

T.C.
ABANT IZZET BAYSAL UNIVERSITY
INSTITUTE OF SOCIAL SCIENCES

THE RELATIONSHIP BETWEEN EPISTEMOLOGICAL BELIEFS AND
TEACHER-EFFICACY BELIEFS OF ENGLISH LANGUAGE TEACHING
TRAINEES

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JULY, 2005

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DEPARTMENT OF ENGLISH LANGUAGE TEACHING

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MASTER OF ARTS IN ENGLISH LANGUAGE TEACHING

BY
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APPROVAL

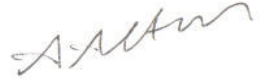
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This thesis titled as **The Relationship between Epistemological Beliefs and Teacher-Efficacy Beliefs of English Language Teaching Trainees** and presented by Anıl Ş. RAKICIOĞLU has been approved as a thesis of Master of Arts in English Language Teaching.

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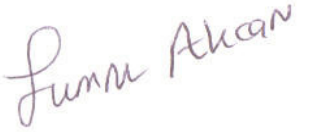
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ABSTRACT

THE RELATIONSHIP BETWEEN EPISTEMOLOGICAL BELIEFS AND TEACHER-EFFICACY BELIEFS OF ENGLISH LANGUAGE TEACHING TRAINEES

by

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The study describes the epistemological beliefs, the teacher-efficacy beliefs and the relationship between these beliefs held by a group of English language teaching (ELT) trainees at different universities. Four hundred and fifty six English as a Foreign Language (EFL) pre-service teachers from different universities participated in the study. Schommer's Epistemological Beliefs Questionnaire (Schommer, 1990) and the Teacher Efficacy Scale (Woolfolk & Hoy, 1990) were used to identify the beliefs about knowledge and learning and teacher-efficacy beliefs. A pilot study was conducted in order to validate the reliability of the instruments.

The results of this study revealed that when the epistemological beliefs are taken into consideration, EFL pre-service teachers are not sure whether knowledge is certain and acquired from the authority or not. On the other hand, EFL pre-service teachers believe that learning ability is quick and fixed at birth. Statistically significant relationship was found between gender, year at school and teacher-efficacy. However, there was not a significant relation between gender, age, year at school and their personal epistemology. When the teacher-efficacy beliefs are examined, EFL pre-service teachers appear to perceive themselves not ready for teaching profession. The EFL pre-service teachers' sense of efficacy and personal epistemology were found to effect their perceptions either positively or negatively.

The findings of this study may give insights to ELT Departments in terms of maintaining and/or improving cognition and efficacy supportive environment for pre-service teachers to become active practitioners in their learning and teaching process.

Key words: Epistemological beliefs, Teacher-efficacy, Teacher training

ÖZ

İNGİLİZ DİLİ EĞİTİMİ ÖĞRETMEN ADAYLARININ EPISTEMOLOJİK İNANCLARI VE ÖĞRETMEN YETERLİĞİ İNANCLARI ARASINDAKİ İLİSKİ

Rakıcıoğlu, Anıl Ş.

Bu çalışma çeşitli üniversitelerdeki bir grup İngiliz Dili Eğitimi (İDE) öğretmen adaylarının epistemolojik ve öğretmen yeterlilik inançları ile bu inançlar arasındaki ilişkiyi incelemiştir. Çalışmada dört yüz elli altı İDE öğretmen adayı yer almıştır. İki veri toplama aracı kullanılmıştır. Bunlar, Schommer'ın Epistemolojik İnançlar Anketi (1990) ile Öğretmen Yeterliği Ölçeği'nin (Woolfolk & Hoy, 1990) birleşimi olan bilgi toplama aracıdır. Kullanılan araçların güvenilirliğini onaylamak için asıl çalışmadan önce pilot bir çalışma yürütülmüştür.

Bu çalışmanın sonuçları, epistemolojik inançlar dikkate alındığında, İDE öğretmen adaylarının bilginin mutlak olduğuna ve otoriteden edinildiğine dair inançlarının belirsizliğini ortaya koymuştur. Diğer taraftan İDE öğretmen adayları, öğrenme yeteneğinin hızlı ve doğuştan gelen bir kabiliyet olduğu inancına sahiptirler. İstatistiksel olarak, cinsiyet ve okuldaki sınıfları ile kişisel öğretmen yeterliği inançları arasında önemli bir ilişki bulunmuştur. Fakat cinsiyet, yaş ve okullardaki sınıfları ile kişisel epistemolojileri arasında bir fark bulunmamıştır. Öğretmen yeterliliği inançları incelendiğinde, İDE öğretmen adayları kendilerini öğretmenlik mesleği için hazır görmedikleri sonucuna varılmıştır. Diğer bir taraftan, öğretmen adaylarının yeterlilik ve kişisel epistemoloji algılarının, anlayışlarını olumlu ya da olumsuz olarak etkilediği bulunmuştur.

Bu çalışmanın bulgularının, İDE bölümlerine, öğretmen adaylarının öğrenme ve öğretme süreçlerinde aktif katılımcı olarak bulunmaları için farkındalık ve yeterlilik inancını destekleyen çevrenin oluşturulmasına ve/veya geliştirilmesine bir bakış açısı getirebileceği düşünülmüştür.

Anahtar Kelimeler: Epistemolojik inançlar, Öğretmen yeterliliği, Öğretmen eğitimi

To my family, Ayşe, Adem, Aslı RAKICIOĞLU

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CHAPTER I

Introduction

1.1. Introduction

This study will examine the epistemological beliefs, the teacher-efficacy beliefs and the interrelationship between these beliefs of a group of English as a Foreign Language (EFL) pre-service teachers at different universities. In particular, the study will focus on beliefs about knowledge and learning and personal teaching efficacy of the student teachers in the research group.

1.2. Background of the study

Language teacher cognition has been studied mainly in the last 10 years, but in mainstream educational research has been conducted on teacher cognition for over 25 years (Borg, 1998). Teacher cognition refers to the cognitive processes and structures which influence what teachers do. These cognitive processes and structures include beliefs, knowledge, theories, attitudes, thoughts and reflections teachers have before, during, and after teaching. The study of teacher cognition aims to shed light on these cognitive processes and structures, in order to explore their origins and development, and to understand their relationships with what teachers do (Borg, 1999).

There are many reasons for studying teacher cognition. First, studying teacher cognition provides a more complete account of teaching than a behavioral model offers. Cognitive models of teaching help to explain the processes of teaching and learning from the perspectives of learners and teachers and to examine what goes inside the learners and teachers. Researchers in teacher education have suggested that teachers' classroom behavior and activities are shaped by various frameworks (Chan & Elliott, 2004), and they represent teachers' conceptions about teaching and learning which are assumed to be belief driven. Second, teacher cognition examines teaching by gaining insight into psychological context of instruction. Therefore, language teaching and

learning is not seen solely as giving and receiving messages; however, it also involves more cognitive processes in mind. Third, studying teacher cognition engages teachers in teaching process by making them aware of the psychological bases of their classroom practice, helping teachers understand their mental lives (Clark & Lampert, 1986). In addition teacher cognition develops supports and improves the quality of teachers' professional practice (Pajares, 1992), provides the basis of effective pre- and in-service teacher education and professional development (Goodman, 1988), provides descriptive information about subject-specific teacher cognition and pedagogy. (Smith, 1997; Conley, Pintrich, Vekiri, Harrison, 2004; Gill, Ashton & Algina, 2004; Oosterheert & Vermunt, 2001; Haritos, 2004), and helps to understand how teachers develop (Tobin & LaMaster, 1995).

During the past years, teacher education research in studying the complex relationships between teacher beliefs and practices has been a growing interest. Studying the relationship has generated important findings that are of practical implications for teacher education (Fang, 1996). The casual relations of teachers' beliefs and conceptions have the potential to inform teachers' conceptions and hence theoretical frameworks about teaching and learning.

There are numbers of studies examining how belief systems take place in the teaching and/or learning process (e.g. File & Gullo, 2002; Cassidy & Eachus, 2000). While these beliefs have been examined through narrative enquiries and case studies, there is not enough quantitative research reporting measures of the relations between teachers' beliefs and conceptions about teaching and learning (Chan & Elliott, 2004; Schommer-Aikins, 2004). In addition, although considerable work has been done in the other subject areas of teaching (Conley, Pintrich, Vekiri, Harrison, 2004; Whitmire, 2003; Nietfeld & Enders, 2003; Gill, Ashton & Algina, 2004; Conley, Pintrich, Vekiri, Harrison, 2004), teachers' beliefs about language and learning haven't been investigated in depth in the field of second/foreign language teaching (Woods, 1996). This study focuses on beliefs about learning.

1.3. English Language Teacher Training in Turkey

English language teacher training programs last for four years and in some universities there are preparatory classes in entering the university. According to the documents presented by the Student Selection and Placement Center (ÖSYM, 2004) there are 26 universities in different parts of Turkey having English Language Teaching Departments, holding 3430 trainees every year.

At the English Language Teaching Departments, there are courses both given by the department staff and the Educational Sciences department staff. The courses given by the ELT department are mainly focused on English Language Teaching (ELT); however, the courses given by the Educational Sciences do focus on general education and its principals. These courses are conducted in Turkish, and ELT departments do not have an effect on the courses.

1.4. Statement of Purpose

Teachers have a conscious mental process about all aspects of their work. Teachers' experiences as learners can inform cognition about teaching and learning which continue to influence teachers throughout their career. Despite the fact that professional training does shape trainees' cognition, programs ignoring trainees' beliefs about knowledge and learning may be less effective (Borg, 2003).

The purpose of the study is to investigate the interrelationship among key variables, teacher-efficacy and beliefs about knowledge and learning that are most frequently being measured separately in studies on belief systems in the language teacher training.

1.5. Research Questions

- a. What are the epistemological beliefs held by the EFL pre-service teachers?
- b. What are the personal teaching efficacy beliefs held by the EFL pre-service teachers?
- c. What are the relations between language teacher education students' epistemological beliefs, and their personal teaching efficacy beliefs?
- d. Are there meaningful effects of gender, age and year at school on epistemological beliefs and teacher efficacy beliefs?

1.6. Significance of the Study

This study attempted to describe to what extent epistemological beliefs and personal teaching beliefs are related to each other in a foreign language teacher training program. The results of this study provided valuable data to English language teacher training programs and other training programs regarding the effectiveness of beliefs about knowledge and learning and efficacy beliefs in teacher education programs. This study adds data to the limited research database pertaining to the evaluation of epistemological beliefs and teacher efficacy beliefs in language teacher training programs.

1.7. Delimitations and Limitations

1.7.1. Delimitations

One of the delimitations is that the study focuses on only one community. For instance, the study concentrates on English language teacher trainees, effectiveness of belief systems in teacher education, and perceptions of English language teacher trainees about how they see themselves as prospective teachers.

An additional delimitation is that the study is limited to the description and implementation of the epistemological beliefs and efficacy beliefs of English language teacher trainees from all four years (Freshmen, Sophomore, Junior, and Senior).

1.7.2. Limitations

The study being designed as a descriptive quantitative study has a number of limitations. The limitations would be based on the characteristics of the subjects and the instruments that are used in the study.

1.7.2.1. Subjects

One of the limitations of the study is its being dependent on the honesty and sincerity of the English language teacher trainees who take place in the study. The participants were the groups of trainees at Anadolu University, Uludağ University, Çukurova University, Gazi University and Abant İzzet Baysal University. The subjects were selected by following simple random sampling procedures. In addition to that each group of trainees was clustered in terms of their grades.

1.7.2.2. Instruments

The instruments used in the study were consisted of 85 items, Epistemological Belief Questionnaire including 63 and Teacher Efficacy Scale including 22 items. Filling out the instruments last half an hour; therefore, this may have resulted in losing the attention while reading the items.

1.8. Definition of Terms

Epistemological beliefs: Refer to beliefs about the nature of knowledge and knowing (Hofer & Pintrich, 1997)

Schommer-Aikins (2002; Schommer, 1990) has expanded the definition by breaking down epistemological beliefs into 5 categories as:

Certain knowledge (i.e., absolute knowledge exists)

Simple knowledge (i.e., knowledge is facts)

Omniscient authority (i.e., authorities have access to every information)

Quick learning (i.e., quick or not-at-all)

Fixed/innate ability (i.e., static ability, never changes)

Personal Epistemology is a system of more or less independent beliefs (Schommer-Aikins, 2004)

Self-efficacy beliefs: Self-efficacy is the “beliefs in one’s capabilities to organize and execute the courses of action required to produce given attainments” (Bandura, 1997).

Self-efficacy is a belief about what one is capable of doing; it is not the same as knowing what to do (Schunk, 2000).

Teacher-Efficacy Beliefs: “Teacher efficacy” refers to teachers’ belief in their ability to influence valued student outcomes.”(Wheatley, 2005)

“The teacher’s beliefs in his or her capability to organize and execute courses of action required to accomplish a specific teaching task in a particular context successfully” (Tschannen-Moran et al., 1998)

Personal Efficacy Beliefs: Teachers’ personal sense of efficacy is related to the beliefs teachers have regarding their own abilities to teach effectively (Gibson & Dembo, 1984)

Teacher training: Teacher training is a strategy emphasizing development of the teaching skills of a student teacher who will be in charge of his or her profession (Freeman, 1990)

1.9. Conclusion

In this chapter, an overview of the literature on teacher cognition and English language teacher training has been provided. The statement of the problem, research questions, and the significance of the study have also been presented. In the second chapter, relevant literature is explored in more detail. In the third chapter, the methodology of this study is presented. In the fourth chapter, the collected data of the study are analyzed. In the last chapter, conclusions are drawn from the data in the light of the literature.

CHAPTER II

Review of Literature

2.1. Introduction

This study is aimed at describing the EFL pre-service teachers' epistemological beliefs and teacher efficacy beliefs as well as the interrelationship between their epistemological beliefs and teacher efficacy beliefs. The research questions asked in this study revealed a review of literature from epistemological beliefs and teacher efficacy research. The review of literature from these points will accomplish two main goals. First, it will frame the issues involved in beliefs effecting the view of teaching from a broader perspective. Secondly, it will place the research questions asked in the study in a more meaningful context.

In the following sections the issues in teacher cognition supplemented with epistemological belief and teacher efficacy research will be discussed.

2.2. Teacher cognition

For various reasons, most of the current ideas on language teacher cognition are informed by research on other educational teacher programs. One of the reasons can be language is one of the branches in education.

To what extent is there a relationship between teacher cognition and performance held by the language teacher? In answer to this question, Borg, gives a definition of the term 'teacher cognition' as being the unobservable cognitive dimension of teaching on what teachers know, believe and think (Borg, 2003).

There is more than enough studies providing evidence that teachers' experiences as learners can inform cognition about teaching and learning which continue to have an influence on teachers throughout their professional career (Holt Reynolds, 1992); there is also evidence to suggest that although professional preparation shape trainees'

cognition, programs which ignore trainee teachers' prior beliefs may be less effective at influencing the cognitive processes held by the trainee (Kettle & Sellars, 1996); and research has also shown that teacher cognition and practices are mutually informing, with contextual factors playing an important role in determining the extent to which teachers are able to implement instruction harmonious with their cognition (Beach, 1994).

Epistemological beliefs and teacher efficacy beliefs are the two of many aspects considered as effective factors of teacher cognition.

2.3. Epistemological beliefs

Beliefs about the nature of knowledge and learning, or epistemological beliefs, would appear to play a role in almost every aspect of individuals' day-to-day lives. Although these implicit beliefs are likely to effect reasoning (Pajares, 1992), learning (Hofer & Pintrich, 1997), and decision making (Pajares, 1992), they are often ignored in educational research (Schommer, 1994).

Hofer and Pintrich (1997) set mid 1970s as the starting point of epistemological research in education with the study of Perry (1970, cited in Schommer-Aikins, 2004). Following the work of Perry (1970), researchers suggested models that are structural and/or developmental. The studies can be grouped under three main headings in terms of suggested models.

One group of researchers has been interested in how individuals interpret their educational experiences (Baxter Magolda, 1992; Belenky et al., 1986; Perry, 1970, 1981, cited in Schommer-Aikins, 2004). These studies focused on either effect of gender, male or female, or similar concerns with both male and female. The second group of researchers have been interested in how epistemological assumptions influence thinking, reasoning processes (King & Kitchener, 1981, 1994; Kitchener, Lynch, Fischer & Wood, 1993), and skills of argumentation. The third and most recent kind of studies has

accepted the approach that epistemological ideas are a system of more-or-less independent beliefs rather than reflecting coherent developmental structure (Schommer, 1990, 1994; Schommer- Aikins, 2004; Ryan, 1984).

In this study, the recent model of epistemological belief research will be examined. In the following sections, brief history of personal epistemology, overall explanation of epistemological belief system, methodology, and studies related to epistemological belief system will be presented.

2.3.1. History of Personal Epistemology Research

Studies on personal epistemology can be traced back to the initial work of Perry (1970, 1981, cited in Schommer-Aikins, 2004) who began empirical investigations into the epistemological beliefs by interviewing Harvard undergraduates over their four year-college experience. Perry (1970) examined the gradual process of epistemological belief change of male students. Perry (1970) concluded that many first-year students believe that facts are simple, unchangeable and handed down by the authority. By the time they reach their senior year, students believe that knowledge is complex and tentative, derived from reason. Perry (1970, cited in Schommer-Aikins, 2004) suggested that epistemological beliefs develop in stages. In the early stages, students regard knowledge either right or wrong and believe that the authority figures are the sources of information. As they reach later stages of their development, they realize that there are complex combinations of knowledge, and there is more than one way to find answers to questions.

Perry's (1970) work brought new studies into the literature. Belenky et al. (1986) refined Perry's (1970) research by focusing on women's ways of knowing, particularly women's assumptions about knowledge, reality, and authority. Through intense interviews with 135 women, Belenky et al. (1986) developed a model of epistemological beliefs based on women's point of view. By focusing on female sample, Belenky et al. (1986) have provided a different conceptualization of epistemological beliefs suggesting

that epistemological belief researchers need to take into consideration beliefs other than these of the certainty and source of knowledge.

Gender related studies are followed by Baxter Magolda (1992). From the study Baxter Magolda (1992) derived the Epistemic Reflection Model similar to Perry's. Differing tendencies between the genders as they move from reliance on dualistic answers through subjectivity to a more relativistic stance, "Knower" is categorized as "absolute," "transitional," "independent," and "contextual". Baxter Magolda described the female-related tendencies within absolute, transitional and independent knower ("receiving," "interpersonal," and "inter-individual," respectively) as "relational." She described the male-related tendencies within these three categories ("mastery," "impersonal," and "individual," respectively) as "abstract".

King and Kitchener (1994; cited in Hofer & Pintrich, 1997) have studied the epistemic assumptions that underlie reasoning. They argue that reflective judgment is an ultimate outcome and developmental end point of reasoning and the ability to evaluate knowledge claims.

Model of epistemological research is followed by the relationship between epistemological beliefs and learning. Ryan (1984) focused on relating epistemological beliefs and learning and simplified Perry's (1970) conceptualization of personal epistemology. Ryan (1984) developed an instrument which allowed him to classify students as dualistic or relativistic learners. When students are classified in this way, the study indicated that dualistic thinkers were sure they understood material when they could recall facts, whereas, relativistic thinkers were sure they understood material when they could apply facts to new situations.

Conceptualization of epistemological beliefs among Belenky et al. (1986), Perry (1970), King and Kitchener (1981, 1994), and Ryan (1984) varied in content and application but were common in terms of representing personal epistemology as

unidimensional. Unidimensional view of epistemological beliefs may fail to capture the complexity of personal epistemology, and may limit the explanation of the relation between epistemology and learning (Schommer, 1994). Thus epistemological beliefs are renewed as a system of more or less independent beliefs.

The theories and models mentioned above differ depending on the focus of inquiry and the populations studied. However, there have been some points of similarity about what individuals believe knowledge is and how it is they know. When the theories and models are reviewed, there seems to be some agreement about ideas that cluster as two core sets of concerns: the nature of knowledge and the process of knowing, although not all of the models reviewed deal fully with both (see Table 1).

Table 1

History of Personal Epistemology

Core Dimension of epistemological theories			Peripheral beliefs about learning, instruction, and intelligence	
Researcher(s)	Nature of Knowledge	Nature of Knowing	Nature of Learning and instruction	Nature of intelligence
Perry (1970)	Certainty of knowledge Absolute ↔ Contextual	Source of knowledge Authorities ↔ Self		
Belenky et al. (1986)		Source of knowledge Received ↔ Constructed Outside the Self ↔ Self		
Magolda (1992)	Certainty of knowledge Absolute ↔ Contextual	Source of knowledge Reliance on authority ↔ Self	Role of Learner Evaluation of learning Role of peers Role of instructor	
King & Kitchener (1994)	Certainty of knowledge Certain, right/wrong ↔ Uncertain, contextual			

Continued Table 1

History of Personal Epistemology

Core Dimension of epistemological theories			Peripheral beliefs about learning, instruction, and intelligence	
Researcher(s)	Nature of Knowledge	Nature of Knowing	Nature of Learning and instruction	Nature of intelligence
	Simplicity of knowledge Simple ↔ complex	Source of Knowledge Reliance on authority ↔ Knower as constructor of meaning		
Schommer (1990, 1992, 1993, 2000, 2004)	Certainty of knowledge Absolute ↔ Tentative Simplicity of knowledge Isolated ↔ Interrelated	Source of Knowledge Handed down by authority ↔ Derived from reason	Quick Learning Quick ↔ Gradual	Innate Ability Predetermined ↔ Acquired

2.3.2. The Epistemological Belief System

In 1990 Schommer proposed a re-conceptualization of personal epistemology as a system of more-or-less independent beliefs. It is meant by Schommer that there are multiple beliefs that compose personal epistemology as a system. By more-or-less independent, it is meant that these beliefs may or may not develop at synchronous rates. The study of personal epistemology was originally based on in-depth interviews, descriptions of student responses, and stage schemes of epistemological development (Schommer-Aikins, 2004). Along with this re-conceptualization, a quantitative approach to the assessment of epistemological beliefs has been introduced. The research model developed by Schommer has taken a more analytic view of the components of epistemological beliefs (Hofer & Pintrich, 1997).

The model proposes a belief system made up of five more-or-less independent dimensions, which are structure, certainty, source of knowledge, control and speed of knowledge acquisition. These beliefs were initially conceived as continua, from naïve beliefs to sophisticated beliefs. A person who has naïve beliefs would think that knowledge is handed by the authority, absolute, simple in its nature single. In addition, s/he would think that learning either takes place quickly or not at all; learning ability is genetically predetermined. On the other hand, a person who has sophisticated beliefs would think that knowledge is complex and evolving. The acquired knowledge should be questioned and integrated with previous learning. The continua are shown in Table 2.

Table 2
Continuum of Epistemological Belief Dimensions

Source of Knowledge		
Knowledge is handed down by authority.	↔	Knowledge is reasoned out through objective and subjective means.
Certainty of Knowledge		
Knowledge is absolute.	↔	Knowledge is constantly evolving.
Organization of Knowledge		
Knowledge is separated.	↔	Knowledge is integrated.
Control of Learning		
Ability to learn is genetically predetermined.	↔	Ability to learn is acquired through experience.
Speed of Learning		
Learning is quick or not at all.	↔	Learning is a gradual process.

