be appropriate.

Moreover, it can be suggested that the epistemological beliefs and metacognitive strategy use of the ELT pre-service teachers in formal and distance education programs can be examined by using different scales. Besides, the qualitative research approach in which the pre-service teachers' opinions are asked can be used to examine this issue. Also, gender, academic achievement, grade can be included in the study as variables.

Additionally, the studies on the relationship between the students' epistemological beliefs and their learning styles, thinking manners, used learning strategies, which are important features for learning should be conducted.

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