These dimensions do not follow a general development stage sequence. By more-or-less independent hypothesis, it is meant that epistemological beliefs may or may not develop in synchrony (Schommer-Aikins, 2004). An example of asynchronous development is an individual who believes that knowledge is complex but at the same time unchanging. Believing in the complexity of knowledge is considered mature, whereas believing in unchanging nature of knowledge is not. As a point of clarification, to develop or to be mature means that the belief supports higher order thinking. Therefore, an individual who believes that knowledge is simple and certain, and that learning is quick and fixed at birth, is considered less mature (Schommer, 1990, 1994, 2002, 2004; Chan & Elliot, 2000, 2002, 2004).

Research has supported this maturity assumption in that the more students believe in simple (isolated) knowledge, the more poorly they comprehend complex text and the less likely they are to use integrative study strategies (Chan & Elliot, 2004; Schommer-Aikins, 2004). The more students believe in certain knowledge, the more likely they are to misinterpret tentative information (Schommer, 1990). The more students believe in quick learning, the more poorly they perform academically as measured by grade and reading comprehension texts (Schommer, 1993). The more students believe in fixed ability to learn, the less likely they persist in difficult tasks, and the less likely they are to value education (Schommer & Walker, 1997).

2.3.3 Methodology of Epistemological Belief System

Schommer developed a questionnaire consisting of 63 statements categorizing epistemological beliefs to assess these five dimensions. These are stated in either the negative or the positive extreme on the questionnaire, and the respondent rate the statements on a Likert-scale from 1 (strongly disagree) to 5 (strongly agree). Each dimension has two or more subscales. These were reviewed and categorized into 12 subsets by three psychologists prior to the piloting questionnaire with the undergraduates (Schommer, 1990). Factor analysis yielded four factors which are Fixed Ability, Quick Learning, Simple Knowledge, and Certain Knowledge. However, factor analysis reported in the studies was conducted by using the 12 subsets, not the 63 items, as variables. The instrument provides information about individual beliefs that can help in to find out the exact position of strengths in an individual's epistemological belief system (Duell & Schommer-Aikins, 2001).

2.3.4. Studies related to epistemological belief system

There are various studies focusing on epistemological beliefs varying from teenagers to professional people, subject-dependent to everyday issues. In the following sections studies will be examined from the perspective of age and culture.

2.3.4.1. Studies in elementary school education

Conley, Pintrich, Vekiri, and Harrison (2004) conducted a study examining how personal epistemological beliefs can facilitate or constrain student understanding, reasoning, thinking, learning, and achievement. The study follows previous studies, but adds to the literature by examining change over time in young elementary school children's epistemological beliefs in science. In addition, the authors of the study examined whether gender, socio-economic status (SES), and achievement moderate changes in these beliefs. Results showed that students became more sophisticated in their beliefs about source and certainty of knowledge over time, but that there were no reliable changes in development and justification. Moreover, there were no main or moderating effects of gender or ethnicity, but there were effects of SES and achievement.

The beliefs that individuals hold about knowledge and knowing have been the focus of a growing body of work on personal epistemology. There has been general agreement among researchers about developmental stages of epistemological understanding that takes place in adolescence and adulthood. Burr and Hofer (2002) claim that rarely has this research included children, and there is a lacking body of research about the origins of epistemological awareness or its early development. In their study, the researchers reviewed the theoretical foundation for a proposed relation between the constructs and reported on an exploratory investigation with 3-5 year olds.

2.3.4.2. Studies at Undergraduate Setting

May and Etkina (2002) explored the views about knowledge and learning in the context of an introductory physics course for freshmen engineering honors students at Ohio State University. In their study, students submitted weekly reports, in which they reflect on how they learned specific physics content each week. The reports of the twelve participants were analyzed for the quality of reflection and some of the epistemological beliefs they exhibited. It was found out that students with high

conceptual gains tend to show reflection on learning that is more articulate and epistemologically sophisticated than students with lower conceptual gains.

Kardash and Howell (2000) investigated the effects of epistemological beliefs and topic-specific beliefs on undergraduates' cognitive and strategic processing of a dual-positional text. Forty undergraduates thought aloud while reading a text that presented information both consistent and inconsistent with their prior beliefs about the HIV-AIDS relationship. In the study, epistemological beliefs about the speed of learning affected the overall number of cognitive process exhibited, whereas topic-specific beliefs interacted with the nature of the information read to influence the specific type of cognitive processing used. Strategies for accepting or resolving apparent ambiguities in text were related positively to delayed recall; cognitive processes for developing awareness were related negatively to the number of distortions produced.

Kardash and Scholes (1996) examined the influence of people's beliefs about the certainty of knowledge, the strength of their beliefs about controversial issue, and their tendency to enjoy effortful thinking on their interpretation of controversial information in their study. Ninety-six undergraduates completed Schommer's (1990) epistemological beliefs questionnaire and the Need for Cognition Scale by (J.T. Cacioppo, R.E. Petty, & C.F.Kao, 1984, cited in Kardash and Scholes (1996)), and indicated the degree to which they believed that HIV causes Aids. They then read a text that presented two conflicting views regarding the HIV-AIDS relationship and wrote a concluding paragraph for the text. Regression analysis revealed that the fewer students believed in certain knowledge the less extreme their initial beliefs, and the higher their need for cognition, the more likely they were to write conclusions that reflected the inconclusive nature of the mixed evidence they read.

Valanides and Angeli (2005) investigated the effects of teaching critical-thinking principles on university students' epistemological beliefs, whether these effects had any relation to the teaching approaches, and whether there was any significant interaction

effect between teaching approach and students' epistemological beliefs. One hundred and eight undergraduates were randomly assigned to three different 65-minute instructional interventions namely, General, Infusion, and Immersion approaches. Statistical analyses of the data using a Repeated Measures ANOVA showed a statistically significant higher post-assessment performance. The main effect related to the intervention was also significant, but there was no significant interaction between intervention and epistemological beliefs. Post hoc comparisons revealed that students assigned to the Infusion strategy outperformed those assigned to the General approach on epistemological change.

Whitmire (2004) interviewed 15 first-year undergraduates about their information seeking behavior. Undergraduates completed a short-answer questionnaire, the Measure of Epistemological Reflection, measuring their epistemological beliefs and conducted Reflective Judgment Interview that assessed their reflective judgment level. Undergraduates talked aloud while searching digital environments about the decisions they were making about the information they encountered while transaction analyses software (Lotus ScreenCam) recorded both their search moves and their decision-making through verbal protocol analysis. Analyses included examining the relationship between undergraduates' epistemological beliefs and reflective judgment and how they searched for information in these digital environments. Results indicated that there was a relationship between epistemological beliefs and reflective judgment and information-seeking behavior. Undergraduates' at higher stages of epistemological development exhibited the ability to handle conflicting information sources and to recognize authoritative information sources.

Buehl, Alexander, and Murphy (2002) explored the domain specificity of students' beliefs about academic knowledge in three related studies. Using a four-factor model as an initial framework, they developed a series of domain-specific items about mathematics and history. In study I, these items were administered to 182 undergraduates, and the psychometric properties and underlying factor structure were

examined via exploratory factor analysis. In Study II, the modified instrument, the Domain-Specific Beliefs Questionnaire (DSBQ), was administered to 633 students and a confirmatory factor analysis was conducted. A sub-sample of participants' responses on the DSBQ was also compared to responses on Schommer's epistemological questionnaire. Study III involved a second confirmatory factor analysis using data from a new sample ($n=523$). Those data were examined for potential gender differences. Overall, the results of this investigation suggested that students possess certain domain specific beliefs about knowledge in mathematics and history. Further, a significant moderate relationship between the DSBQ and Schommer's questionnaire provided some evidence of domain-generalizability in undergraduates' epistemological beliefs.

2.3.4.3. Studies on Teacher Education Students

Sinatra and Kardash (2004) examined 182 pre-service teachers' views of teaching as persuasion, and related those views to their openness/resistance to new ideas as measured by selected epistemological belief scales and dispositional measures. The results of the study indicated that teacher candidates who believed that knowledge evolves, that beliefs can be revised, and that learning is a process of constructing knowledge were more open to persuasive teaching. The findings of the study provides a view of persuasion and suggests further that the teaching as persuasion metaphor would be more successful embedded in an instructional context designed to broaden teachers' epistemological worldviews.

Bråten and Strømsø (2004) examined the relative contribution of epistemological beliefs and implicit theories of intelligence to the adoption of mastery, performance-approach, and performance-avoidance goals, respectively, in a sample of 80 Norwegian student teachers in an innovative, co-operative instructional context with little emphasis on grades and performance evaluation. According to the study, epistemological beliefs about the speed of knowledge acquisition predicted achievement goals. Students who believed that learning occurs quickly or not at all were less likely to adopt mastery goals

and more likely to adopt performance-approach and performance-avoidance goals. In addition, students who believed in stable and given knowledge were less likely to adopt mastery goals. Epistemological beliefs were found to play more important roles in goal adoption than implicit theories of intelligence.

Tirri, Husu and Kansanen (1999) aimed to build a conceptual framework of teachers' practical knowing. The researchers identified the common features underlying teachers' thinking through consideration of interview data from both elementary and secondary school teachers. The empirical findings indicated that teachers shared field-dependent epistemological standards guiding their practical knowledge. According to the study, teachers' professional and moral character were interrelated and could not be separated from each other. The study brought the two epistemological dimensions in teachers' reasoning together. They found out that the stances of teachers' professional character and teachers' moral character have the potential of combining vocational and professional aspects by establishing epistemological standards in teachers' thinking.

Gill, Ashton and Algina (2004) investigated a theoretical model including an instructional intervention and systematic processing to account for change in pre-service teachers' epistemological beliefs about teaching and learning in mathematics. General and subject-specific epistemological beliefs and systematic processing were assessed in 161 pre-service teachers, randomly assigned to an experimental group whose epistemological beliefs about mathematics were activated and challenged through augmented activation and refutation text or to a control group who read a traditional expository text. The model was partially supported. The treatment group receiving the instructional intervention demonstrated greater change in implicit epistemological beliefs than the control group, and partial support for systematic processing as a mediator of the relationship between general epistemological beliefs and change in specific epistemological beliefs was obtained.

2.3.4.4. Studies on Cultural Differences

Chan and Elliott (2004) identified four epistemological beliefs and two teaching and learning conception dimensions from a survey study of a sample of Hong Kong teacher education students. The researchers labeled the epistemological dimensions as Innate/Fixed Ability, Learning Effort/Process, Authority/Expert Knowledge and Certainty Knowledge. The results of their study on epistemological beliefs were somewhat different from Schommer's (1990) findings with North American college students and reflected the influence of cultural contexts. The two teaching and learning conceptions were labeled "Traditional" and "Constructivist Conceptions". The statistical analysis of Pearson correlation showed significant relations between Innate/Fixed Ability, Authority/Expert Knowledge and Certainty Knowledge with Traditional Conception and Learning Effort/ Process with Constructivist Conception. Then the researchers conducted a confirmatory factor analysis that also showed the possible causal effect of epistemological beliefs on conceptions about teaching and learning. All these analyses tended to support the suggested views in literature that teachers' conceptions about teaching and learning are beliefs driven. The researchers also drew implications for future research in teacher education with respect to the relation of epistemological beliefs and teaching/learning conceptions in different cultures.

Estes, Chandler, Horvath & Backus (2003) tested the assumption that epistemological beliefs about the nature, sources, and limits of knowledge are often assumed to be similar across different domains of knowledge by comparing beliefs about scientific research on psychological and biological development. In the study undergraduates from the United States and the United Kingdom responded to a set of epistemologically relevant statements about each field and then compared the two fields directly in terms of their confidence in the conclusions and advice of experts. The researchers found that on all measures, more negative beliefs were expressed about research on psychological development. Although U.S. students were found to be more skeptical about both fields, U.S. and U.K. students displayed similar response patterns.

To justify the skepticism between both groups, students in both countries gave similar reasons (e.g., the difficulty in accurately measuring psychological variables). These results demonstrate that epistemological beliefs can differ substantially between two closely related fields across cultures. They also highlight issues that must be addressed to make education about the validity of research in developmental psychology more effective.

Chan & Elliott (2004) reported a study of epistemological beliefs of Hong Kong teacher education students in which four belief dimensions had been identified. The result is similar to that found by Schommer (1990) with North American university students in that the number of dimensions is the same but the nature of the dimensions is different. The study hypothesized that the differences can be accounted for in terms of differences in cultural context. In particular, the difference in dimensions concerned with authority–expert knowledge and effort and learning reported in this study might be explained by value differences between Western (North American) and non- Western (Hong Kong Chinese) cultures. From a methodological perspective, the researchers also conducted interview which also implied difficulties in measuring knowledge beliefs. Another result driven from the study was that from in-depth interviews to complement quantitative data were found to be necessary for a study of epistemological beliefs.

2.4. Self-Efficacy

Self-efficacy is the “beliefs in one’s capabilities to organize and execute the courses of action required to produce given attainments” (Bandura, 1997). Bandura’s theory of self-efficacy is based on the observation that different people have different levels of self-efficacy under particular conditions. The main principles of the theory are focused on the differences between people with high self-efficacy and low self-efficacy in terms of their attitudes towards tasks and the amount of work to be done, the structure and sources of self-efficacy.

The principles of self-efficacy have been widely tested in different disciplines and settings, such as clinical problems (Bandura, 1983) social skills (Moe & Zeiss, 1982, cited in Pajares, 1997).

Self-efficacy beliefs have also received an increasing attention in educational research, primarily in the studies of teacher education. Constructs in these studies have included attributions, goal settings, modeling, having control across domains.

In order to set foundation for exploration, a brief overview of the role of self-beliefs in Bandura's social cognitive theory will be offered.

2.4.1. Self-efficacy, Component of Social Cognitive Theory

Self-efficacy beliefs are defined as the beliefs in one's capability to organize and execute the courses of action required to manage prospective situations (Bandura, 1997). Self-efficacy beliefs differ from related conceptions of personal competence; therefore, self-efficacy beliefs are concerned with individuals' perceived capabilities to produce results and attain types of performances. How self-efficacy beliefs are acquired, how they influence motivational process and how they differ from similar or related conceptions of self-belief constructs are the basic tenets of self-efficacy beliefs.

2.4.2. Sources of Self-efficacy Beliefs

The sources of self-efficacy are defined as enactive mastery experiences, vicarious experiences, verbal persuasion, and the physiological and affective states of people (Bandura, 1997). The degree to which people consider themselves capable in a particular area and their level of self-efficacy is influenced by these factors.

Enactive mastery experiences, which are success stories people have, are seen as the influence that has the greatest effect on self-efficacy. Achieving certain tasks, especially under terrifying conditions after working hard, helps people believe in their capabilities. The obstacles they encounter help them have stronger self-efficacy as they

overcome problems one by one. People have the capacity to accomplish the task despite any problems by such positive experiences. On the other hand, completing tasks which do not require much effort may lead to making incorrect assumptions about capabilities. When people get used to achieving tasks in a short period of time without making much effort, they expect to succeed in doing every new task as easily as they did the earlier ones.

The second source of efficacy is the vicarious experiences that are concerned with the inferences people make about their own capabilities by observing or learning about the performances of others. However, people may have higher levels of self-efficacy when they observe the successful performance of others who are at similar positions. “The greater the assumed similarity, the more persuasive are the models’ successes and failures” One’s experiencing a certain task may seem to be a stronger source of self-efficacy, but vicarious experiences may sometimes play an even stronger role on the level of self-efficacy of the person. For example, students who fail to spell words may have low self-efficacy for doing the task. However, if they see other classmates spelling successfully, the self-efficacy level of those students for doing the task is likely to increase. The reason for this is that they are at a similar position with their classmates in terms of age and the teacher they are taught by.

Other people’s expression of positive or negative thoughts about potential future success may persuade people of the presence of their capabilities. Verbal persuasion may be advantageous or disadvantageous considering the result it brings. Persuading a person of the presence of non-existent capabilities leads to low self-efficacy upon failure. On the other hand, a person who has the necessary skills and who has made enough effort to succeed in an activity will feel the strength to accomplish the given task and have high self-efficacy with the help of verbal persuasion. Bandura reports that especially if people believe that they can do a certain task by making the necessary effort, verbal persuasion can have positive influence on their self-efficacy level. However, since these persuasions involve exposure to the verbal judgments that others

provide, are weaker source of efficacy information than mastery or vicarious experiences (Pajares, 1997).

The effect of physiological and affective states such as anxiety, stress and mood states also provide information about efficacy beliefs. When people think that they are stressed because they do not have the confidence to perform well and that being stressed will lead to failure in accomplishing a task, they feel even more uneasy about their performance. Therefore, strong emotional reactions to a task provide cues about the anticipated success or failure of the outcome (Pajares, 1997)

2.4.3. Effects of Self-efficacy Beliefs

According to Bandura's (1986) social cognitive theory, self-referent thought mediates between knowledge and action, and through self-reflection individuals evaluate their own experiences and thought processes. Self-efficacy beliefs influence psychological processes in several ways. Most people prefer to take place in the tasks that they feel themselves confident and certain to accomplish rather than take place in the tasks that they will face with failure. Beliefs of personal competence will also help determine how much effort people will spend on an activity, how long they will keep trying to accomplishing a task without giving up, and how people will keep themselves strong to the faced difficulties. In addition, efficacy beliefs have influence on the amount of stress and anxiety as people engage in a task. The higher the sense of efficacy, the greater the effort, persistence and endurance (Pajares, 1997).

People with high self-efficacy beliefs will take the tasks as to be mastered rather than obstacles to avoid. In addition, high self-efficacy belief will bring intrinsic interest in activities, set challenging goals, recover their confidence after failures. On the other hand, people with low self-efficacy may believe that things are tougher than they really are. As a result, self-efficacy beliefs are strong predictors of the level of accomplishment that individuals finally attain (Pajares, 1997; Bandura, 1986, 1997).

This section will focus on teacher efficacy research and studies related to pre-service teacher efficacy. The studies and research reviewed here are compiled according to their main concerns and constructs.

2.4.4. Teacher Efficacy Beliefs

Teacher efficacy which is sometimes called “teaching efficacy” referring to teachers’ beliefs about their ability to influence student outcomes (Wheatley, 2002). Teacher efficacy has been identified as a variable accounting for individual differences in teaching effectiveness (Gibson & Dembo, 1984). A teacher’s efficacy belief is a judgment of his or her capabilities to bring about desired outcomes of student engagement and learning (Tschannen-Moran & Woolfolk Hoy, 2002). Teachers’ sense of efficacy has been related to many aspects that take place in learning and teaching process; such as achievement (Schunk & Pajares, 2002), use of materials in the classroom (Tschannen-Moran & Hoy, 2002), application of new methods (Ghaith & Yaghi, 1997).

In addition, teachers’ efficacy beliefs relate to their behavior in the classroom. Efficacy is thought to affect the effort the teachers invest in teaching and the goals that are set. It has been reported by many researchers that teachers’ beliefs of personal efficacy affect their instructional activities and their orientation toward the educational process. Research has shown that teachers’ sense of self-efficacy affects the way they teach and provide order in the classroom (Bandura, 1997). As a result of different teachers’ practices and attitudes towards teaching and classroom management, students’ success in learning subject matter (Bandura, 1997; Brownell & Pajares, 1999) and self-efficacy for learning (Bandura, 1997) vary.

Teachers who have low and high self-efficacy differ from each other in the way they instruct and deal with difficulties when teaching students. Teachers with low self-efficacy believe that there are other, more influential factors involved in students’ learning than their teaching. For instance, the teachers assume that if students are not

motivated, they are not likely to be able to teach these students. On the other hand, teachers having high self-efficacy believe that if they endeavor to teach, they can accomplish teaching even when working with the most difficult students (Bandura, 1997). In this respect, teacher efficacy have been investigated.

Ghaith and Yaghi (1997) conducted a research to investigate the relationships among teachers experience, efficacy, and attitudes toward the implementation of instructional innovation. The researchers gathered the data through three questionnaires administered to 25 teachers after a four-day staff development program. They claimed that experience was negatively correlated, while personal teaching efficacy was positively correlated. They concluded that teachers with high personal teaching efficacy were more eager to use new instructional methods and that they did not have complaints about the difficulty of the task of using new methods in teaching as teachers with low personal teaching efficacy did. Teachers with low self-efficacy believe that there are other, more influential factors involved in students' learning than their teaching.

Tschannen-Moran and Hoy (2002) measured the extent to which teachers' assessment of key resources and supports in their teaching contexts contributes to their efficacy judgments. Their sample consisted of 225 teachers to explore the relationships between teachers' sense of efficacy and their rating of abundance of teaching materials, the interpersonal support from administrators and colleagues, as well as the level of parental and community support. Their results indicate that task analysis was the most explicit for novice teachers and for those entering a new teaching assignment. In addition, the availability of resources and support from parents were two elements of support that were related to teachers' sense of efficacy.

In addition, teacher efficacy doubts are thought to be beneficial for educational innovations. Wheatley (2002) conducted a research analyzing the benefits of specific teacher efficacy doubts that are thought to have an impact for educational forms in terms of progressive and meaning-centered. The study challenges the assumption that teachers'

doubts about their efficacy are problematic for educational improvement. In addition, the analysis relates teacher efficacy beliefs to the process of teacher learning that are absolutely essential for successful reform. Finally, the study highlights some of the ways in which specific teacher efficacy doubts are actually an integral part of progressive, and meaning centered teaching.

Ghaith and Shaaban (1999) in investigating the relationship between perceptions of teaching concerns, teacher efficacy and the characteristics that they selected as being a teacher claimed that beginning teachers and those with low sense of personal efficacy were concerned about the task of teaching and the impact they make as teachers more than highly experienced and more personally efficacious counterparts.

Gibson and Dembo (1984) examined the relationship between teacher efficacy and observable teacher behaviors. They claimed that classroom observation data related to academic focus and teacher feedback behaviors indicated differences between high and low efficacy teachers in terms of group size, criticism and persistence in failure situations.

Chacón (2005) explored self-efficacy beliefs among English as a Foreign Language teachers in Venezuela in the study. Data were collected through a survey administered to 100 teachers. The teacher Sense of Efficacy Scale was used to assess efficacy for management, engagement, and instructional strategies. In addition to survey, interviews were conducted with a purposeful sample. According to the results of the study, teachers' efficacy for instructional strategies was higher than efficacy for management and engagement.

Yılmaz (2004) explored the relationship between novice and experienced teachers' self-efficacy for classroom management and students' perceptions of their teachers' classroom management with 10 novice and 10 experienced English teachers and 295 students of those teachers at Marmara University Department of Foreign Languages Preparatory School. The researcher collected through two questionnaires and

interviews. The questionnaire administered to measure teachers' self-efficacy for classroom management. The questionnaire completed by students provided data about their perceptions of teachers' actual classroom management practices. The interviews provided insight into teachers' feelings, experiences, and practices concerning classroom management. The results reveal that teachers have high efficacy for classroom management. When the two groups were compared, novice and experienced teachers differ in their self-efficacy for classroom management, but not in their efficacy for personal teaching and external influences. Students did not distinguish between novice and experienced teachers' classroom management, viewing both positively. No significant relationship was found between teachers' efficacy levels and students' perceptions.

Ünver (2004) investigated the level of perceived self-determination and self-efficacy of the EFL instructors working in the Anadolu University School of Foreign Languages (AUSFL) in the 2003-2004 academic year. The study examined the possible relation between instructors' perceived self-determination and self-efficacy. Forty-nine EFL instructors working in AUSFL participated in the study. Two data collection instruments were used in the study. A survey combining the Work Climate Questionnaire and the Teacher Efficacy Scale (Woolfolk & Hoy, 1990) was used to identify the level of perceived self-determination and self-efficacy of the instructors. The results revealed that the majority of instructors perceived themselves to be working in an autonomy supportive environment. Textbook selection, the use of extra materials, teaching methods and exam preparation were the areas the instructors mostly felt autonomous. However, unmotivated students and heavy workload affected the instructors' motivation negatively. The quality of relationship between the instructors and the administration also found to be influential. As for teacher efficacy, the majority of instructors appeared to have high levels of personal and general teaching efficacy. However, no significant relation was found between the levels of self-determination and self-efficacy of the instructors. The results reveal the complexity of the factors that influence teachers' perceptions.

Teacher efficacy is sometimes divided into two; general teacher efficacy and personal teacher efficacy. General teacher efficacy means the teachers' beliefs in the ability of teachers in general to influence student outcomes; personal teacher efficacy means teachers' beliefs about their own ability to affect student outcomes (Pajares, 2002) regardless of constructs used, teacher efficacy is typically assessed through teacher self-report on Likert-scale items.

2.4.5. Pre-service Teacher Efficacy Beliefs

Teachers' beliefs in their abilities to instruct students and influence student performance are strong indicators of instructional effectiveness (Bandura, 1997). It can be argued that the idea is also valid in the initial years of teacher education because there are also studies focusing on the beliefs of efficacy of the teacher trainees. One of the reasons that prospective teachers' efficacy beliefs are being investigated is the question of how a sense of efficacy might be affected by teacher education programs (Woolfolk, 1990).

Woolfolk and Hoy (1990) examined the structure and meaning of efficacy for a sample of 182 prospective teachers and related efficacy beliefs about control and motivation. The independent dimensions of teaching efficacy and personal efficacy that are defined in the studies of experienced teachers were also found for the prospective teachers. In their study, they stated that personal efficacy was positively related to a control orientation rejecting teacher control of students but accepting the schools' control of teachers.

Lin and Gorrell (2001) conducted their study with 714 early childhood and elementary pre-service teachers at the beginning and at the end of their teacher education. The researchers claimed that the prospective teachers' beliefs reflected strong social and cultural differences with respect to perceptions about the roles of teachers.

They concluded that the measurement tool was designed for American samples, and it was thought not to be suitable for applying to different cultures (Lin & Gorrell, 2001).

Savran and Çakıroğlu (2003) conducted a study in Turkey with elementary and secondary pre-service science teachers' focused on perceived efficacy beliefs and their classroom management beliefs. The purposes of the study were first to examine the relationship of teaching efficacy and classroom management beliefs and second to assess the differences between Turkish elementary and secondary pre-service teachers' science teaching efficacy and classroom management beliefs. The sample was consisted of 646 pre-service teachers in elementary and science teaching teacher programs. They concluded that secondary pre-service teachers were more efficacious than the elementary counterparts (Savran & Çakıroğlu, 2003).

2.5. Conclusion

Although there have been various kinds of studies focusing on different aspects of self-efficacy, and teacher efficacy, there is a lacking body of research on the relationship between beliefs about knowledge and learning and teacher efficacy beliefs.

The next chapter presents the methodology of this study, particularly by giving information about the setting, participants, instruments, data collection procedures and data analysis.

CHAPTER III

METHODOLOGY

3.1. Introduction

The purpose of this study was to investigate the interrelationship among key variables, personal teaching efficacy and beliefs about knowledge and learning. The study aimed to find out the epistemological beliefs and teacher efficacy beliefs held by the English language teacher education trainees. In addition, the relations between the language teacher education students' epistemological beliefs and teacher efficacy beliefs were investigated.

This chapter will provide information about the research design, study participants, instruments to obtain the data, the data collection procedures, and the data analysis strategies.

3. 2. Research Design

In order to explore the relationship of beliefs about knowledge and learning and teacher efficacy of English language teacher trainees, and to contribute to teacher cognition research, a quantitative survey study was undertaken to explore the issues involved in teacher cognition. Survey studies are the preferred strategy among researchers when the focus is on a group's attitudes, opinions and/or characteristics (Brown, 2002). By applying this kind of method, the researcher takes the advantage of collecting substantial amount of information in short amount of time. This kind of study would bring the question of how much of the obtained information presents the desired results when the questionnaires are mailed to the target group. Quantitative methods were chosen mainly because they would bring a different perspective for exploring the interrelationship between epistemological beliefs and teacher efficacy beliefs held by the teacher trainees. Schommer-Aikins (2004) states about quantitative assessment that

“...the assessment of epistemological beliefs is delicate regardless of the type of assessment involved. Any form of assessment, whether quantitative or qualitative, can be rendered invalid if it is not properly analyzed. ...it is clear that each assessment technique brings with a different perspective.”

Two questionnaires were administered to 456 teacher trainees of English language. The first questionnaire was designed to measure epistemological beliefs and the second questionnaire to examine teacher beliefs held by the teacher trainees. Participants were also asked to supply various demographic data such as gender, year, age, place of English Language Teaching (ELT) choice in admission to university in completing the questionnaires. The following sections give a brief description of the development and content of the two questionnaire instruments.

3. 3. Participants

A sample consisting of 456 (see Table 3) volunteer teacher education students of the ELT departments at different Turkish-medium universities, Abant Izzet Baysal University, Gazi University, Çukurova University, Anadolu University, and Uludag University, was used in the study. Only Abant Izzet Baysal University does not have a preparatory class at the curriculum. The program used at the ELT departments of the universities are determined by the Council of Higher Education. Random sampling was applied in terms of sample selection and the sample was also clustered in terms of year at school. By applying random sampling, it has been ensured that each member of the population had the equal chance of being selected for the sample; therefore, biases in the choice of participants had been eliminated.

The age ranged from 18 to 22. There were 90 male and 366 female students. The English Language Teacher Education program is a 4 year full-time degree program for teacher training students to become English language teachers for the primary and secondary education. The admission requirement is achieving certain scores from two

Table 3
Profile of the Participants

Participants	Number of Participants	Gender		Year at School					Age				Choice of ELT				
		Female	Male	1	2	3	4	18	19	20	21	22	1	2	3	4	5
Abant İzzet Baysal University	81	60	21	20	24	22	15	18	22	16	10	15	75	2	1	-	3
Çukurova University	58	45	13	12	19	11	16	2	4	8	28	16	49	2	3	2	2
Anadolu University	70	51	19	15	18	19	18	12	9	12	17	20	58	6	4	-	2
Uludağ University	103	85	18	29	19	32	23	20	21	21	20	21	58	12	15	5	13
Gazi University	144	125	19	41	33	31	39	14	23	32	45	30	110	19	9	2	4
Total	456	366	90	117	113	115	111	66	79	89	120	102	350	41	32	9	24

tests, one for social studies, and the other for English language only, administered by Student Selection and Placement Center (OSYM). The departments are selected at the high school at the grade of 10. Therefore, the students selecting foreign language departments in the high school are motivated to study in the departments of foreign languages at the universities. One of the fields the students graduated from foreign language departments can select is the ELT department. Therefore it can be claimed that the students who have selected ELT departments are motivated to become teachers of English.

3. 4. Instruments

The survey instrument consisted of two questionnaires (Epistemological Beliefs Questionnaire (EBQ) and Teacher-Efficacy scale(TES)) and a demographic section asking students to supply their demographic data such as, gender, age, year at school, and choice of ELT in admission to university. The first questionnaire was to measure the epistemological beliefs and the second questionnaire was to determine teacher efficacy beliefs held by the ELT teacher trainees. EBQ consisted of 63 items and TES 22 items. Both questionnaires were administered once and the students were asked to complete the two questionnaires by rating the Likert-scale items. In addition, the demographic information was gathered in the survey.

3. 4.1. Epistemological Belief Questionnaire (EBQ)

According to Duell and Schommer-Aikins (2001), Schommer's epistemological belief questionnaire is a multidimensional focus on the beliefs. Its dimensions are listed as follows:

- a. The structure of knowledge: ranging from isolated bits to interrelated concepts (Simple Knowledge)
- b. The speed of learning: ranging from quick, all or none to gradual (Quick Learning)

- c. The ability to learn: ranging from fixed at birth to improving with experience and over time (Innate/Fixed Ability)
- d. The stability of knowledge: ranging from unchanging to always changing (Certain Knowledge)
- e. The source of knowledge : ranging from handed down by the authority to derived from reasoning (Omniscient Authority)

The questionnaire can be applied to a group varying from Grade 6 to adults depending on the version. There are two versions of the questionnaire, one is 63-item Likert-scale for high school and college students, and the other is 30-item Likert scale for the middle school students.

Cronbach alpha values range from .63 to .85 for the college version (Duell & Schommer-Aikins, 2001). The content validity of the questionnaire is screened by professionals in the field of educational psychology (Duell & Schommer-Aikins, 2001). Validity is also evidenced in the instruments' prediction of students' comprehension (Schommer, 1990), thinking about everyday controversial issues (Schommer-Aikins & Hutter, 2002). In addition, speed of learning predicts comprehension monitoring; ability to learn predicts the value of education, and stability of knowledge predicts the interpretation of tentative text.

Schommer's Epistemological Belief Questionnaire (see Appendix A) consists of 63 items, which consider the 'Simple Knowledge', 'Quick Learning', 'Innate/Fixed Ability', 'Certain Knowledge', and 'Omniscient Authority' beliefs held by the teacher trainees. There are twelve subsets of items used as variables in factor analysis. In addition, 28 items in the questionnaire have negative code and 35 items with positive code. Table 4 shows the five dimensions, twelve subscales and the items associated with them.

Table 4
Items of Epistemological Belief Questionnaire

Dimensions	Subsets	Items
Simple Knowledge	Seek single answers	11, 16, 17, 19, 22, 23, 30, 33, 56, 58, 59
	Avoid integration	14, 18, 31, 35, 37, 38, 54, 63
Quick Learning	Quick learning	1, 10, 39, 50, 60
	Learn the first time	20, 24, 52
	Concentrated effort is a waste of time	51, 53
	Success unrelated to hard work	26, 32, 43, 49
Innate/Fixed Ability	Can't learn how to learn	4, 15, 25, 28, 62
	Innate ability	8, 47, 55, 57
Certain Knowledge	Avoid ambiguity	9, 27, 41, 42, 44
	Knowledge is certain	2, 12, 21, 34, 48, 61
Omniscient Authority	Don't criticize authority	3, 6, 7, 13, 45, 46
	Depend on authority	5, 29, 36, 40

Information about the participants' epistemological beliefs was gathered through the use of a Likert scale. The questionnaire, which uses a 5- point Likert scale, provided the respondents with 5 possible answers ranging from 'strongly disagree' to 'strongly agree'. Since the original questionnaire has been used in different cultural contexts, and examined the cultural effects on the epistemological beliefs; and the trainees who filled out the questionnaire are proficient in English language, the questionnaire was given in its original language, English, without being translated.

3. 4.2. Teacher Efficacy Scale (TES)

Woolfolk and Hoy's (1990) Teacher Efficacy Scale was used in this study to measure teachers' teacher efficacy beliefs. The researchers developed this questionnaire by omitting 8 items from Gibson and Dembo's Teacher Efficacy Scale (1984). Woolfolk and Hoy's scale (see Appendix B) consists of 22 items, which have two dimensions: the 'teaching efficacy' and personal efficacy' of teachers. In Woolfolk and Hoy's study Cronbach alpha value was .74 for the teacher efficacy scale and .82 for the personal efficacy scale. Table 5 shows the factors and the items associated with them.

Table 5

Items of Teacher Efficacy Scale

Dimensions	Items
Personal Efficacy	1, 5, 6, 7, 8, 11, 12, 14, 16, 18, 19, 21, 22
Teaching Efficacy	2, 3, 4, 9, 10, 13, 15, 17, 20

The questionnaire, originally in English, was translated into Turkish by an expert both in his subject area and in English because the original form of the questionnaire consisted of technical terms that are thought to cause misunderstandings by the trainees. Then, a colleague in the Foreign Languages Department English Language Teaching program at Abant İzzet Baysal University, who has a teaching position at the department, translated the Turkish version into English. Necessary changes were made on the Turkish version of the questionnaire by comparing the back translation and the original version.

3. 5. Data Collection Procedures

The researcher asked for permission from the randomly selected Departments of Foreign Languages Education of other universities to conduct the research. The researcher mailed and/or phoned the instructors in the target departments and asked for their contribution.

The two questionnaires were applied to the group of students at Abant Izzet Baysal University and were mailed to the departments to be applied at other universities. Students were asked to rate their responses for the items in both the EBQ and TE scale on a five-point Likert scale (1=strongly agree and 5=strongly disagree).

Before completing the EBQ and TE scale, the participants were briefed about the direction and purpose of the study, significance of exploring their epistemological beliefs and efficacy as being a teacher which would facilitate their professional development in teaching.

3. 5.1. Pilot study

A pilot study was conducted with the instrument for the purpose of establishing reliability of the instrument, determining if the instrument would accomplish the objectives and research questions of the study, and estimating response rates.

The pilot study was conducted with 250 participants in order to check whether students would have any problems in answering the EBQ and TE scale items. The pilot participants were encouraged to ask any questions about the items that were not clear and report any problems in understanding the questionnaire and to ensure that all of the items in each questionnaire were clear enough for the participants to understand. The participants were selected from each university by applying simple random sampling procedure. The demographic profile of the pilot study subjects is displayed in Table 6.

It took about half an hour for trainees to fill out the EBQ and TE scale. The trainees responded to the questionnaires in the classroom without taking them home. The researcher was ready to make necessary changes to the questionnaires and asked the trainees to provide feedback; however, the trainees stated that all of the items were clear and that there was no need to make any changes in the questionnaires.

The questionnaires were gathered from the universities of Anadolu University, Gazi University, Uludağ University, and Çukurova University. The questionnaires were stapled together and were kept in separate envelopes labeled according to the home universities so that they could be analyzed easily.

The researcher started entering the data using the Statistics Package for the Social Sciences (SPSS 12.0). After having completed the entry of the data, the researcher calculated the reliability of the results for teachers' efficacy and trainees' beliefs about knowledge and learning.

Table 6
Demographic Profile of Pilot Study Respondents

Participants	Number of Participants	Gender		Year at School				Age					Choice of ELT				
		Female	Male	1	2	3	4	18	19	20	21	22	1	2	3	4	5
Abant İzzet Baysal University	37	26	11	10	7	8	12	6	5	8	11	7	34	1	2	-	-
Çukurova University	33	27	6	7	11	10	5	4	1	9	13	6	26	4	1	1	1
Anadolu University	49	41	8	9	14	11	15	5	8	7	14	15	43	4	1	0	1
Uludağ University	59	46	13	21	7	14	17	6	12	11	14	16	27	13	5	5	9
Gazi University	72	61	11	16	20	21	15	3	17	20	13	19	53	14	2	2	1
Total	250	201	49	63	59	64	64	24	43	55	65	63	183	36	11	8	12

3.5.2. EFL Pre-service Teachers' Epistemological Beliefs

EBQ consisted of five dimensions and twelve subscales. Within these subscales, the questionnaire items are grouped. While making the analysis of EBQ, in order to follow similar procedures used by Schommer (1990), Chan and Elliot (2004), first the reliability of the questionnaire was calculated for the pilot study. While making the calculations, there were negatively correlated items within the data. These items were first reversed before calculating the final reliability. The reason for reversing is that Epistemological beliefs are highly culture-bound (Chan & Elliot, 2004). The items reversed are thought to be culturally misunderstood while being read. In Turkish culture when a person is asked a negative question, if s/he agrees and wants to give a positive answer, s/he would probably give a positive remark. However, in the English Language culture, in order to give an agreement statement to the negative question, the answer has to be negative. After having five items reversed, the Cronbach's alpha reliability coefficient of the EFL pre-service teachers' EBQ was found to be 0.70 for 61 items (see Table 7).

Table 7

Reliability Statistics for Epistemological Belief Questionnaire

Cronbach's Alpha	Cronbach's Alpha Based on Standardized Items	N of Items
.69	.70	61

The Cronbach's alpha reliability coefficients were also calculated for each dimension. The reliability coefficient of the dimensions ranged from .11 to .40. Factors were in complex combinations, each factor had at least one subscale of the dimensions. This explains the complexity of belief structure, not being simple and not constituting independent nature of dimensions. Rather, some dimensions are interrelated and

constitute each others' subscales. The complex combination of the subscales also explains the belief structure of Turkish student teacher sample. When explanation is considered for the subscales, sample items from the subscales are taken into account.

The results explain that beliefs are to be thought as a system. The items in that system are interrelated, and they explain the beliefs held by the Turkish EFL pre-service teachers when they are examined together. This makes EBQ to be analyzed with its subscales. In order to make the items to be calculated within their groups, first the subscales were identified by adding the items in the subscale and dividing to the number of the items in that subscale. Finally, factor analysis with equamax rotation procedures were followed for the research questions seeking to explain the epistemological beliefs held by the EFL pre-service teachers. According to Darlington (2004), in any event, rotation does not affect a factor structure's fit to the data, if a researcher chooses one of the rotation techniques whose results give balanced results, it is commonly accepted. The initial factor solution was rotated by the equamax method to guarantee optimal solution with high loadings on every factor (Reiman & Oedewald, 2004). When it is compared with varimax rotation results, equamax rotation gave more balanced results. With equamax rotation more stable and consistent findings were obtained from epistemological belief questionnaire responses. Principle component analysis with varimax rotation has been conducted on teacher efficacy beliefs responses. Table 8 shows the descriptive statistics of EBQ subscales for the pilot study.

Table 8
Descriptive Statistics of EBQ Subscales for the Pilot Study

Subscale	n	Mean	SD	Dimension	N	Mean	SD
Seek single answers	235	2.71	.32255	Simple Knowledge	217	2.63	.28975
Avoid integration	242	2.58	.42054				
Quick learning	244	3.16	.41255	Quick Learning	246	2.65	.31216
Learn the first time	250	2.58	.63532				
Concentrated effort	247	2.52	.61585				
Success unrelated	241	2.36	.58532	Innate/Fixed Ability	237	2.45	.36306
Can't learn how to learn	243	2.10	.41434				
Innate ability	244	3.04	.64419				
Avoid ambiguity	241	2.85	.50132	Certain Knowledge	230	2.93	.41765
Knowledge is certain	240	2.62	.53703				
Don't criticize	241	2.23	.36906	Omniscient Authority	236	2.69	.35506
Depend on authority	246	3.00	.54955				

The sampling adequacy was .67 for the study (see Table 9).

Table 9

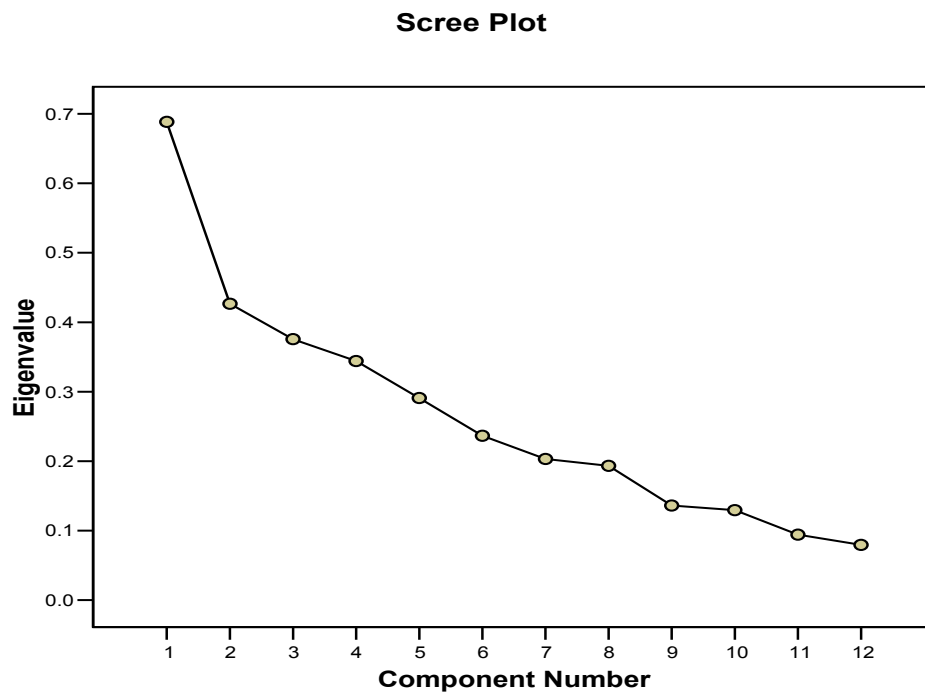
Sampling Adequacy of EBQ

Kaiser-Meyer-Olkin Measure of Sampling Adequacy.		.67
Bartlett's Test of Sphericity	Approx. Chi-Square	224.332
	df	66
	Sig.	.000

On examining the scree plot (see figure 1) in the analysis, there was a sharp break indicating a factor solution having more than five factors. In the relevant literature, it has been mentioned that the minimum factor structure of the EBQ is three and the maximum factor structure is five factors (Chan & Elliot, 2004). For this reason, the factor structure of the study was thought to be limited by five factors.

Figure 1

Scree Plot for Rotated Factor of EBQ



Five factors were extracted by using 12 conceptual subscales as variables. The five factors accounted for 55 % (cumulative percentage) of the total variance. (see Table 10)

Table 10

Total Variance Explained Matrix for EBQ

	Component	Initial Eigenvalues(a)			Rotation Sums of Squared Loadings		
		Total	% of Variance	Cumulative %	Total	% of Variance	Cumulative %
Raw	1	.688	21.525	21.525	.468	14.637	14.637
	2	.427	13.338	34.863	.489	15.286	29.923
	3	.376	11.744	46.607	.333	10.410	40.333
	4	.344	10.761	57.368	.391	12.232	52.565
	5	.291	9.094	66.463	.444	13.897	66.463
	6	.237	7.399	73.862			
	7	.203	6.352	80.214			
	8	.193	6.046	86.260			
	9	.136	4.258	90.518			
	10	.130	4.051	94.569			
	11	.094	2.945	97.514			
	12	.080	2.486	100.000			
Rescaled	1	.688	21.525	21.525	1.519	12.658	12.658
	2	.427	13.338	34.863	1.411	11.759	24.417
	3	.376	11.744	46.607	1.324	11.037	35.454
	4	.344	10.761	57.368	1.290	10.750	46.204
	5	.291	9.094	66.463	1.116	9.300	55.504
	6	.237	7.399	73.862			
	7	.203	6.352	80.214			
	8	.193	6.046	86.260			
	9	.136	4.258	90.518			
	10	.130	4.051	94.569			
	11	.094	2.945	97.514			
	12	.080	2.486	100.000			

Extraction Method: Principal Component Analysis.

A When analyzing a covariance matrix, the initial eigenvalues are the same across the raw and rescaled solution.

The raw and rescaled loadings of the factors are given in Table 11.

Table 11

Rotated Component Matrix of EBQ

	Raw Component					Rescaled Component				
	1	2	3	4	5	1	2	3	4	5
Concentrated effort is a waste of time	.51					.82				
Depend on authority	.36					.67				
Avoid integration										
Seek single answers										
Innate ability		.60					.93			
Avoid ambiguity		.27					.55			
Quick learning										
Knowledge is certain			.48					.89		
Don't criticize										
Success unrelated to hard work				.54					.94	
Can't learn how to learn				.19					.46	
Learn the first time					.63					.98

For the sake of content integrity, the subscale in the third factor was merged with the third factor, and the fifth factor was accepted as a factor itself, since it is highly valued.

On the basis of high-loading subscales of items, the factors were identified. The first factor has a loading greater than .60 of two subscales representing Quick Learning (“Concentrated effort is a waste of time”)(see Table 12) and Omniscient Authority (“Depend on authority”) (see Table 13).

Factor 1:

Table 12

Items of “Concentrated Effort is a Waste of Time” Subscale

Quick Learning	Item Number
If a person tries too hard to understand a problem, they will most likely just end up being confused	51
Usually you can figure out difficult concepts if you eliminate all outside distractions and really concentrate	53

Table 13

Items of “Depend on Authority” Subscale

Omniscient Authority	Item Number
How much a person gets out of school mostly depends on the quality of the teacher.	5
When you first encounter a difficult concept in a textbook, it is best to work it out on your own.	29
Whenever I encounter a difficult problem in life, I consult with my parents	36
Sometimes you just have to accept answers from a teacher even though you do not understand them.	40

Factor 2:

For the identified second factor, there were three subscales. The second factor has a loading greater than .55 of three subscales representing 2 main dimensions, Innate/Fixed Ability (“Innate Ability”), Certain Knowledge (“Avoid Ambiguity” and

“Knowledge is certain“) . Sample sentences from these subscales are presented in Tables 14, 15, and 16.

Table 14

Items of “Innate Ability” Subscale

Innate/Fixed Ability	Item Number
The ability to learn is innate	8
Some people are born good learners; others are just stuck with limited ability	47
Students who are “average” in school will remain “average” for the rest of their lives	55
An expert is someone who has a special gift in a specific area (field)	57

Table 15

Items of “Avoid Ambiguity” Subscale

Certain Knowledge	Item Number
It is annoying to listen to a lecturer who cannot seem to make up his mind as to what he really believes.	9
I find it refreshing (I find myself updated) to think about issues that authorities cannot agree on.	27
If professors would stick more to the facts and do less theorizing, one could get more out of college.	41
I do not like movies that do not have an ending.	42
It is a waste of time to work on problems which have no possibility of coming out with a clear-cut and unambiguous answer.	44

Table 16

Items of “Knowledge is Certain” Subscale

Certain Knowledge	Item Number
If scientists try hard enough, they can find the truth to almost anything	12
Scientists can ultimately get to the truth	21
Truth is unchanging	34
Nothing is certain, but death and taxes	48
Today’s facts may be tomorrow’s fiction	61

Factor 3:

For the identified third factor, there were three subscales. The third factor has a loading greater than .46 of three subscales representing two main dimensions, Innate/Fixed Ability (“Success unrelated to hard work”, “Can’t Learn How to Learn), Sample sentences from these subscales are presented in Tables 17 and 18.

Table 17

Items of “Success unrelated to hard work” Subscale

Innate/Fixed Ability	Item Number
Genius is 10% ability and 90% hard work.	26
Wisdom is not knowing the answers, but knowing how to find the answers.	32
Getting ahead takes a lot of work.	43
Really smart students do not have to work hard to do well in school.	49

Table 18

Items of “Cannot Learn How to Learn” Subscale

Innate/Fixed Ability	Item Number
A course in study skills would probably be valuable.	4
The most successful people have discovered how to improve their ability to learn.	15
Students have a lot of control over how much they can get out of a textbook.	25
Everyone needs to learn how to learn.	28
Self-help books are not much help.	62

Factor 4:

For the identified fourth factor, there was one subscale. The third factor has a loading greater than .90 of the subscale representing Quick Learning (“Learn the First Time”). Sample sentences from the subscale are in Table 19.

Table 19

Items of “Learn the First Time” Subscale

Quick Learning	Item Number
Going over and over a difficult textbook chapter usually will not help you understand it	20
If I find the time to re-read a textbook chapter, I get a lot more out of it the second time	24
You will get almost all the information you can learn from a textbook during the first reading	52

3.5.3. EFL Pre-service Teachers' Teacher-Efficacy Beliefs

Teacher-Efficacy Scale consisted of two dimensions, personal efficacy, and teaching efficacy. Within these dimensions, the questionnaire items are grouped. While making the analysis of TES, in order to follow similar procedures used by Woolfolk and Hoy (1990), first the reliability of the questionnaire was calculated. While making the calculations, there were negatively correlated items within the data. These items were first reversed before calculating the final reliability. However, there were items that gave negative correlations after the reversing. Therefore, those items were deleted from the data. The deleted items were, item 2, 4, and 9. After having three items deleted, the Cronbach's alpha reliability coefficient of the EFL pre-service teachers' teacher-efficacy questionnaire was found to be .69 (see Table 20). Teacher Efficacy scale Cronbach's alpha reliability coefficients were also calculated for each dimension. The reliability coefficient was .65 for personal efficacy dimension, .39 for teaching efficacy before the factorial analysis is conducted. Factors were in complex combinations, some of the items representing teaching efficacy were included in the personal efficacy.

Table 20
Reliability Statistics for Teacher Efficacy Scale

Cronbach's Alpha	N of Items
.69	19

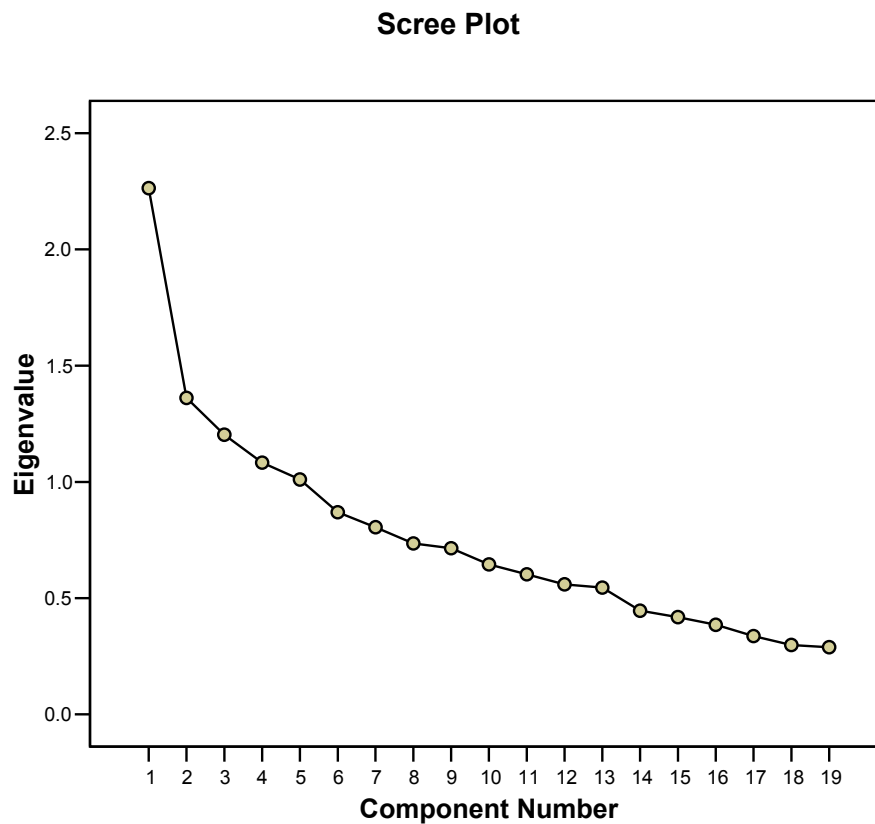
The sampling adequacy was .70 for the study (see Table 21).

Table 21
Sampling Adequacy of TES

Kaiser-Meyer-Olkin Measure of Sampling Adequacy.		.70
Bartlett's Test of Sphericity	Approx. Chi-Square	514.202
	df	171
	Sig.	.000

On examining the scree plot (see Figure 2) in the analysis, there was a sharp break indicating that there are more than two factors, but it is decided to design the factorial analysis in accordance with the studies in the literature.

Figure 2
Scree Plot for Rotated Factor of TES



The items loaded less than .35 were omitted in accordance with the literature. When rotated component analysis is examined, items 6, 10, 13, 15, 16, 17, and 18 were not enough loaded to be taken into the analysis (see Table 21).

Table 22
Rotated Component Matrix for TES

	Raw Component		Rescaled Component	
	1	2	1	2
it19	.475		.561	
it1	.561		.555	
it14	.391		.480	
it8	.305		.440	
it12	.307		.426	
it7	.369		.417	
it15	.286		.381	
it16	.275		.356	
it3		.900		.803
it5		.439		.460
it22		.392		.401
it20		-.387		.401
it21		.318		.365
it11		.280		.356

Extraction Method: Principal Component Analysis. Rotation Method:
Varimax with Kaiser Normalization.
A. Rotation converged in 3 iterations.

The two factors accounted for 29 % (cumulative percentage) of the total variance (see Table 23).

Table 23

Total Variance Explained Matrix for TES

Component	Initial Eigenvalues			Extraction Sums of Squared Loadings			Rotation Sums of Squared Loadings		
	Total	% of Variance	Cumulative %	Total	% of Variance	Cumulative %	Total	% of Variance	Cumulative %
1	2.449	17.494	17.494	2.449	17.494	17.494	2.100	15.003	15.003
2	1.694	12.102	29.596	1.694	12.102	29.596	2.043	14.593	29.596
3	1.409	10.061	39.657						
4	1.062	7.582	47.239						
5	.979	6.992	54.231						
6	.931	6.650	60.881						
7	.854	6.099	66.980						
8	.771	5.505	72.485						
9	.746	5.331	77.816						
10	.721	5.147	82.962						
11	.674	4.816	87.779						
12	.649	4.638	92.417						
13	.542	3.874	96.291						
14	.519	3.709	100.000						

When the study is compared with the relevant literature, some of the items in the teaching efficacy factor actually found to be belonged to personal efficacy. After conducting the factorial analysis, the Cronbach's alpha reliability coefficient for the first factor was .62 for the eight items (see Table 24). The second factors' Cronbach's alpha reliability coefficient was .40 for six items (see Table 25).

Table 24

Reliability Analysis of Personal Efficacy Factor

Cronbach's Alpha	N of Items
.62	8

Table 25
Reliability analysis for Teaching Efficacy Factor

Cronbach's Alpha	N of Items
.40	6

Table 26 and Table 27 show the items in the factors with factor loadings.

Table 26
Items Loading for Personal Efficacy

Item	Factor Loading
19. If I really try hard, I can reach even the most difficult and unmotivated students.	.56
1. When a student has performed better than usual, many times this is due to a little more effort on my part.	.55
14. If a student does not remember a particular bit of information that I gave in the previous class, I know how to foster his/her retention of it in the next class.	.48
8. I can reach the most difficult students when I really try hard.	.44
12. If a student masters a new topic quite fast, this may have resulted from my knowing the necessary steps in teaching the topic	.42
7. When a student gets a better grade than usual, the reason for this is that I have found better ways to instruct the student.	.41
15. The impact of a student's home experiences can be overcome by means of good instruction.	.38
16. If a student in my class is bothersome and noisy, I feel sure that I know certain techniques to redirect him/her quickly.	.35

Table 27
Factor 2 Item Loadings for Teaching Efficacy

Item	Factor Loading
3. The amount that a student can learn is related to his/her family background.	.80
5. I have enough training to handle almost any learning problem.	.46
22. My Teacher Education Program and/or Practice has/have gained me the necessary skills to be an effective teacher.	.40
20. When it comes to student's motivation and performance, the teacher is unable to do much; for a student's motivation and performance depend mostly on home environment.	.40
21. Some students need to be placed in slower groups so that they will not be subject to external expectations.	.36
11. When my students' grades improve, it is because I have found more effective approaches.	.35

3. 6. Data Analysis

This section describes the rationale and procedures followed to analyze the data collected during the preference survey. The data collected from both the pilot and the actual study were statistically analyzed using SPSS 12.0. Before running any statistical tests on the data, the items with negative meanings were reversed. Items 2, 4, 7, 14, 15, 18, 22, 23, 24, 25, 26, 27, 28, 29, 30, 32, 35, 39, 43, 46, 48, 53, 54, 56, 60, 61 in the Epistemological Belief Questionnaire and items 1, 5, 6, 7, 8, 11, 12, 14, 15, 16, 18, 19, 22 in the Teacher Efficacy Scale were reverse scored.

When the subscales were described, beliefs for each subscale were analyzed in terms of the number of participants, mean scores, and the standard deviations. At the beginning of the study the scale range values was thought to be given as Strongly agree 1.00, Agree 2.00, Not Sure 3.00, Disagree 4.00, Strongly Disagree 5.00; however, EBQ

is reversed in accordance with the studies in the literature, the range between scales was also reversed. For the analysis of Likert scale, the accepted range is below (Kılıçoğlu & Altun, 2002).

Strongly Agree	5.00 – 4.20
Agree	4.19 – 3.40
Not Sure	3.39 – 2.60
Disagree	2.59 – 1.80
Strongly Disagree	1.79 – 1.00

However, since the original form of the questionnaire values the scales in a reversed order, for this study the form was changed as:

Strongly Agree	1.00 – 1.79
Agree	1.80 – 2.59
Not Sure	2.60 – 3.39
Disagree	3.40 – 4.19
Strongly Disagree	4.20 – 5.00

There are nine subscales having the value equal to or higher than .40 for EBQ and 14 items having the value equal to or higher than .35. Therefore nine subscales for EBQ and 14 items for TE scale have been taken into account during the analysis.

CHAPTER IV

FINDINGS

4.1. Introduction

The purpose of the study was to describe the epistemological beliefs and teacher efficacy beliefs and the interrelationship between epistemological beliefs and teacher efficacy beliefs held by the English language teacher trainees in a foreign language setting. In addition, the effects of age, year at school were examined. The collected data were analyzed to describe the epistemological beliefs, teacher efficacy beliefs held by the English language teacher trainees, in relation with the effect of gender, year at school, age and the relation between the two target beliefs.

This chapter consists of three sections. In the first and second sections, the analysis of the EFL pre-service teachers' Epistemological Belief Questionnaire, Teacher-Efficacy Scale and the effects of age, year at school, and gender on each questionnaire is presented. In the third section, analysis of the relation between the two questionnaires examined.

4.2. The Assumptions for MANOVA

While conducting MANOVA analysis, there are three main assumptions to check before conducting MANOVA to fulfill the requirements of the analysis. One of them is the number of cases in each cell being greater than the number of dependent variables. There are totally six dependent variables with N=456 cases in this study which means that the assumption has been conformed.

The second assumption is that there should be both univariate and multivariate normality of distributions. Although assessment of multivariate normality is difficult in practice; it should be checked that each dependent variable is normally distributed. There are two ways in which normality may be violated. The first is platykurtosis in which the distribution curve looks like a low plateau. It is checked by histograms

generated for each dependent variable. The second is the presence of outliers which are the data points far outside the area covered by the normal distribution curve.

In Figures 3 to 8 the histograms have been conducted for each dependent variable to verify the normal distribution of the dependent variables.

Figure 3

Histogram for Authority-Quick Learning

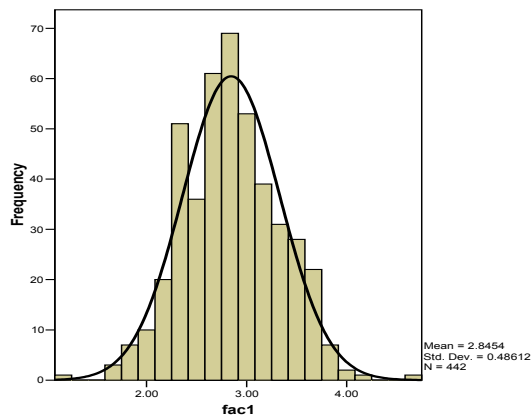


Figure 4

Histogram for Certain Knowledge

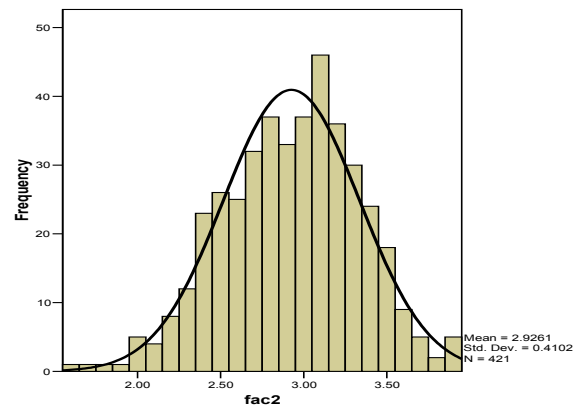


Figure 5

Histogram for Innate/Fixed Ability

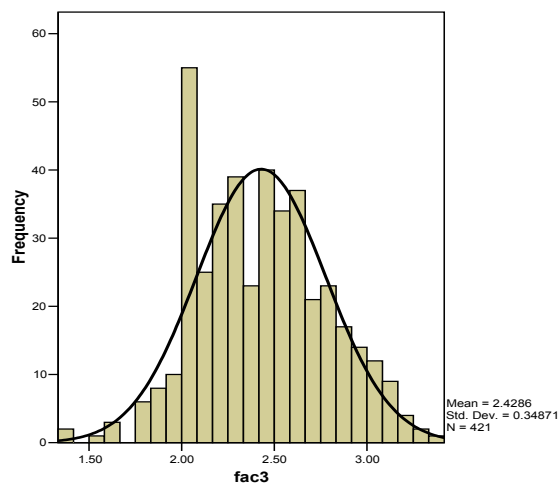


Figure 6

Histogram for Quick Learning

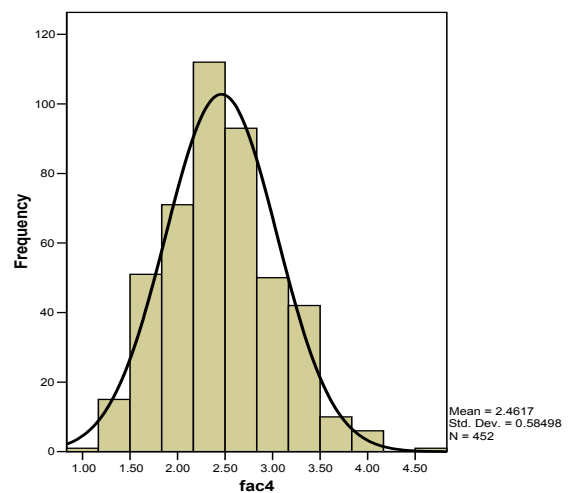


Figure 7

Histogram for Personal Efficacy

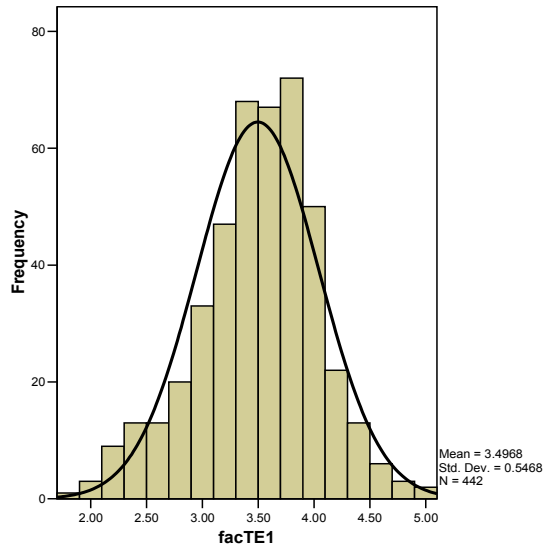
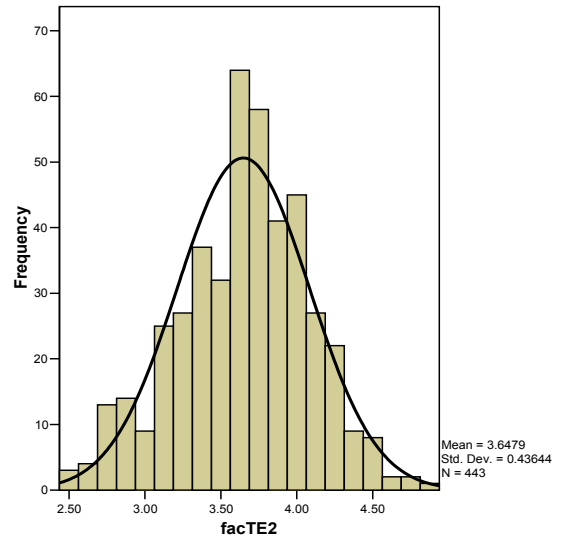


Figure 8

Histogram for Teaching Efficacy



Although there are outliers far outside the area covered by the normal distribution curve, the dependent variables do carry normality of distribution. In other words, the second assumption for MANOVA has also been conformed.

The last assumption is the homogeneity of variance-covariance matrices. Box's M Test checks whether the data violate the assumption of variance-covariance matrices. If it is significant, the assumption has been violated.

Table 28

Box's M test for effect of gender on Epistemological Beliefs

Box's Test of Equality of Covariance Matrices(a)

Box's M	12.365
F	1.214
df1	10
df2	102066.48
	8
Sig.	.276

a Design: Intercept+gender

Table 29

Box's M test for effect of age on Epistemological Beliefs
Box's Test of Equality of Covariance Matrices(a)

Box's M	60.116
F	1.460
df1	40
df2	81327.609
Sig.	.030

a Design: Intercept+age

Table 30

Box's M test for effect of year at school on Epistemological Beliefs

Box's Test of Equality of Covariance Matrices(a)

Box's M	44.149
F	1.444
df1	30
df2	413972.23
	7
Sig.	.055

a Design: Intercept+year

Table 31

Box's M test for effect of gender on Teacher-Efficacy beliefs

Box's Test of Equality of Covariance Matrices(a)

Box's M	17.402
F	5.750
df1	3
df2	367896.07
	3
Sig.	.001

a Design: Intercept+gender

Table 32

Box's M test for effect of age on Teacher-Efficacy beliefs

Box's Test of Equality of Covariance Matrices(a)

Box's M	14.217
F	1.170
df1	12
df2	272964.33
	9
Sig.	.298

a Design: Intercept+age

Table 33

Box's M test for effect of year at school on Teacher-Efficacy beliefs

Box's Test of Equality of Covariance Matrices(a)

Box's M	9.650
F	1.063
df1	9
df2	2088280.2
	68
Sig.	.387

a. Design: Intercept+year

When Box's M test results are analyzed, the results indicated that effect of gender on Teacher-Efficacy beliefs and effect of age on Epistemological Beliefs are significant and do not conform the assumption of homogeneity of variance-covariance matrices. This test is however very sensitive, and hence possibly too strict when the sample sizes are equal so most attention should be paid to the outcome of this test when the sample size is small and/or equal.

In general, if the sample sizes and a reasonable number of the participants in each group are provided, and outliers are checked before conducting the analysis, MANOVA will still be a valid test (Brace, Kemp & Snelgar, 2003)

4.3. EFL Pre-service Teachers' Epistemological Beliefs:

The first research question was to describe the epistemological beliefs held by the English language teacher trainees. In order to answer this question, table of score distribution, mean scores, and standard deviations were analyzed for each factor.

Table 34 shows the number of participants, minimum and maximum loadings, mean scores, and standard deviation of the gathered data.

Table 34

Descriptive Statistics of EBQ Factors

EBQ Factors	N	Minimum	Maximum	Mean	Std. Deviation
Authority-Quick Learning	442	1.17	4.67	2.84	.48612
Certain Knowledge	421	1.60	3.90	2.92	.41020
Innate/Fixed Ability	421	1.38	3.38	2.42	.34871
Quick Learning	452	1.00	4.67	2.46	.35211

When the mean scores of the factors are analyzed, it is clear that the participants agree on factors 3 and 4; however, could not decide on factors 1 and 2. The range of means lowest with 2.42 for factor 3 which is consisted of “Success unrelated to hard work”, “Innate Ability”, and “Can’t Learn How to Learn” represents “Innate/Fixed Ability” dimension. The highest with mean score is 2.92 for factor 2 which is consisted of “Knowledge is certain” and “Avoid Ambiguity” representing “Certain Knowledge” dimension. All factors range from strongly agree to strongly disagree. The descriptive statistics of each factor will be given in Table 35 to Table 41.

Authority-Quick Learning:

Depend on Authority and Concentrated effort is a waste of time

Table 35

Correlation Matrix for Authority-Quick Learning Factor

Authority-Quick Learning Factor		Depend on authority	Concentrated effort
Depend on authority	Pearson Correlation	1	.17(**)
	Sig. (1-tailed)	.	.000
	N	446	442
Concentrated effort	Pearson Correlation	.17(**)	1
	Sig. (1-tailed)	.000	.
	N	442	448

** Correlation is significant at the 0.01 level (1-tailed).

Table 36
Descriptive Statistics for Authority-Quick Learning Factor of EBQ

Authority-Quick Learning Factor	N	Minimum	Maximum	Mean	Std. Deviation
Depend on authority	446	1.00	4.50	2.9	.60155
Concentrated effort	448	1.00	5.00	2.6	.63989

When the first factor representing dimensions of “Omniscient Authority” and “Quick Learning” is analyzed, the subscales are found to be correlated with each other. The mean scores range from 2.6 for “Depend on Authority” to 2.9 for “Concentrated Effort is a Waste of Time”. Although there is a relationship between these subscales, the participants could not agree on the subscales and the factor.

Certain Knowledge:

Avoid ambiguity and Knowledge is certain

Table 37
Descriptive Statistics for Certain Knowledge Factor of EBQ

Certain Knowledge Factor	N	Minimum	Maximum	Mean	Std. Deviation
Avoid ambiguity	434	1.20	4.40	2.83	.52732
Knowledge is certain	425	1.33	4.00	2.61	.52060
Valid N (listwise)	411				

Table 38
Correlation Matrix for Certain Knowledge Factor

Certain Knowledge Factor		Avoid ambiguity	Knowledge is certain
Avoid ambiguity	Pearson Correlation	1	.151(**)
	Sig. (1-tailed)	.	.001
	N	434	411
Knowledge is certain	Pearson Correlation	.151(**)	1
	Sig. (1-tailed)	.001	.
	N	411	425

** Correlation is significant at the 0.01 level (1-tailed).

When the second factor representing dimension of “Certain Knowledge” is analyzed, the subscales are found to be significant. The mean scores range from 2.61 for “Knowledge is Certain” to 2.83 for “Avoid ambiguity”. Although there is a relationship between these subscales, the participants could agree on neither of the subscales and the factor.

Innate Learning:

Innate/ Fixed Ability

Table 39

Descriptive Statistics for Innate/Fixed Ability Factor of EBQ

Innate/Fixed Ability Factor	N	Minimum	Maximum	Mean	Std. Deviation
Innate ability	441	1.50	5.00	3.06	.66420
Success unrelated	440	1.00	4.25	2.35	.58580
Can't learn how to learn	438	1.00	4.00	2.08	.42673
Valid N (listwise)	419				

Table 40

Correlation Matrix for Innate/Fixed Ability Factor

		Innate ability	Success unrelated	Can't learn how to learn
Innate ability	Pearson	1	.188(**)	.069
	Correlation			
	Sig. (1-tailed)	.	.000	.077
	N	441	432	427
Success unrelated	Pearson	.188(**)	1	.191(**)
	Correlation			
	Sig. (1-tailed)	.000	.	.000
	N	432	440	427
Can't learn how to learn	Pearson	.069	.191(**)	1
	Correlation			
	Sig. (1-tailed)	.077	.000	.
	N	427	427	438

** Correlation is significant at the 0.01 level (1-tailed).

When the third factor representing the dimension of “Innate/Fixed ability” is analyzed, all the subscales are found to be included their original dimension. The mean scores range from 2.08 for “Can't Learn How to Learn”, 2.35 for “Success Unrelated to

Hard Work” to 3.06 for “Innate Ability”. The subscales are found to be significant in terms of correlation. The participants could not decide on only one of the subscales in this factor, “Innate Ability”; however, when the subscales are examined within the factor, the participants agree on the factor as a whole.

Quick Learning

Learn the first time

Table 41

Descriptive Statistics of Quick Learning Factor of EBQ

Quick Learning Factor	N	Minimum	Maximum	Mean	Std. Deviation
Learn the first time	452	1.00	4.67	2.46	.35211
Valid N (listwise)	452				

The fourth factor has only one subscale. When the fourth factor representing the dimension of “Quick Learning” is analyzed the participants agree on the subscale individually and the factor as a whole.

Effect of gender on epistemological beliefs has been studied in the relevant literature by many researchers (Perry 1970, cited in Schommer-Aikins, 2004; Ryan, 1984, Chan & Elliott, 2002, 2004; Schommer, 1990, 1994; Schommer-Aikins, 2004). One of the research questions in this study was to determine the effect of gender on EFL pre-service teachers’ epistemological beliefs.

When the effect of gender is analyzed, there was not a significant effect of gender on the combined dependent variables of EBQ ($F_{(4,394)} = 3.338$, $p > 0.05$; Wilks' Lambda = .97; partial eta squared = .033),

Table 42 shows the effect of gender on epistemological beliefs

Table 42

Effect of Gender on Epistemological Beliefs

Tests of Between-Subjects Effects						
Source	Dependent Variable	Type III Sum of Squares	df	Mean Square	F	Sig.
Corrected Model	fac1	.131(a)	1	.131	.559	.455
	fac2	.902(b)	1	.902	5.337	.021
	fac3	.652	1	.652	5.497	.020
	fac4	.201(d)	1	.201	.591	.442
Intercept	fac1	2119.122	1	2119.122	9038.575	.000
	fac2	2190.554	1	2190.554	12967.404	.000
	fac3	1588.085	1	1588.085	13388.650	.000
	fac4	1599.228	1	1599.228	4712.359	.000
Gender	fac1	.131	1	.131	.559	.455
	fac2	.902	1	.902	5.337	.021
	fac3	.652	1	.652	5.497	.020
	fac4	.201	1	.201	.591	.442
Error	fac1	91.906	392	.234		
	fac2	66.220	392	.169		
	fac3	46.497	392	.119		
	fac4	133.033	392	.339		
Total	fac1	3307.139	394			
	fac2	3438.330	394			
	fac3	2379.118	394			
	fac4	2506.556	394			
Corrected Total	fac1	92.037	393			
	fac2	67.121	393			
	fac3	47.149	393			
	fac4	133.233	393			

When the effect of age is analyzed, there was not a significant effect of age on the beliefs held by the pre-service teachers. Table 43 shows the effect of age on epistemological beliefs. ($F_{(4,394)} = 1.32$, $p > 0.05$; Wilks' Lambda = .94; partial eta squared = .013)

Table 43

Effect of Age on Epistemological Beliefs

Tests of Between-Subjects Effects						
Source	Dependent Variable	Type III Sum of Squares	df	Mean Square	F	Sig.
Corrected Model	fac1	2.176(a)	4	.544	2.355	.053
	fac2	1.106(b)	4	.276	1.629	.166
	fac3	.498(c)	4	.124	1.038	.387
	fac4	1.222(d)	4	.305	.900	.464
Intercept	fac1	2615.934	1	2615.934	11324.147	.000
	fac2	2733.769	1	2733.769	16108.933	.000
	fac3	1867.306	1	1867.306	15570.585	.000
	fac4	1916.296	1	1916.296	5646.783	.000
age	fac1	2.176	4	.544	2.355	.053
	fac2	1.106	4	.276	1.629	.166
	fac3	.498	4	.124	1.038	.387
	fac4	1.222	4	.305	.900	.464
Error	fac1	89.861	389	.231		
	fac2	66.015	389	.170		
	fac3	46.651	389	.120		
	fac4	132.011	389	.339		
Total	fac1	3307.139	394			
	fac2	3438.330	394			
	fac3	2379.118	394			
	fac4	2506.556	394			
Corrected Total	fac1	92.037	393			
	fac2	67.121	393			
	fac3	47.149	393			
	fac4	133.233	393			

a R Squared = .024 (Adjusted R Squared = .014)

b R Squared = .016 (Adjusted R Squared = .006)

c R Squared = .011 (Adjusted R Squared = .000)

d R Squared = .009 (Adjusted R Squared = -.001)

Finally, when the effect of year at school is analyzed, it is found out that there was not a significant effect of year at school on the beliefs held by the pre-service teachers. Table 44 shows the effect of year at school on epistemological beliefs. ($F_{(4,394)} = .91, p > 0.05$; Wilks' Lambda = .97; partial eta squared = .009).

Table 44

Effect of Year at School on Epistemological Beliefs

Tests of Between-Subjects Effects						
Source	Dependent Variable	Type III Sum of Squares	df	Mean Square	F	Sig.
Corrected Model	fac1	.883(a)	3	.294	1.260	.288
	fac2	.901(b)	3	.300	1.769	.153
	fac3	.1281	3	.043	.354	.786
	fac4	.3651	3	.122	.358	.784
Intercept	fac1	3209.951	1	3209.951	13733.774	.000
	fac2	3367.036	1	3367.036	19829.928	.000
	fac3	2328.660	1	2328.660	19314.362	.000
	fac4	2371.260	1	2371.260	6960.237	.000
year	fac1	.883	3	.294	1.260	.288
	fac2	.901	3	.300	1.769	.153
	fac3	.128	3	.043	.354	.786
	fac4	.365	3	.122	.358	.784
Error	fac1	91.153	390	.234		
	fac2	66.220	390	.170		
	fac3	47.021	390	.121		
	fac4	132.868	390	.341		
Total	fac1	3307.139	394			
	fac2	3438.330	394			
	fac3	2379.118	394			
	fac4	2506.556	394			
Corrected Total	fac1	92.037	393			
	fac2	67.121	393			
	fac3	47.149	393			
	fac4	133.233	393			

a R Squared = .010 (Adjusted R Squared = .002)

b R Squared = .013 (Adjusted R Squared = .006)

c R Squared = .003 (Adjusted R Squared = -.005)

Analysis of each independent variable of EBQ, using a Bonferroni adjusted alpha level of .0125, showed that there was no effect of gender, age, and year at school on epistemological beliefs held by EFL pre-service teachers.

4.4. EFL Pre-service Teachers' Teacher-Efficacy Beliefs:

The second research question was to describe the teacher-efficacy beliefs held by EFL pre-service teachers. In order to provide answer to the second research question, table of score distribution, mean scores, and standard deviations were analyzed for each factor.

Table 45 shows the number of participants, minimum and maximum loadings mean scores, and standard deviation of the gathered data.

Table 45

Descriptive Statistics for TES Factors

Personal Efficacy Factor	N	Minimum	Maximum	Mean	Std. Deviation
Year 1	111	1.80	4.80	3.47	.56426
Year 2	113	2.00	4.60	3.45	.53081
Year 3	112	2.00	5.00	3.57	.53742
Year 4	106	2.20	4.80	3.48	.55397
Total	442	1.80	4.88	3.49	.54680
Teaching Efficacy Factor	N	Minimum	Maximum	Mean	Std. Deviation
Year 1	114	2.50	4.75	3.55	.41935
Year 2	111	2.75	4.63	3.77	.39172
Year 3	113	2.50	4.63	3.63	.45346
Year 4	105	2.50	4.88	3.62	.45467
Total	443	2.50	4.88	3.64	.43644

When the mean scores of the factors are analyzed, it is clear that the participants disagree on Personal Efficacy and Teaching Efficacy of Teacher-efficacy scale. The range of mean scores is close to each other, lowest with 3.49 for Personal Efficacy and the highest with mean score is 3.64 for Teaching Efficacy factor. Both factors range from agree to strongly disagree.

When the “Personal Efficacy” factor is analyzed, the mean score is 3.49 for the factor explaining that the pre-service teachers feel that their personal efficacy does not fulfill the efficacy beliefs that a pre-service language teacher should have.

When the second factor representing “Teaching Efficacy” is analyzed, the mean score is 3.64 for the factor explaining that the pre-service language teachers do not perceive themselves efficacious enough for their teaching. The mean scores of the factors have declared that the trainees are not ready for their profession.

Since the study is designed to examine the effect of gender, age, year at school in addition to the belief relations, the effect of gender is analyzed and there was a significant effect of gender on personal efficacy factor of TES ($F_{(2,434)} = 3.64$, $p < 0.05$; Wilks’ Lambda = .98; partial eta squared = .016), but not on teacher-efficacy beliefs held by the pre-service teachers (see Table 46)

Table 46

Effect of Gender on Teacher Efficacy Beliefs

Tests of Between-Subjects Effects						
Source	Dependent Variable	Type III Sum of Squares	df	Mean Square	F	Sig.
Corrected Model	facTE1	2.000(a)	1	2.000	6.669	.010
	facTE2	.195(b)	1	.195	1.071	.301
Intercept	facTE1	3364.662	1	3364.662	11220.924	.000
	facTE2	3749.646	1	3749.646	20562.914	.000
gender	facTE1	2.000	1	2.000	6.669	.010
	facTE2	.195	1	.195	1.071	.301
Error	facTE1	129.538	432	.300		
	facTE2	78.775	432	.182		
Total	facTE1	5441.040	434			
	facTE2	5878.469	434			
Corrected Total	facTE1	131.538	433			
	facTE2	78.970	433			

a R Squared = .015 (Adjusted R Squared = .013)
b R Squared = .002 (Adjusted R Squared = .000)

When the effect of age is analyzed with the same purposes in mind, there was not a significant effect of age on the combined dependent variables of TES ($F_{(2,434)} = .78$, $p > 0.05$; Wilks' Lambda = .98; partial eta squared = .007). (see Table 47)

Table 47

Effect of Age on Teacher Efficacy Beliefs

Tests of Between-Subjects Effects

Source	Dependent Variable	Type III Sum of Squares	df	Mean Square	F	Sig.
Corrected Model	facTE1	.329(a)	4	.082	.269	.898
	facTE2	.893(b)	4	.223	1.227	.299
Intercept	facTE1	4520.304	1	4520.304	14779.621	.000
	facTE2	4894.574	1	4894.574	26893.528	.000
age	facTE1	.329	4	.082	.269	.898
	facTE2	.893	4	.223	1.227	.299
Error	facTE1	131.208	429	.306		
	facTE2	78.077	429	.182		
Total	facTE1	5441.040	434			
	facTE2	5878.469	434			
Corrected Total	facTE1	131.538	433			
	facTE2	78.970	433			

a R Squared = .003 (Adjusted R Squared = -.007)

b R Squared = .011 (Adjusted R Squared = .002)

When the effect of year at school is analyzed, there was a significant effect of year at school on the teaching efficacy factor of TES.

($F_{(2,434)} = 3.46$, $p < 0.05$; Wilks' Lambda = .95; partial eta squared = .024). (see Table 48).

Table 48

Effect of Year at School on Teacher Efficacy Beliefs

Tests of Between-Subjects Effects

Source	Dependent Variable	Type III Sum of Squares	df	Mean Square	F	Sig.
Corrected Model	facTE1	.975(a)	3	.325	1.071	.361
	facTE2	3.007(b)	3	1.002	5.674	.001
Intercept	facTE1	5303.495	1	5303.495	17466.754	.000
	facTE2	5793.585	1	5793.585	32795.278	.000
year	facTE1	.975	3	.325	1.071	.361
	facTE2	3.007	3	1.002	5.674	.001
Error	facTE1	130.562	430	.304		
	facTE2	75.963	430	.177		
Total	facTE1	5441.040	434			
	facTE2	5878.469	434			
Corrected Total	facTE1	131.538	433			
	facTE2	78.970	433			

a R Squared = .007 (Adjusted R Squared = .000)

b R Squared = .038 (Adjusted R Squared = .031)

Analysis of each independent variable of TES, using a Bonferroni adjusted alpha level of .025, showed that there was no effect of age, but effect of gender and year at school on teacher efficacy beliefs held by EFL pre-service teachers.

4.5. The Relationship Between Epistemological Beliefs and Teacher-Efficacy Beliefs held by EFL Pre-service Teachers:

The third research question was to describe the relationship between epistemological and teacher efficacy beliefs of the EFL pre-service teachers. In order to answer to the third research question, correlation matrix table was taken into consideration for each factor. (See Table 49)

Table 49

Correlation Matrix for EBQ and TES

		Correlations					
		fac1	fac2	fac3	fac4	facTE1	facTE2
fac1	Pearson Correlation	1	.186(**)	.125(*)	.104(*)	.109(*)	-.179(**)
	Sig. (2-tailed)	.	.000	.011	.029	.023	.000
	Sum of Squares and Cross-products	104.213	15.180	8.818	13.094	12.387	-16.366
	Covariance	.236	.037	.021	.030	.029	-.038
	N	442	415	414	442	431	433
fac2	Pearson Correlation	.186(**)	1	.142(**)	.048	.189(**)	-.103(*)
	Sig. (2-tailed)	.000	.	.004	.328	.000	.035
	Sum of Squares and Cross-products	15.180	70.673	8.151	4.764	17.021	-7.561
	Covariance	.037	.168	.020	.011	.041	-.018
	N	415	421	400	421	412	416
fac3	Pearson Correlation	.125(*)	.142(**)	1	.163(**)	.041	-.230(**)
	Sig. (2-tailed)	.011	.004	.	.001	.407	.000
	Sum of Squares and Cross-products	8.818	8.151	51.071	13.897	3.182	-14.231
	Covariance	.021	.020	.122	.033	.008	-.034
	N	414	400	421	421	410	415
fac4	Pearson Correlation	.104(*)	.048	.163(**)	1	.112(*)	-.041
	Sig. (2-tailed)	.029	.328	.001	.	.018	.391
	Sum of Squares and Cross-products	13.094	4.764	13.897	154.335	15.788	-4.612
	Covariance	.030	.011	.033	.342	.036	-.010
	N	442	421	421	452	440	441
facTE1	Pearson Correlation	.109(*)	.189(**)	.041	.112(*)	1	.119(*)
	Sig. (2-tailed)	.023	.000	.407	.018	.	.013
	Sum of Squares and Cross-products	12.387	17.021	3.182	15.788	131.856	12.156
	Covariance	.029	.041	.008	.036	.299	.028
	N	431	412	410	440	442	434
facTE2	Pearson Correlation	-.179(**)	-.103(*)	.230(**)	-.041	.119(*)	1
	Sig. (2-tailed)	.000	.035	.000	.391	.013	.
	Sum of Squares and Cross-products	-16.366	-7.561	-14.231	-4.612	12.156	84.190
	Covariance	-.038	-.018	-.034	-.010	.028	.190
	N	433	416	415	441	434	443

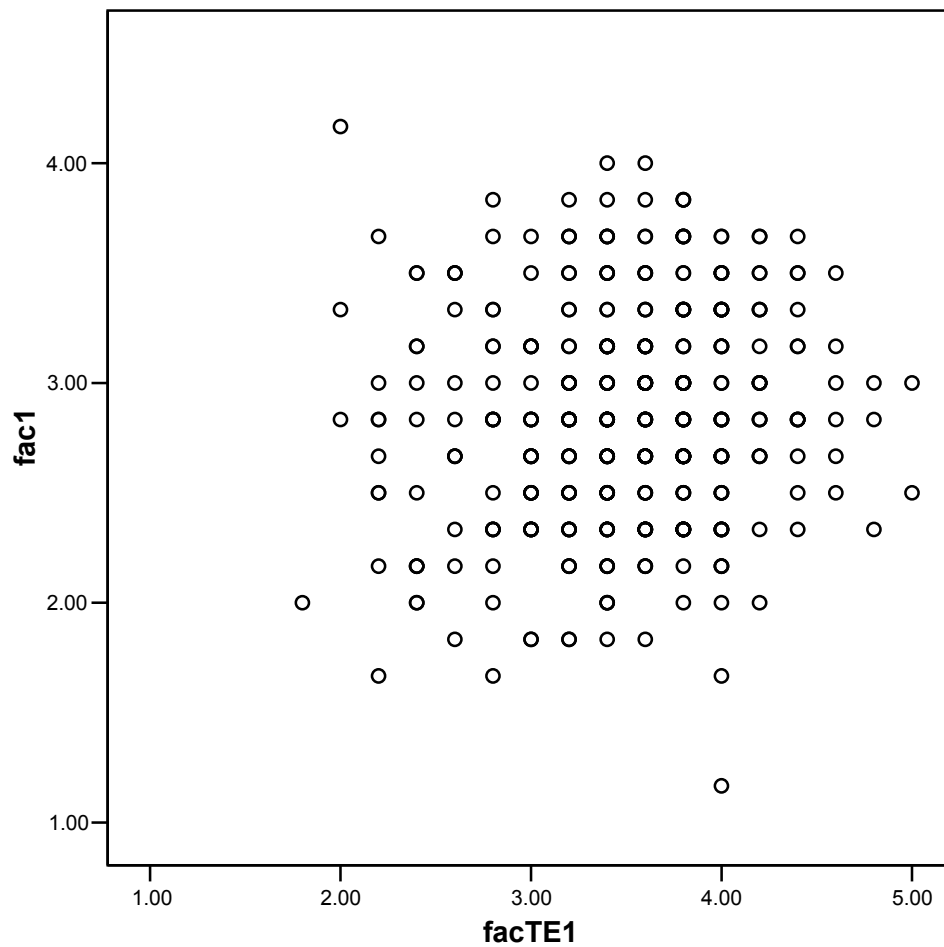
** Correlation is significant at the 0.01 level (2-tailed).

123.□. Correlation is significant at the 0.05 level (2-tailed).

In Figure 9, Authority-Quick Learning Factor of EBQ representing “Depend on Authority” and “Concentrated effort is a waste of time” representing Quick Learning is found to be correlated with Personal Efficacy Factor of TES. There is a weak but significant relation between the two factors. ($r = .109$, $n = 431$, $p < .05$)

Figure 9

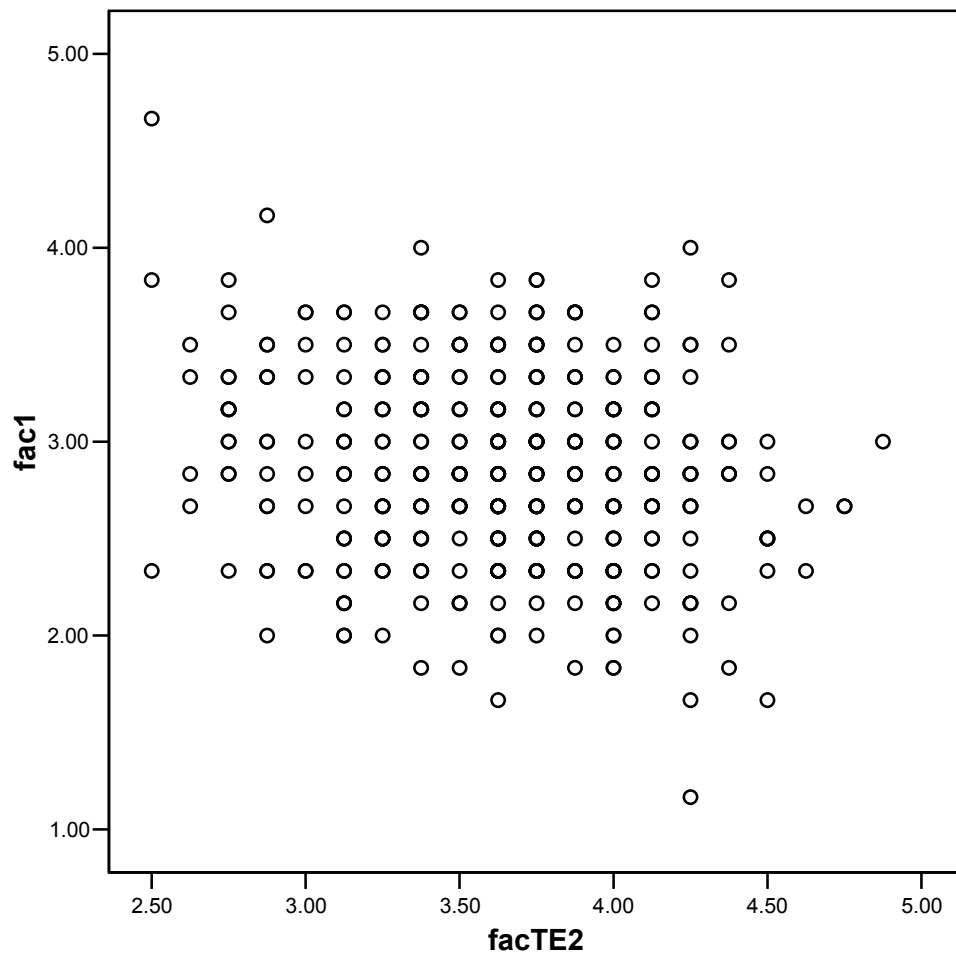
Scatterplot for Authority-Quick Learning Factor of EBQ and Personal Efficacy Factor of TES.



In Figure 10, there was a significant negative correlation between Authority-Quick Learning Factor of EBQ and Teaching Efficacy Factor of TES. ($r = -.179$, $n = 433$, $p < .05$)

Figure 10

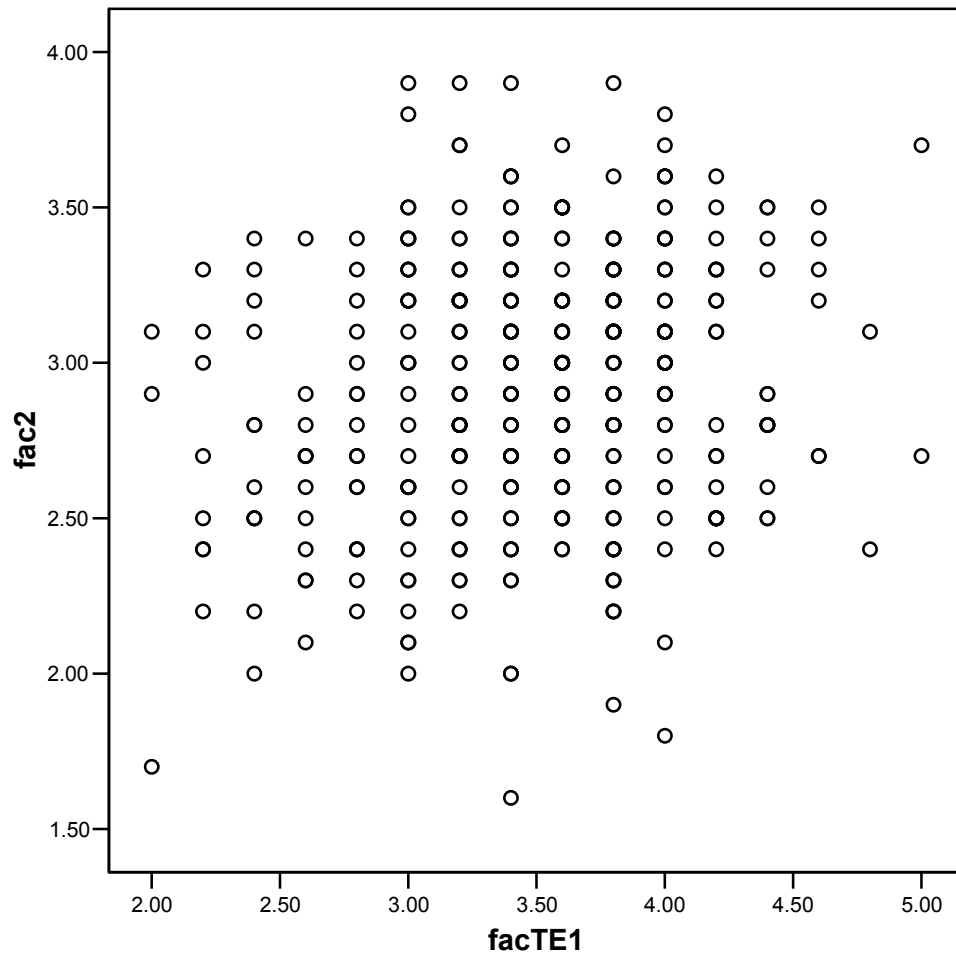
Scatterplot for Authority-Quick Learning Factor of EBQ and Teaching Efficacy Factor of TES



In addition, in figure 11, Certain Knowledge Factor of EBQ representing “Avoid ambiguity” and “Knowledge is certain” is found to be in a significantly positive correlation with Personal Efficacy Factor of TES. ($r = .189$, $n = 412$, $p < .05$)

Figure 11

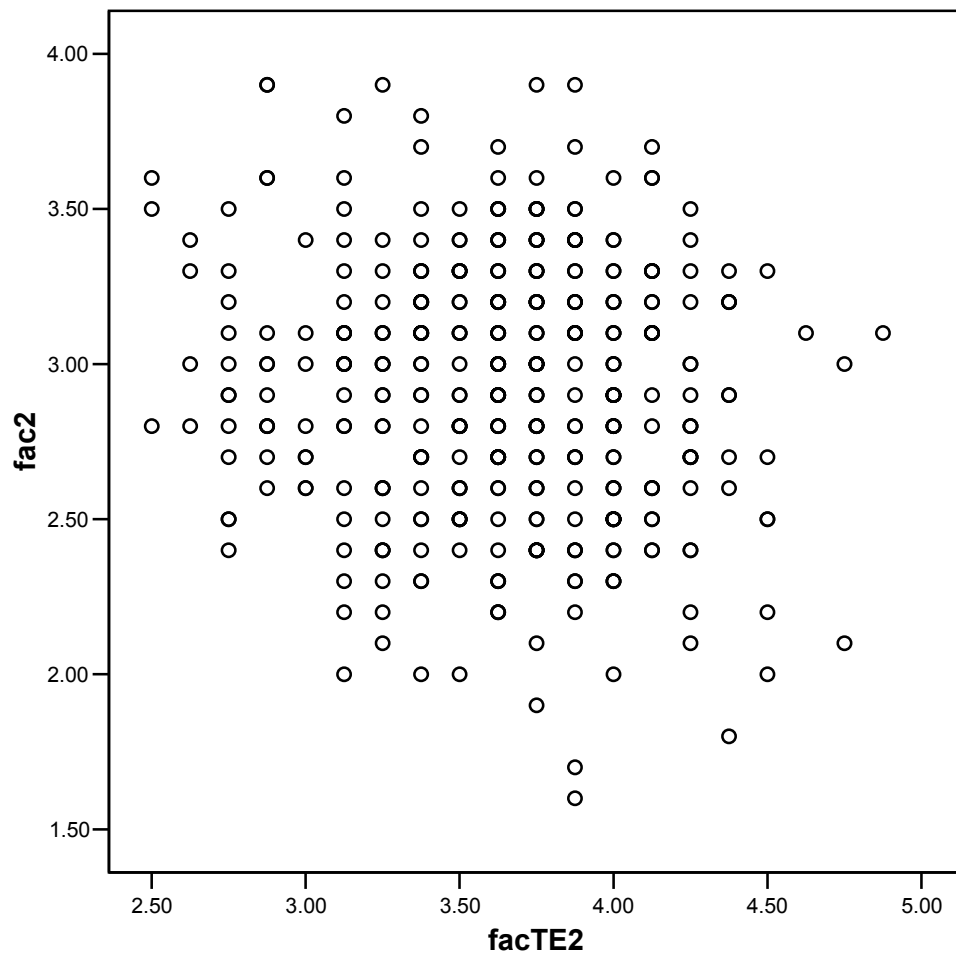
Scatterplot for Certain Knowledge Factor of EBQ and Personal Efficacy Factor



On the contrary Certain Knowledge Factor of EBQ is negatively correlated with Teaching Efficacy of TES. There is a weak but significant relation between two factors. (see Figure 12) ($r = -.103$, $n = 416$, $p < .05$).

Figure 12

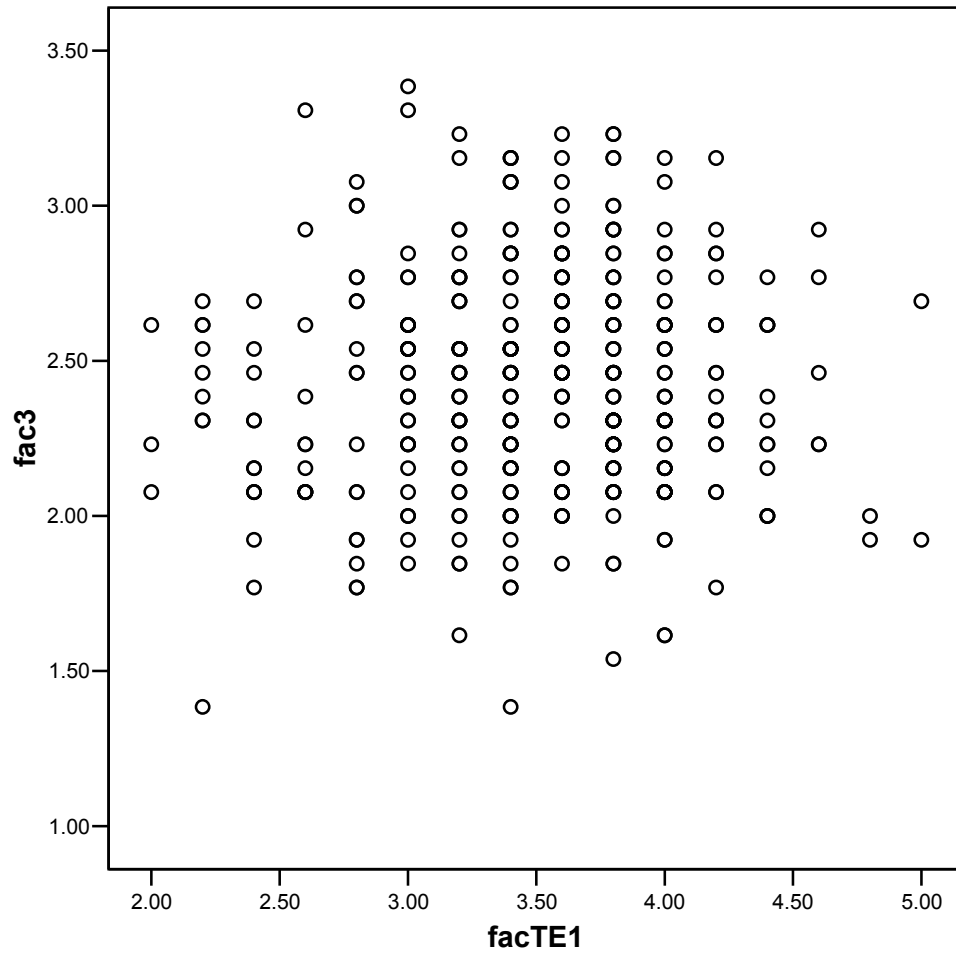
Scatterplot for Certain Knowledge Factor of EBQ and Teaching Efficacy of TES



In addition, there was no relationship between Innate Ability Factor of EBQ and Personal Teaching Factor of TES (see Figure 13). ($r = .041$, $n = 410$, $p > .05$).

Figure 13

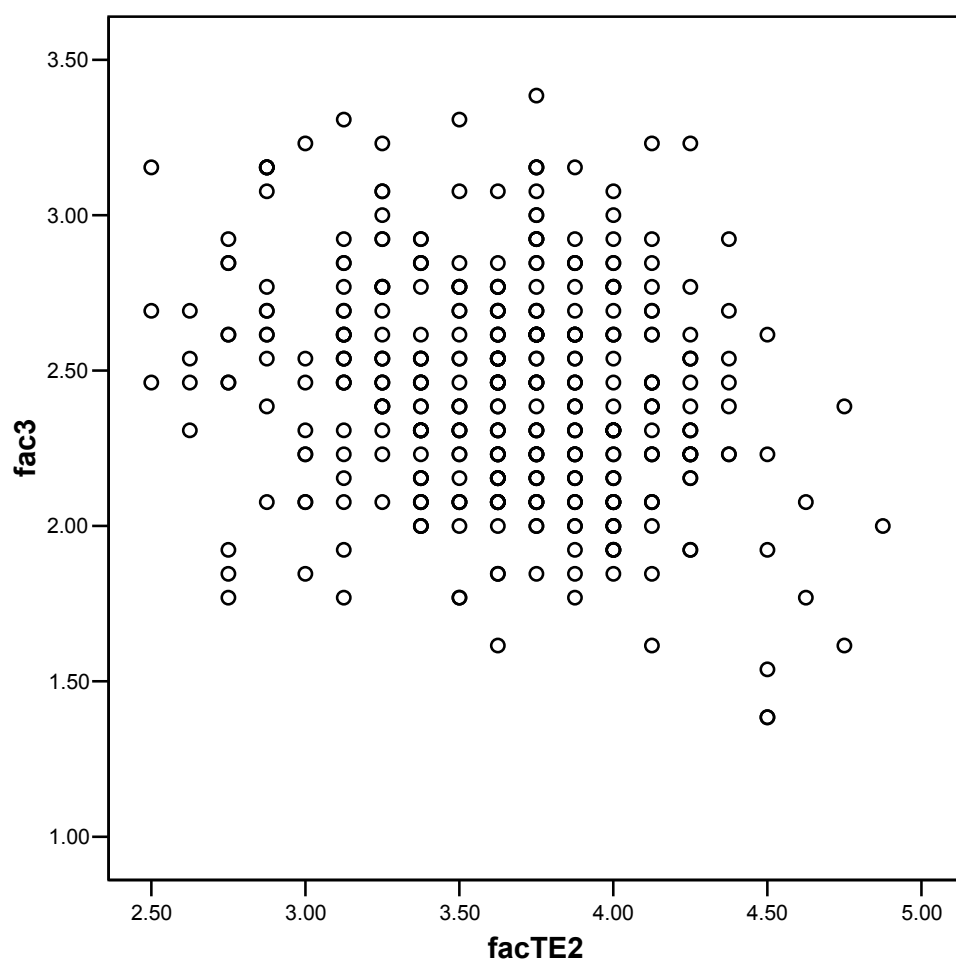
Scatterplot for Innate Ability Factor of EBQ and Personal Efficacy Factor of TES



Innate Ability Factor of EBQ is found to be in a negative and significant correlation with Teaching Efficacy Factor of TES (see Figure 14) ($r = -.230$, $n = 415$, $p < .05$).

Figure 14

Scatterplot for Innate Ability Factor of EBQ and Teaching Efficacy Factor of TES.



Quick Learning Factor of EBQ was in a weak but significant relation with Personal Efficacy Factor of TES ($r = .112$, $n = 440$, $p < .05$). However, there was not a correlation between Teaching Efficacy factor of TES ($r = -.041$, $n = 441$, $p > .005$). (See Figures 15 and 16).

Figure 15

Scatterplot for Quick Learning Factor of EBQ and Personal Efficacy Factor of TES.

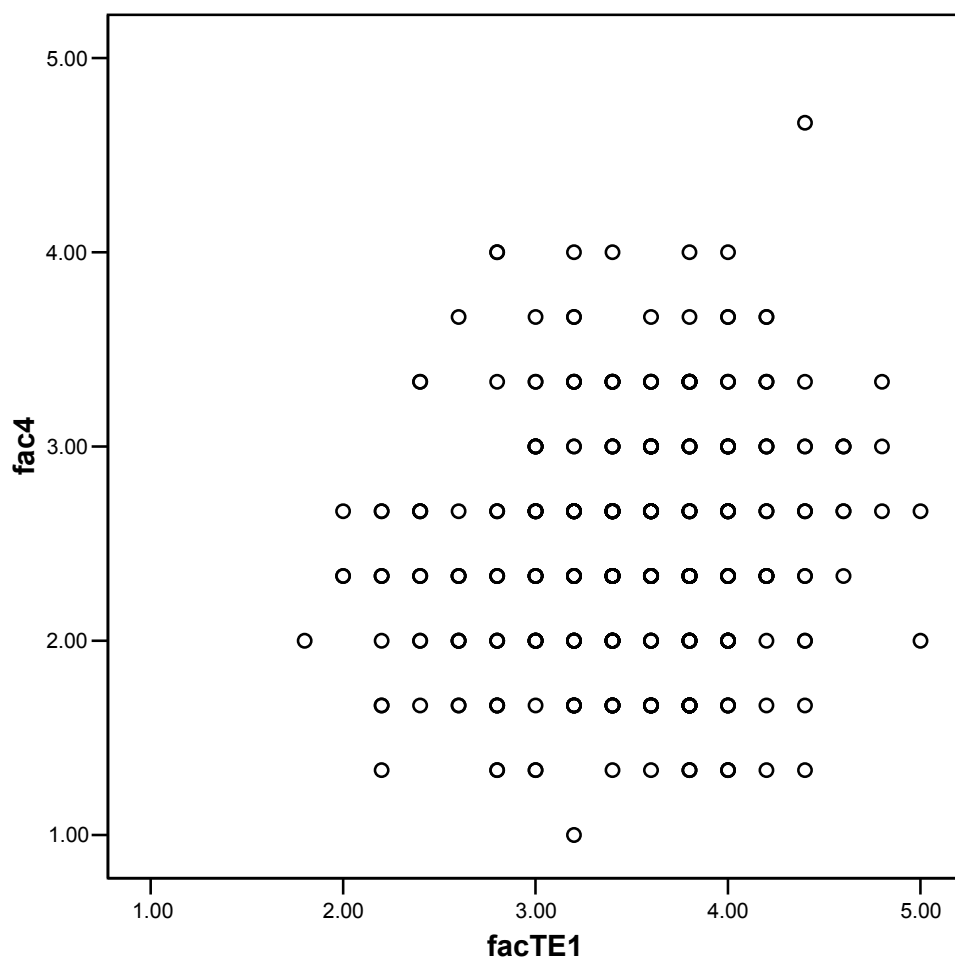
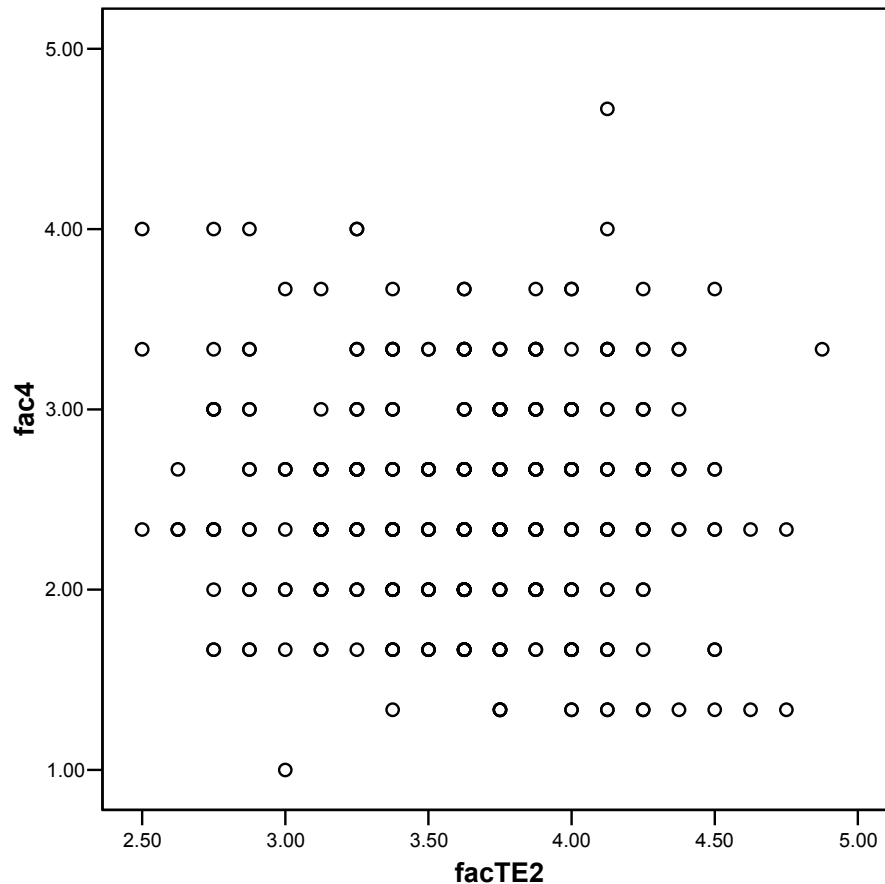


Figure 16

Scatterplot for Quick Learning Factor of EBQ and Teaching Efficacy Factor of TES.



Although Personal Efficacy Factor is found to be positively correlated with Authority-Quick Learning, Certain Knowledge, Quick Learning factors; Teaching Efficacy factor 2 was found to be negatively correlated with Authority-Quick Learning, Certain Knowledge, and Innate Ability factors.

4.6. Conclusion

In this chapter, the findings were presented in the order of the research questions. In the next chapter, the discussion and implications of the study will be presented in the light of what the findings revealed. Conclusion of the study and suggestions for further studies will also be introduced.

CHAPTER V

CONCLUSION

5.1. Overview of the Study

The study aimed to find out the epistemological beliefs and teacher efficacy beliefs held by the English language teacher education trainees. In addition, the relations between the language teacher education students' epistemological beliefs and teacher efficacy beliefs were investigated.

First, the epistemological beliefs and teacher efficacy levels of 250 student-teachers were determined through the administration of questionnaires as a pilot study. Second, adaptations were made according to the statistical analysis on the data gathered from the pilot study. Third, the adapted questionnaires were administered to 456 EFL pre-service teachers in order to examine the perceptions of epistemological belief and teacher efficacy levels. Fourth, students' perceptions were analyzed in terms of each dimension of the variables. In the last stage of the analysis, the EFL pre-service teachers' epistemological beliefs and teacher efficacy levels were compared in order to find out whether there is a correlation between them. The collected data were analyzed to describe the epistemological beliefs, teacher efficacy beliefs held by the English language teacher trainees, in relation with the effect of gender, year at school, age on two target beliefs.

In this chapter, the findings of this study will be discussed. The findings of the statistical analysis and the results reached through the analysis of the questionnaires will also be related to the literature in the discussion section. Both the points where the results are in parallel with literature and the points that conflict with the literature will be presented. The possible reasons for the results will be explained. Then, suggestions for further research are given, and conclusions are drawn from this study. In the conclusion, the major findings of this study are summarized.

5.2. Discussion of the Findings

5.2.1. Epistemological Beliefs of EFL Pre-service Teachers

Related to the first research question, which is to describe the epistemological beliefs held by the EFL pre-service teachers, data analysis indicated that there is a four-factor structure explaining the epistemological beliefs. In the relevant literature, minimum of three and maximum of five factors are gathered (Chan & Elliott, 2004). Interpretation of the generated factor structure began with examining the loading subscales of items. Factor 1 has a prominent loading greater than .82 of a subscale representing Quick Learning (Concentrated Effort is a Waste of Time) and one subscale (Depend on Authority) representing Omniscient Authority with a loading of .67. The association of the subscales for Omniscient Authority and Quick Learning on the same factor could lead one name to Factor 1 as Authority-Quick Learning, which means knowledge coming from the authority is learned quickly without questioning or criticizing. This factor structure is different from the structure Schommer (1994) and Chan and Elliot (2002, 2004) found in their studies. The reason for the differences in factor structures in the studies could be the epistemological beliefs' being highly culture bound (Chan & Elliot, 2002), not giving the same results for studies from different cultures.

Factor 2 has three subscales with loading values greater than .50. The three subscales include "Ability to Learn is Innate" (.93) representing Innate Ability, and "Avoid Ambiguity" (.55), "Knowledge is Certain" (.89) representing Certain Knowledge. The three subscales were of a completely different. The merging of the subscales made it difficult to name a complex factor. Innate Ability dimension originally has three subscales. Since two other subscales for Innate Ability had loaded considerably on the third factor made it out of position and inconsistent. Similar findings were also reported in Schommer's (1990, 1994), Chan and Elliot's (2002, 2004) previous studies. They also commented on the inconsistency of their hypothesis and this factor structure;

moreover, they reconsidered the whole factor structure and labeled the factor as Certain Knowledge. In this study, the same procedures were followed.

The identification of the third factor in which subscales for Innate/Fixed Ability (Success Unrelated to Hard Work (.94), and Can't Learn How to Learn (.47)) was also labeled as the name of the original dimension, which shows similarities with both Schommer and Chan and Elliot's studies. In other words, Schommer's and Chan and Elliot's Innate/Fixed Ability factor was also identified in the Turkish sample.

The last factor with a loading of .98 "Learn the First Time" representing Quick Learning constitutes a factor which was similar to Schommer's (1994) study but not to Chan and Elliot's study in terms of factor identification.

The identification of factor structure was problematic in that a number of subscales belonging to different dimensions based on Schommer's hypothesized conceptual framework loaded on the same factors. Therefore it was difficult to interpret and label factors. Some subscales tended to come together to form complex factors such as Authority-Quick Learning in Factor 1.

What was obvious in the study was that the factor Omniscient Authority, which was not reported to load significantly in Schommer's study but in Chan and Elliot's studies, had a value of .67 appeared in a combination with another dimension. This might be because of the different cultural contexts in educational settings of the relevant studies. In addition to respecting authority, the trainees seem to accept the authorities as the sources of knowledge from whom they acquire knowledge quickly or not at all.

The other factors extracted in this study were similar to Schommer and Chan and Elliot's findings, such as Certain Knowledge, Innate Ability. In addition Quick Learning factor showed similarity with Schommer's studies with American sample but not with Chan and Elliot's study with Chinese sample. Although Simple Knowledge dimension

did not have a significant value in any of the factor analysis as it was in Chan and Elliot's studies (2002, 2004), it was valued in Schommer's studies (1990, 1994)

The four factor structure gives an overall picture of epistemological belief system held by the EFL pre-service teachers in Turkey setting. The findings suggest that EFL pre-service teachers believe that knowledge is certain, and learning is quick and fixed at birth. According to Schommer-Aikins (2004), if learners believe that certain knowledge is handed down by authority, then they will likely believe that learning is passive, is heavily influenced by innate ability, and is likely to come to a solution quickly based on the concept of learning. They are likely not to question, query or criticize authority in the classroom and to cease to try learning if they do not learn quickly. In addition, knowledge gathered from the authority is thought to be certain, away from ambiguity, and should be accepted by itself without integrated to any proceeding and/or following other information. Moreover, knowledge and learning are thought as ability gained by birth determining knowledge acquisition ability and speed of knowledge acquisition.

These characteristics are considered to being less mature. Since EFL pre-service teachers tend to believe in certain and isolated knowledge, they would have problems in comprehending a complex text and would be inefficient to integrate studying skills which are going to be reflected during their professional life (Schommer, Crouse, & Rhodes, 1992).

As for the relationship of epistemological beliefs and demographic variables such as gender, age, year at school were obtained by subjecting the factors to MANOVA analysis. The MANOVA analysis indicated no significant difference in epistemological beliefs held by EFL pre-service teachers in terms of their gender (Wilks=.97, $p>.05$), age (Wilks=.94, $p>.05$), and year at school (Wilks=.97, $p>.05$).

5.2.2. Teacher-Efficacy Beliefs of EFL Pre-service Teachers

For the second research question, which is to describe the Teacher-Efficacy beliefs held by the EFL pre-service teachers, first the items of the scale were reversed. The reason for a reversion is not because the items were negatively coded, but some of the items comprised of ideas about sharing the responsibility of teaching with parents, others teachers, social environment, and school system rather than perceiving teachers as the source of teaching. Data analysis indicated that there is more than two factor structure explaining the efficacy beliefs. However, in the relevant literature, it is agreed that the Woolfolk and Hoy's TES (1990) has two main dimensions examining Personal and Teaching Efficacy. Therefore, it is decided to follow the same procedures in accordance with the literature. Item loadings .35 or greater were taken into analysis. Eight items met this criterion for Personal Efficacy and six items were included for Teaching Efficacy. It was accepted that the higher the score on both scales, the more efficacious the response was. However, when the mean scores were analyzed the EFL pre-service teachers in this study found not ready for teaching profession since they do not perceive themselves efficacious enough.

The examination of teacher-efficacy beliefs and demographic variables of gender, age, year at school were run through MANOVA analysis. The MANOVA analysis indicated that there was a significant effect of gender on the personal teaching efficacy factor (Wilks=.98, $p<.05$) but not on teacher-efficacy beliefs held by the pre-service teachers. When the effect of age is analyzed, there was no significant effect of age on teacher-efficacy beliefs held by the pre-service teachers (Wilks=.98, $p>.05$). When the effect of year at school is analyzed, there was a significant effect of year at school on the teaching-efficacy belief factor (Wilks=.95, $p<.05$), but not on personal efficacy factor held by the pre-service teachers.

5.2.3. Relationship between Epistemological Beliefs and Teacher-Efficacy Beliefs

The third research question posed for this study was to examine the relation between the epistemological beliefs and teacher-efficacy beliefs held by the EFL pre-service teachers. Pearson Correlation Coefficient Analysis was conducted to describe the relation between beliefs. The reason for conducting a relation analysis between these two sets of beliefs is that if the focus of assessment on domain-specific epistemological beliefs narrowed, it is likely to get higher reliability (Schommer-Aikins, 2004). Moreover, when the epistemological beliefs are constructed with items using first-person point of view, it can be argued that, the participants' self concept and/or self efficacy would be related with personal epistemology (Schommer-Aikins, 2004).

There was a significant negative correlation between Authority-Quick Learning and Teaching efficacy. When this relation is examined it is argued that the more EFL pre-service teachers believe in acquiring knowledge from authority, accepting authority as the ultimate source of knowledge, the less they believe in their teaching efficacy, their perceptions about their teaching abilities. In addition, the more they believe in certain knowledge, belief that knowledge is a set of facts, the more they perceive themselves personally efficacious. The more they believe in ability that is genetically predetermined, the less efficacious they perceive themselves in terms of teaching. At last, there was no relation between quick learning factor and neither of the efficacy beliefs. In other words, learning happens at a quick rate or not at all.

5.3. Implications for Findings

5.3.1. Epistemological Beliefs

The epistemological and efficacious development of trainees is mediated by culture-specific educational environments and interactions (Chan & Elliot, 2004). The somewhat different results of this study from that of Schommer (1990,1994), Chan and Elliot (2002,2004) imply that educational environments and academic practices seem to be an influential factor in shaping the epistemological and teacher-efficacy beliefs.

The findings of this study imply that, ELT teacher educators and professionals in this field need to pay attention to teacher cognition in sustaining teacher education programs in Turkey. The participants in this study varied from freshman, trainees taking skills courses, to senior levels, they had educational courses such as introduction to teaching profession, school practice, development and learning, instructional planning and evaluation, classroom management, guidance and practice teaching.

It has been argued that if teacher trainees are able to make their beliefs explicit, it may help their learning how to teach through discussion and analysis of what they believe to work in their teaching. Epistemological beliefs and efficacy beliefs are significant in teacher education understanding meta-cognitive activities and processes of learning how to teach (Schommer, 1994). In ELT methodology courses there are various methods focusing on constructivist approaches, rather than behaviorist approaches advocating models for learning based on the belief that students construct their own knowledge and understanding. The basis for learning is the set of all prior experience and the derived knowledge and understanding. As students learn, they are expected to constantly engage in the process of revising their prior learning based on new experience.

Constructivism is being promoted in Turkish education setting, in various pre and/or in-service teacher education programs. Constructivists believe the environment needs to be highly adaptive to the student. A constructivist designer might provide all information necessary for learning but will allow the student to learn the materials and information in the manner that is most comfortable to the student. The teacher would be available for guidance when needed, but for the most part the students are on their own as to how they want to go accomplish the task they are required to. In the cognitive constructivist perspective, the role of the teacher is to create experiences in which the students will participate that will lead to appropriate processing and knowledge acquisition. Consequently, cognitive constructivism supports the teacher as a guide or facilitator.

In this study, however, teacher trainees have tendency to believe in the authority as a source of knowledge that comprises a threat for constructivist language learning environment, therefore teaching. The mean score for the subscale “Depend on Authority” is 2.9 which means the trainees are not sure of whether they see authority as the source of knowledge or not, but the mean score for this subscale is still not negative but close to positive polar of the continuum. There can be various reasons for such an outcome. The main could be the result of lectures only given by the instructors, rather than involving trainees in their teaching process. If this kind of research continues to take place in the EFL pre-service teachers teaching profession, there would be contradictions with the methods of language teaching and the actual performance. To exemplify, some teaching proposals focus more directly on instructional factors. For instance, Cooperative Learning, which is viewed as a learner-centered approach, focuses on the organization and activities. Moreover, one of its several goals is to enhance learner motivation and reduce learner stress to create a positive classroom climate. Another method advocating the importance of specially designed instructional tasks as the basis of learning is Task-Based Language Teaching (Richards & Rodgers, 2001).

The other subscale that belongs to the Authority-Quick Learning Factor is “Concentrated Effort is a Waste of Time” which has a mean value of 2.6 stating that the trainees are not sure whether to agree on the subscale or not. However, if the mean score had been 2.59, it would have been accepted as an agreement on this subscale. In other words, the trainees seem to be close to agreeing on the idea of seeing concentration as a waste of time.

Another factor that the trainees seem to be not sure of is Certain Knowledge, which accepts knowledge as pure, absolute facts, either right or wrong. The mean score for the subscale “Avoid Ambiguity” is 2.83 and for “Knowledge is Certain” is 2.61 which is quite close to an agreement on accepting the dimension. If the trainees would continue to be not sure of whether knowledge is comprised of absolute facts, no one could give a guarantee that they would not agree on the factor at the later stages of their

professional life. For instance, when the trainee in a Turkish education setting is taught a course on teaching capitalization such as the letter 'I', mentioning that there would not be a capital dotted 'I' in English language, the result would be a disappointment, when the trainee faces a sample from colloquial language. Therefore, rather than referring to book based activities; the trainees should be exposed to real life experiences; genre-based approaches focusing on different kinds of materials from various resources. The teacher trainers are expected to present the same material by using various techniques. Thus, the learner needs knowledge of forms, meanings, as well as functions. However, s/he must also use this knowledge and take into consideration the social situation in order to convey his/her intended meaning appropriately (Larsen-Freeman, 2000).

One of the two factors they agree on is Innate/ Fixed ability factor of epistemological beliefs. This factor focuses on the belief that ability to learn is genetically predetermined which expresses the idea that people are born either brilliant or not. Their success level is limited to their ability that they brought with them at birth. Although language learning is a learning process, not one shot in life, this kind of attitude keeps the learners where they are rather than trying to improve their language teaching skills. Since they agree on the subscales "Success is Unrelated to Hard Work" with a mean score of 2.35, and "Can't Learn How to Learn" with a mean score of 2.08, the trainees cannot be expected to be aware of their learning and teaching process. It can be argued that they would also perceive teaching as an ability brought by birth. This would also explain why their view on teaching efficacy is negatively correlated with this factor.

The last factor of epistemological beliefs is Quick Learning on which the trainees agree with a mean score of 2.46. This factor emphasizes the nature of learning and instruction. When the subscale is agreed on, learning is acquired quickly or not at all, rather than a gradual process. Therefore, it is claimed that the trainees in this study are not aware of their progress during their education. The reason could be depending only on mid-term and final exams rather than focusing on gradual assessment such as

portfolio assessment, or any kind of assessment concentrating on assessing gradual development. When a kind of portfolio assessment is favored, the trainees would be aware of their personal progress in their learning and teaching process. As a result, they would not think that learning takes place quickly but needs attention for a gradual progress.

5.3.2. Teacher-Efficacy Beliefs

As for the teacher-efficacy beliefs held by the EFL pre-service teachers, they seem to disagree on their teacher-efficacy beliefs in terms of both personal and teacher efficacy dimensions. Although the trainees are thought to be ready for teaching, since they have selected their departments at high school, they continue to have the same naïve beliefs during their training for their profession.

There can be various reasons for ending up with such a result. One of them could be the teacher trainers continue to behave as a teacher at high school, giving homework, quizzes, mid-term and final exams etc. Instead, more opportunities could be provided for actual experiences with instructing and managing children, classrooms in a variety of contexts with increasing levels of complexity and challenge in order to provide mastery experiences. Another reason could be the social environment which has an important effect on efficacy. Although it is expected that the trainees have a notion of teaching, it is concluded that the trainees do not perceive themselves efficacious enough to become a teacher. One can argue that the design and delivery of the courses from the educational science department could be revisited again to ensure EFL pre-service teachers also develop a higher sense of teaching efficacy.

An additional reason could also be the instrument that is used in this study, not having enough items to explain EFL pre-service teachers' competencies in teaching language. Therefore, it can be speculated that these low level efficacies can be explained simply by the fact that trainees might have answered the survey simply by considering their general teaching efficacy.

5.4. Suggestions

Based on the findings and discussions about the related literature, some suggestions and recommendations are made. These suggestions can be based on for ELT departments, EFL pre-service teachers and for further research.

5.4.1. Suggestions for ELT departments

On the basis of this study, ELT departments are expected to be aware of the importance of beliefs about learning and teaching held by EFL pre-service teachers. The reason is that EFL pre-service teachers' beliefs about learning are found to have an impact on their both personal and teaching efficacy. Teacher trainers should consider the prior beliefs of EFL pre-service teachers before the pre-service education, and be aware of the belief change during and after the provided instruction. Although EFL pre-service teachers have naïve beliefs, through a carefully designed instruction, it is possible that naïve beliefs alter to sophisticated beliefs. In addition, language teacher trainers should not be the authoritative figure in the classroom but act as a guide to help the EFL pre-service teachers form their perceptions about teaching.

5.4.2. Suggestions for EFL Pre-service Teachers

EFL pre-service teachers had better be aware of their own beliefs about knowledge and learning, and their personal and teaching efficacy. In order to take an active role in their learning and teaching process, EFL pre-service teachers should be conscious of their strengths and weaknesses. In addition, EFL pre-service teachers should be aware of belief change that will take place after being exposed to experiences gained at classrooms.

5.4.3. Suggestions for Further Research

Problematic in the study of epistemological beliefs is the possibility that individuals' beliefs might change or fluctuate as evidenced by individuals' contradictory responses in some studies (Brownlee, 1999; Schommer, 1990, 1994; Schommer-Aikins, 2002, 2004; Chan & Elliot, 2002, 2004). Even more problematic is that the respondents could not explain those contradictions. It is anticipated that further investigation and employment of a combination of both quantitative and qualitative research methodologies will provide a more thorough understanding of this research area. Moreover, longitudinal and/or cross-sectional studies of EFL pre-service teachers' epistemological beliefs and personal theories would provide an area of inquiry to examine the changes and influencing factors.

In addition, studies comparing pre-service and in-service student teachers at different levels would provide an understanding of maturity and teaching experiences. This implies that there may not be a universal quantitative instrument that can control the complicated nature of epistemological beliefs in different cultural contexts.

Through continuous effort in refining and improving the instrument and the basic methodology, it is anticipated that more will be revealed about the nature and structure of epistemological beliefs held by the participants in different cultures. Such knowledge will be useful in understanding and facilitating learning and teaching processes held by pre-/in-service teacher education from various cultures. This would bring the issue of developing an epistemological belief questionnaire for Turkey based on the cultural norms peculiar to Turkish participants.

The results of Teacher Efficacy Scale indicate that it is critical to understand precisely how efficacy is measured (Woolfolk Hoy & Tschannen-Moran, 2002). What is called teacher efficacy in a particular study may actually be pre-service teachers' sense of political power within the school environment, feelings of responsibility for student success or failures, sense of academic futility, general educational philosophy, belief in

their power to influence students, or some composite of these beliefs. Thus, a questionnaire specifically developed for pre-service language teacher candidates would be another area of further research. Moreover, a questionnaire specifically developed for EFL pre-service teachers having items on ELT competency would also be another area of research.

Since the courses held by the Educational Sciences are not in the hand of Language Teaching Departments, there could be a study on the relationship between general teaching efficacy and language teaching efficacy in order to find out whether there are differences between the teaching approaches.

Epistemological beliefs are significant in teacher education, in understanding meta-cognitive activities and process of learning how to teach (Schommer, 1994). Research can be conducted to examine how epistemological beliefs are related to pre-service teachers' conceptions about teaching and learning. Teacher educators can help pre-service teachers to be aware of their epistemological beliefs and hence the relation of epistemological beliefs with personal theories such as efficacy or any other type of belief, in learning how to teach through discussion and analysis of what they believe to work in their teaching.

A further implication arising from the results of this study is that reflective thinking and inquiry should be encouraged in teacher education programs. The purpose of encouraging pre-service teachers to apply reflective thinking skills is to reduce pre-service teachers' excessive dependence on authority's knowledge in their learning and to be a reflective practitioner in the classroom. Pre-service teachers should be encouraged to believe that ability is changeable by effort and learning process. Learning how to learn and understand what is taught are the important elements of learning. If such notions are valued in teacher education development, pre-service teachers will be motivated to take a more positive attitude and appropriate study approaches in their process of learning how to teach.

5.5. Conclusion

The results of this study revealed that English Language teacher education students believe that knowledge is certain, learning is quick and fixed at birth, and perceived themselves comfortable for the training they received. Yet, their efficacy levels both at the teaching and personal one seem to indicate that they are not so comfortable for their own efficacy. This may be due to the fact that EFL pre-service teachers tend to develop a sharing sense of responsibility since they depend on authority in their learning process. More responsibility should be given to EFL pre-service teachers on the way of becoming a teacher.

There was a statistically significant relationship between gender, year at school and teacher-efficacy. However, there was not a significant relation between gender, age, year at school and their personal epistemology. The pre-service teachers' sense of efficacy and personal epistemology were, on the other hand, appear to affect the teacher candidates' motivation either positively or negatively. The findings of this study may give insights to ELT Departments in terms of maintaining and/or improving belief and efficacy supportive environment for EFL pre-service teachers to become active practitioners in their learning and teaching process.

REFERENCES

- Bandura, A. (1983). Self-Efficacy Determinants of Anticipated Fears and Calamities. **Journal of Personality and Social Psychology**, 45(2), 464-469
- Bandura, A. (1986). **Social foundations of thought and action: A social cognitive theory**. Englewood Cliffs, NJ: Prentice Hall.
- Bandura, A. (1997). Self-efficacy: The exercise of control. New York: W.H. Freeman and Company. **Available at** <http://www.emory.edu/EDUCATION/mfp/effbook1.html>
- Baxter Magolda, M. B. (1992). **Knowing and reasoning in college: Gender related patterns in students' epistemological development**. San Francisco: Jossey Bass.
- Beach, S.A. (1994) Teacher's theories and classroom practice: beliefs, knowledge, or context? **Reading Psychology**, 15(3), 189-196
- Belenky, M. F., Clinchy, B. M., Goldberger, N. R., & Tarule, J. M. (1986). **Women's ways of knowing: The development of self, voice, and mind**. New York: Basic Books.
- Borg, S. (1998) Data-based Teacher Development. **ELT Journal**, 52(2), 273-281
- Borg, S. (1999) Studying Teacher Cognition in Second Language Grammar Teaching. **System**, 27(1), 19-31
- Borg, S. (2003) Teacher Cognition in Language Teaching: a review of Research on What Language Teachers Think, Know, Believe and Do, **Language Teaching**, 36, 81-109.
- Brace, N., Kemp, R. & Snelgar, R. (2003). **SPSS for Psychologists. A guide to Data Analysis using SPSS for Windows**. New York: Palgrave Macmillan
- Bråten, I. & Strømsø, H. I. (2004). Epistemological beliefs and implicit theories of intelligence as predictors of achievement goals. **Contemporary Educational Psychology**, 29(4), 371-388.
- Brown, J. D. (2002). **Doing second language research**. (with Rodgers, T.). Oxford: Oxford University Press

- Brownell, M. & Pajares, F. (1999). Classroom teachers' sense of efficacy to instruct special education students. **Teacher Education and Special Education**, 22, 154-164
- Buehl, M. M., Alexander, P. A., & Murphy, P. K. (2002). Beliefs about schooled knowledge: Domain specific or domain general? **Contemporary Educational Psychology**, 27, 415-449.
- Burr, J. E., & Hofer, B. K. (2002). Personal epistemology and theory of mind: Deciphering young children's beliefs about knowledge and knowing. **New Ideas in Psychology**, 20, 199-224.
- Cacioppo, J. T., Petty, R. E., & Kao, C. E. (1984). The efficient assessment of need for cognition. *Journal of Personality Assessment*, 48, 306-307. In Kardash, C. M. & Scholes, R. J. (1996). Effects of preexisting beliefs, epistemological beliefs, and need for cognition on interpretation of controversial issues. **Journal of Educational Psychology**, 88, 260-271.
- Cassidy, S. & Eachus, P. (2000). Learning Style, Academic Belief Systems, Self-Report Student Proficiency and Academic Achievement in Higher Education. **Educational Psychology**, 20(3)
- Chaco'n, C. T. (2005). Teachers' perceived efficacy among English as a foreign language teachers in middle schools in Venezuela. **Teaching and Teacher Education**, 21, 257-272
- Chan, K.W. & Elliott, R.G. (2000). Exploratory study of epistemological beliefs of Hong Kong teacher education students: resolving conceptual and empirical issues. **Asia Pacific Journal of Teacher Education**, 28(3), 225-234
- Chan, K.W. & Elliott, R.G. (2002). Exploratory study of Hong Kong teacher education students' epistemological beliefs – Cultural Perspectives and Implications on Beliefs Research. **Contemporary Educational Psychology**, 27(3), 392-414.
- Chan, K.W. & Elliott, R.G. (2004). Epistemological Beliefs Across Cultures: Critique and analysis of beliefs structure studies. **Educational Psychology**, 24(2), 123-142

- Clark, C. M. & Lampert, M. (1986). The study of teacher thinking: Implications for teacher education. **Journal of Teacher Education**, 37, 27-31
- Conley, A.M., Pintrich, P.R., Vekiri, I. & Harrison, D. (2004) Changes in epistemological beliefs in elementary science students. **Contemporary Educational Psychology**, 29, 186-204
- Darlington, R. B. "Factor Analysis" <http://www.albany.edu/~jz7088/documents/02-12-2004/Factor.nbsp.doc>, 2004
- Duell, O. K. & Schommer-Aikins, M. (2001). Measures of people beliefs about knowledge and learning. **Educational Psychology Review**, 13(4), 419-449.
- Estes, D., Chandler, M., Horvath, K. J. & Backus, D. W. (2003). American and British college students' epistemological beliefs about research on psychological and biological development. **Journal of Applied Developmental Psychology**, 23(6), 625-642
- Fang Z.H. (1996) A review of research on teacher beliefs and practices. **Educational Research**, 38 (1), 47-65
- File, N. & Gullo, D. (2002). A comparison of early childhood and elementary education students' beliefs about primary classroom teaching practices. **Early Childhood Research Quarterly**, 17, 126-137
- Freeman, D. (1990). Intervening in practice teaching. In R. Carter, & D. Nunan (Eds.), **The Cambridge guide to teaching English to speakers of other languages** (103-117). Cambridge: Cambridge University Press.
- Ghaith, G. & Yaghi, H. (1997). Relationships among experience, teacher efficacy, and attitudes toward the implementation of instructional innovation. **Teaching and Teacher Education**. 13(4), 451-458
- Ghaith, G. & Shaaban, K. (1999) The relationship between perceptions of teaching concerns, teacher efficacy, and selected teacher characteristics. **Teaching and Teacher Education**, 15(1999) 487-496
- Gibson, S & Dembo, M.H. (1984) Teacher Efficacy: A Construct Validation. **Journal of Educational Psychology**, 76(4), 569-582

- Gill, M.G., Ashton, P.T. & Algina, J. (2004). Changing pre-service teachers' epistemological beliefs about teaching and learning in mathematics: An intervention study. **Contemporary Educational Psychology**, 29, 164-185
- Goodman, J. (1988). Constructing a practical philosophy of teaching: a study of pre-service teachers' professional perspectives. **Teaching and Teacher Education**, 4, 121-137
- Haritos, C. (2004). Understanding Teaching Through the minds of teacher candidates: a Curious Blend of Realism and Idealism. **Teaching and Teacher Education**, 20, 637-654
- Hofer, B. & Pintrich, P. (1997) The development of epistemological theories: Beliefs about knowledge and knowing and their relation to learning. **Review of Educational Research**, 67, 88-140
- Holt Reynolds, D. (1992) Personal history-based beliefs as relevant prior knowledge in course work. **American Educational Research Journal**, 29(2), 325-349.
- Kardash, C. M. & Scholes, R. J. (1996). Effects of preexisting beliefs, epistemological beliefs, and need for cognition on interpretation of controversial issues. **Journal of Educational Psychology**, 88, 260-271.
- Kardash, C., & Howell, K.L. (2000). Effects of epistemological beliefs and topic-specific beliefs on undergraduates cognitive and strategic processing of dual-positional text. **Journal of Educational Psychology**, 92, 524-235.
- Kettle, B., Sellars, N. (1996) The development of student teachers' practical theory of teaching. **Teaching and Teacher Education**, 12(1), 1-24.
- Kılıçoğlu, O. & Altun, A. (2002). Ortaöğretim okullarındaki öğrencilerin bilgisayar destekli eğitime yönelik tutumları. **Eğitim Araştırmaları Dergisi**, 8, 175-187.
- King, P. M., & Kitchener, K. S. (1994). **Developing reflective judgment: Understanding and promoting intellectual growth and critical thinking in adolescents and adults**. San Francisco: Jossey Bass.
- Kitchener, K. S., & King, P. M. (1981). Reflective judgment: Concepts of justification and their relationship to age and education. **Journal of Applied Developmental Psychology**, 2, 89-119. In Hofer, B. & Pintrich, P. (1997) The development of

epistemological theories: Beliefs about knowledge and knowing and their relation to learning. **Review of Educational Research**, 67, 88-140

Kitchener, K. S., Lynch, C., Fischer, K., & Wood, P. K. (1993). Developmental range in Reflective Judgment: The effect of contextual support and practice on developmental stage. **Developmental Psychology**, 29, 893-906.

Larsen-Freeman, D. (2000). **Techniques and principles in language teaching**. Oxford: Oxford University Press.

Lin, H. & Gorrell, J.(2001). Exploratory analysis of pre-service teacher efficacy in Taiwan, **Teaching and Teacher Education**, 17 (5),623-635.

May, D. & Etkina, E. (2002). College physics students' epistemological self-reflection and its relationship to conceptual learning. **Physics Education Research: A Supplement to the American Journal of Physics**, 70 (12), 1249-1258.

Moe, K. O. and Zeiss, A. M. (1982). Measuring self-efficacy expectations for social skills: A methodological inquiry, *Cognitive Therapy and Research*, 6, 191-205. In Pajares, F. (1997). "Current directions in self-efficacy research", In: M. Maehr & P. R. Pintrich (eds.) *Advances in motivation and achievement*. Volume 10, 1-49. Greenwich, CT: JAI Press. Available at <http://www.emory.edu/EDUCATION/mfp/effchapter.html>

Nietfeld, J. L., & Enders, C. K. (2003, March 17). An examination of student teacher beliefs: Interrelationships between hope, self-efficacy, goal-orientations, and beliefs about learning. *Current Issues in Education* [On-line], 6(5). Available: <http://cie.ed.asu.edu/volume6/number5/>

Oosterheert, I.E. & Vermunt, J.D. (2001). Individual Differences in Learning to Teach: Relating cognition, regulation and affect. **Learning and Instruction**, 11, 133-156

ÖSYM documents

<http://www.osym.gov.tr/BelgeGoster.aspx?DIL=1&BELGEBAGLANTIANAH=644>

Pajares, F. (1997). Current Directions in Self-Efficacy Research. In M. Maehr & P. R. Pintrich (Eds.), **Advances in motivation and achievement**. (Vol. 10, 1-49). Greenwich, CT: JAI Press

Pajares, F. (2002). Overview of social cognitive theory and of self-efficacy. Retrieved February, 5, 2004, from <http://www.emory.edu/EDUCATION/mfp/eff.html>.

- Pajares, M. F. (1992). Teachers' beliefs and educational research: Cleaning up a messy construct. **Review of Educational Research**, 62(3), 307-332.
- Perry, W. G. (1970). **Forms of intellectual and ethical development in the college years**. New York: Holt, Rinehart and Winston. In Schommer-Aikins, M. (2004). Explaining the epistemological belief system: introducing the embedded systemic model and coordinated research approach. **Educational Psychologist**, 39(1), 19-29.
- Perry, W. G. J. (1981). Cognitive and ethical growth: The making of meaning. In A. W. Chickering (Ed.), **The modern American college** (76-116). San Francisco: Jossey Boss. In Schommer-Aikins, M. (2004). Explaining the epistemological belief system: introducing the embedded systemic model and coordinated research approach. **Educational Psychologist**, 39(1), 19-29.
- Reiman, T. & Oedewald, P. (2004). Measuring maintenance culture and maintenance core task with CULTURE-questionnaire—a case study in the power industry. **Safety Science**, 42 , 859–889.
- Richards, J., & Rodgers, T. (2001). **Approaches and methods in language Teaching** (2nd ed.). Cambridge: Cambridge University Press.
- Ryan, M. P. (1984). Conceptions of prose coherence: Individual differences in epistemological standards. **Journal of Educational Psychology**, 76, 1226-1238.
- Savran, A., Çakıroğlu, J. (2003) Differences Between Elementary and Secondary Pre-service Science Teachers' Perceived Efficacy Beliefs and Their Classroom Management Beliefs, **The Turkish Online Journal of Educational Technology-TOJET**, 2(4).
- Schommer, M. (1990). Effects of beliefs about the nature of knowledge on comprehension. **Journal of Educational Psychology**, 82, 498-504.
- Schommer, M. (1992). Epistemological beliefs and mathematical text comprehension. **Journal of Educational Psychology**, 84, 435-443.
- Schommer, M. (1993). Epistemological Development and Academic Performance among Secondary Students. **Journal of Educational Psychology** 85(3): 406-411.

- Schommer, M. (1994). Synthesizing epistemological belief research: Tentative understandings and provocative confusions. **Educational Psychology Review**, 6, 293-320.
- Schommer, M., Crouse, A., & Rhodes, N. (1992). Epistemological beliefs and mathematical text comprehension: Believing it is simple does not make it so. **Journal of Educational Psychology**, 84(4), 435-443.
- Schommer, M., & Walker, K. (1997). Epistemological beliefs and valuing school: Considerations for college admissions and retention. **Research in Higher Education**, 38(2), 173-185.
- Schommer-Aikins, M. (2002). An evolving theoretical framework for an epistemological beliefs system. In B. Hofer & P. Pintrich (Eds.) **Personal Epistemology: The psychological beliefs about knowledge and knowing**. New Jersey: Lawrence Erlbaum. (pp 103-118).
- Schommer-Aikins, M. (2004). Explaining the epistemological belief system: introducing the embedded systemic model and coordinated research approach. **Educational Psychologist**, 39(1), 19-29
- Schommer-Aikins, M. Hutter, R. (2002). Epistemological beliefs and thinking about everyday controversial issues. **The Journal of Psychology**, 136(1), 5-20
- Schraw, G. & Sinatra, G. (2004). Epistemological development and its impact on cognition in academic domains. **Contemporary Educational Psychology**, 29, 95-102.
- Schunk, D. H. (2000) **Learning Theories An Educational Perspective**. Prentice Hall: New Jersey
- Schunk, D. H., & Pajares, F. (2002). The development of academic self-efficacy. In A. Wigfield & J. Eccles (Eds.), **Development of achievement motivation** (16-31). San Diego: Academic Press.
- Sinatra, G. M. & Kardash, C. A. M. (2004). Teacher candidates' epistemological beliefs, dispositions, and views on teaching as persuasion. **Contemporary Educational Psychology**, 29(4), 483-498.
- Smith, K. (1997). Student Teacher's Beliefs about Developmentally Appropriate Practice: Pattern, Stability, and the Influence of Locus of Control, **Early Childhood Research Quarterly**, 12, 221-243

- Tirri, K., Husu, J. & Kansanen, P. (1999). The epistemological stance between the knower and the known. **Teaching and Teacher Education**, 15(8), 911-922
- Tobin, K. & LaMaster, S. U. (1995). Relationships between metaphors, beliefs, and actions in a context of science curriculum change. **Journal of Research in Science Teaching**, 32, 225-242.
- Tschannen-Moran, M., Woolfolk Hoy, A., & Hoy, W. K. (1998). Teacher efficacy: Its meaning and measure. **Review of Educational Research**, 68, 202-248.
- Ünver, Meral Melek “An Exploration of Perceived Self-Determination and Self-efficacy of EFL instructors in a Turkish State University”. Unpublished master’s thesis. **The Institute of Economics and Social Sciences of Bilkent University**, 2004
- Valanides, N & Angeli, C. (2005). Effects of instruction on changes in epistemological beliefs, **Contemporary Educational Psychology**, 30 (3), 314-330
- Wheatley, K. F. (2002). The potential benefits of teacher efficacy doubts for educational reform. **Teaching and Teacher Education**. 18, 5-22
- Wheatley, K. F. (2005). The case for reconceptualizing teacher efficacy research. **Teaching and Teacher Education**. In Press, Corrected Proof, Available online 27 June 2005.
- Whitmire, E. (2003). Epistemological beliefs and the information-seeking behavior of undergraduates. **Library & Information Science Research**, 25, 127-142
- Whitmire, E. (2004). The relationship between undergraduates’ epistemological beliefs, reflective judgment, and their information-seeking behavior. **Information Processing & Management**, 40(1), 97-111
- Woods, D. (1996). **Teacher Cognition in Language Teaching**. Cambridge University Press, Cambridge.
- Woolfolk, A.E., Hoy, W.K. (1990) Prospective Teachers' Sense of Efficacy and Beliefs About Control, **Journal of Educational Research**, 82(1), 81-91.
- Woolfolk Hoy, A. & Tschannen-Moran, M. (2002, April). **Cultivating teacher**

efficacy; The effects of context. Paper presented at the annual meeting of the American Educational Research Association, New Orleans.

Yılmaz, Elif “The Relationship between Novice and Experienced Teachers’ Self-efficacy for classroom management and students’ Perceptions of their Teachers’ Classroom Management”. Unpublished master’s thesis. **The Institute of Economics and Social Sciences of Bilkent University**, 2004

APPENDICIES

Appendix A

EPISTEMOLOGICAL BELIEF QUESTIONNAIRE					
					March 2005
Directions: There are no right or wrong answers to the following questions. We would like to know what you really believe. For each statement, please indicate the best choice that applies to you for the degree to which you agree or disagree. Thank you for your contribution. Assoc. Prof. Dr. Arif ALTUN, Res. Assist. Anıl Ş. RAKICIOĞLU					
Gender: M _____ F _____					
Year: 1 _____ 2 _____ 3 _____ 4 _____					
Age: < =18 _____ 19 _____ 20 _____ 21 _____ > = 22					
Place of "ELT" choice in admission to university: 1 _____ 2 _____ 3 _____ 4 _____ >=5 _____					
	Strongly agree	Agree	Not Sure	Disagree	Strongly Disagree
1. If you are (ever going to be able) to understand something, it will make sense to you the first time you hear it.	☐	☐	☐	☐	☐
2. The only thing that is certain is uncertainty itself.	☐	☐	☐	☐	☐
3. For success in school, it is best not to ask too many questions.	☐	☐	☐	☐	☐
4. A course in study skills would probably be valuable.	☐	☐	☐	☐	☐
5. How much a person gets out of school mostly depends on the quality of the teacher.	☐	☐	☐	☐	☐
6. You can believe almost everything you read.	☐	☐	☐	☐	☐
7. I often wonder how much my teachers really know.	☐	☐	☐	☐	☐
8. The ability to learn is innate.	☐	☐	☐	☐	☐
9. It is annoying to listen to a lecturer who cannot seem to make up his mind as to what he really believes.	☐	☐	☐	☐	☐
10. Successful students understand things quickly.	☐	☐	☐	☐	☐
11. A good teacher's job is to keep his students from wandering from the right track.	☐	☐	☐	☐	☐
12. If scientists try hard enough, they can find the truth to almost anything.	☐	☐	☐	☐	☐
13. People who challenge authority are over-confident.	☐	☐	☐	☐	☐
14. I try my best to combine information across chapters or even across classes.	☐	☐	☐	☐	☐
15. The most successful people have discovered how to improve their ability to learn.	☐	☐	☐	☐	☐
16. Things are simpler than most professors would have you believe.	☐	☐	☐	☐	☐

17. The most important aspect of scientific work is precise measurement and careful work.	☐	☐	☐	☐	☐
18. To me, studying means getting big ideas from the text, rather than details.	☐	☐	☐	☐	☐
19. Educators should know by now which is the best method, lectures or small group discussions.	☐	☐	☐	☐	☐
20. Going over and over a difficult textbook chapter usually will not help you understand it.	☐	☐	☐	☐	☐
21. Scientists can ultimately get to the truth.	☐	☐	☐	☐	☐
22. You never know what a book means unless you know the intent of the author.	☐	☐	☐	☐	☐
23. Most important part of scientific work is original thinking.	☐	☐	☐	☐	☐
24. If I find the time to re-read a textbook chapter, I get a lot more out of it the second time.	☐	☐	☐	☐	☐
25. Students have a lot of control over how much they can get out of a textbook.	☐	☐	☐	☐	☐
26. Genius is 10% ability and 90% hard work.	☐	☐	☐	☐	☐
27. I find it refreshing (I find myself updated) to think about issues that authorities cannot agree on.	☐	☐	☐	☐	☐
28. Everyone needs to learn how to learn.	☐	☐	☐	☐	☐
29. When you first encounter a difficult concept in a textbook, it is best to work it out on your own.	☐	☐	☐	☐	☐
30. A sentence has little meaning unless you know the situation in which it is spoken.	☐	☐	☐	☐	☐
31. Being a good student generally involves memorizing facts.	☐	☐	☐	☐	☐
32. Wisdom is not knowing the answers, but knowing how to find the answers.	☐	☐	☐	☐	☐
33. Most words have one clear meaning.	☐	☐	☐	☐	☐
34. Truth is unchanging.	☐	☐	☐	☐	☐
35. If a person forgot details, and yet was able to come up with new ideas from a text, I would think they were bright.	☐	☐	☐	☐	☐
36. Whenever I encounter a difficult problem in life, I consult with my parents.	☐	☐	☐	☐	☐
37. Learning definitions word-for-word is often necessary to do well on tests.	☐	☐	☐	☐	☐
38. When I study, I look for the specific facts.	☐	☐	☐	☐	☐
39. If a person cannot understand something within a short amount of time, they should keep on trying.	☐	☐	☐	☐	☐
40. Sometimes you just have to accept answers from a teacher even though you do not understand them.	☐	☐	☐	☐	☐
41. If professors would stick more to the facts and do less theorizing, one could get more out of college.	☐	☐	☐	☐	☐
42. I do not like movies that do not have an ending.	☐	☐	☐	☐	☐
43. Getting ahead takes a lot of work.	☐	☐	☐	☐	☐
44. It is a waste of time to work on problems which have no possibility of coming out with a clear-cut and unambiguous answer.	☐	☐	☐	☐	☐
45. You should evaluate the accuracy of information in a textbook, if you are familiar with the topic.	☐	☐	☐	☐	☐
46. Often, even advice from experts should be questioned.	☐	☐	☐	☐	☐
47. Some people are born good learners; others are just stuck with limited ability.	☐	☐	☐	☐	☐
48. Nothing is certain, but death and taxes.	☐	☐	☐	☐	☐
49. The really smart students do not have to work hard to do well in school.	☐	☐	☐	☐	☐

50. Working hard on a difficult problem for an extended period of time only pays off for really smart students.	☐	☐	☐	☐	☐
51. If a person tries too hard to understand a problem, they will most likely just end up being confused.	☐	☐	☐	☐	☐
52. You will get almost all the information you can learn from a textbook during the first reading.	☐	☐	☐	☐	☐
53. Usually you can figure out difficult concepts if you eliminate all outside distractions and really concentrate.	☐	☐	☐	☐	☐
54. A really good way to understand a textbook is to re-organize the information according to your own personal scheme.	☐	☐	☐	☐	☐
55. Students who are "average" in school will remain "average" for the rest of their lives.	☐	☐	☐	☐	☐
56. A tidy mind is an empty mind.	☐	☐	☐	☐	☐
57. An expert is someone who has a special gift in a specific area (field).	☐	☐	☐	☐	☐
58. I really appreciate instructors who organize their lectures meticulously and then stick to their plan.	☐	☐	☐	☐	☐
59. The best thing about science courses is that most problems have only one right answer.	☐	☐	☐	☐	☐
60. Learning is a slow process of building up knowledge.	☐	☐	☐	☐	☐
61. Today's facts may be tomorrow's fiction.	☐	☐	☐	☐	☐
62. Self-help books are not much help.	☐	☐	☐	☐	☐
63. You will just get confused if you try to integrate new ideas in a textbook with knowledge you already have about a topic	☐	☐	☐	☐	☐

Appendix B

Efficacy Scale for Teacher Trainees					
Directions: Please indicate your personal opinion about each statement by circling the appropriate response at the right of each statement					
	Strongly agree	Agree	Not Sure	Disagree	Strongly Disagree
PE 1. When a student has performed better than usual, many times this is due to a little more effort on my part.	☐	☐	☐	☐	☐
2. Compared to the impact of home environment, the hours that students spend in my class have less impact on them.	☐	☐	☐	☐	☐
TE 3. The amount that a student can learn is related his/her family background.	☐	☐	☐	☐	☐
4. Unless students are disciplined at home, they tend not to accept any kind of discipline.	☐	☐	☐	☐	☐
TE 5. I have enough training to handle almost any learning problem.	☐	☐	☐	☐	☐
6. When a student has a problem with any given homework, I can usually adapt the homework to the student's level.	☐	☐	☐	☐	☐
PE 7. When a student gets a better grade than usual, the reason for this is that I have found better ways to instruct the student.	☐	☐	☐	☐	☐
PE 8. I can reach the most difficult students when I really try hard.	☐	☐	☐	☐	☐
9. A teacher has limitations as to what he/she can achieve, because home environment has a great influence on his/her achievement that affects student's success to a great extent.	☐	☐	☐	☐	☐
10. When all factors are considered, teachers do not have a strong influence on students' success.	☐	☐	☐	☐	☐
TE 11. When my students' grades improve, it is because I have found more effective approaches.	☐	☐	☐	☐	☐
PE 12. If a student masters a new topic quite fast, this may have resulted from my knowing the necessary steps in teaching the topic.	☐	☐	☐	☐	☐
13. If parents can do more for their children, I can do more for them.	☐	☐	☐	☐	☐
PE 14. If a student does not remember a particular bit of information that I gave in the previous class, I know how to foster his/her retention of it in the next class.	☐	☐	☐	☐	☐
PE 15. The influences of a student's home experiences can be overcome by means of good instruction.	☐	☐	☐	☐	☐
PE 16. If a student in my class is bothersome and noisy, I feel sure that I know certain techniques to redirect him/her quickly.	☐	☐	☐	☐	☐
17. Even a teacher with good teaching abilities may not reach many students.	☐	☐	☐	☐	☐
18. When one of my students does not do his/her homework, I can correctly evaluate whether the homework is at the appropriate level of difficulty or not.	☐	☐	☐	☐	☐

PE 19. If I really try hard, I can reach even the most difficult and unmotivated students.	☐ ☐ ☐ ☐ ☐
TE 20. When it comes to student's motivation and performance, the teacher is unable to do much, for a student's motivation and performance depend mostly on home environment.	☐ ☐ ☐ ☐ ☐
TE 21. Some students need to be placed in slower groups so that they will not be subject to external expectations.	☐ ☐ ☐ ☐ ☐
TE 22. My Teacher Education Program and/or Practice has/have gained me the necessary skills to be an effective teacher.	☐ ☐ ☐ ☐ ☐
Thank you for your cooperation.	