Marmara University

Institute of Educational Sciences

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THE EFFECTS OF WEBQUEST-SUPPORTED CRITICAL THINKING INSTRUCTION ON THE CRITICAL THINKING DISPOSITION LEVEL AND L2 WRITING PERFORMANCE OF TURKISH PRE-SERVICE EFL TEACHERS

Dilan BAYRAM

(M.A. Thesis)

İstanbul - 2015

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Yabancı Diller Eğitimi Ana Bilim Dalı

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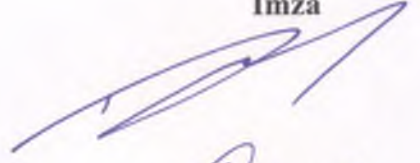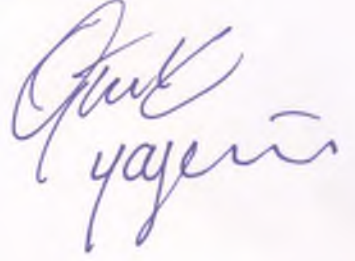Dr. Gökçe KURT TİFTİK
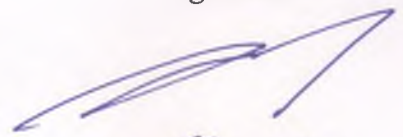
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Dilan Bayram tarafından hazırlanan "WebQuest destekli eleştirel düşünme eğitiminin Türk İngilizce öğretmen adaylarının eleştirel düşünme eğilim seviyeleri ve İngilizce yazma becerilerine etkileri" konulu bu çalışma 01.04.2015 tarihinde yapılan savunma sınavı sonucunda jüri tarafından başarılı bulunmuş ve yüksek lisans tezi olarak kabul edilmiştir.

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CONFERENCE PROCEEDINGS

Bayram, D., & Mutlu, G. (2014). Exploring self-efficacy levels of Turkish EFL teachers. In A. Akbarov & V. Cook (Eds.), *Applied Intercultural Competence to Foreign Language Teaching and Learning* (pp. 904-913). Sarajevo, Bosnia and Herzegovina: IBU Publications.

Mutlu, G., & Bayram, D. (2014). The attitudes of Turkish EFL learners towards their L1-accented English. Applied Intercultural Competence to Foreign Language Teaching and Learning. In A. Akbarov & V. Cook (Eds.), *Applied Intercultural Competence to Foreign Language Teaching and Learning* (pp. 570-9578). Sarajevo, Bosnia and Herzegovina: IBU Publications.

CONFERENCE PRESENTATIONS

Bayram, D., Kurt, G., & Atay, D. (2014). *Using WebQuests to improve critical thinking skills of Turkish pre-service teachers of English.* 8th International ELT Research Conference. Çanakkale, Turkey.

Bayram, D., & Kaşlıoğlu, Ö. (2013). *Task-based language teaching in the Turkish context: Exploring prospective and newly-qualified teachers' views.* 9th International Postgraduate Conference on Linguistics and Language Teaching. Ankara, Turkey.

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TAM METİN BİLDİRİLER

Bayram, D., & Mutlu, G. (2014). *Exploring self-efficacy levels of Turkish EFL teachers.* Applied Intercultural Competence to Foreign Language Teaching and Learning. IBU Publications (sf. 904-913). Saraybosna, Bosna-Hersek.

Mutlu, G., & Bayram, D. (2014). *The attitudes of Turkish EFL learners towards their L1-accented English.* Applied Intercultural Competence to Foreign Language Teaching and Learning. IBU Publications (sf. 570-578). Saraybosna, Bosna-Hersek.

SUNULAN BİLDİRİLER

Bayram, D., Kurt, G., & Atay, D. (2014). *Using WebQuests to improve critical thinking skills of Turkish pre-service teachers of English.* 8th International ELT Research Conference. Çanakkale, Türkiye.

Bayram, D., & Kaşlıoğlu, Ö. (2013). *Task-based language teaching in the Turkish context: Exploring prospective and newly-qualified teachers' views.* 9th International Postgraduate Conference on Linguistics and Language Teaching. Ankara, Türkiye.

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ABSTRACT

The aims of the present study is to examine the effects of WebQuest-supported critical thinking instruction on the critical thinking disposition levels and L2 writing performance of Turkish pre-service teachers (PTs) of English; to determine whether receiving WebQuest-supported critical thinking instruction leads to a change in the PTs' understanding of critical thinking; and finally to investigate the PTs' perceptions of the WebQuest integration. The following research questions are addressed:

1. Will there be a statistically significant difference between the Turkish PTs of English who receive traditional instruction and those who receive WebQuest-supported critical thinking instruction in terms of their:
    a. critical thinking disposition levels?
    b. L2 writing performance?
2. Will there be a change in the PTs' understanding of critical thinking at the end of the study?

3. What are the PTs' opinions about the WebQuest-supported instruction?

Data were collected from 60 freshman Turkish PTs of English studying at a state university in Istanbul, Turkey. A total of 30 PTs were assigned to the experimental group and received WebQuest-supported critical thinking instruction. On the other hand, 30 PTs were assigned to the control group and received traditional instruction. The study lasted 6 weeks and data were collected by means of the Turkish version (Kökdemir, 2003) of the California Critical Thinking Disposition Inventory (Facione & Facione, 1992), PTs' argumentative essays, the WebQuest Opinion Survey (Prapinwong, 2008), and focus group interviews.

Findings revealed that the WebQuest-supported critical thinking instruction produced statistically significant differences in the PTs' critical thinking disposition level and L2 writing performance. Also, the PTs reported relatively positive perceptions towards WebQuest learning and almost all of them stated that they would implement WebQuest in their future teaching career. Finally, it was found out that the PTs demonstrated clearer awareness of critical thinking at the end of the study.

Hence, the results of the study indicated that WebQuest-supported critical thinking instruction can be utilized as an effective teaching method promoting critical thinking disposition level and L2 writing performance in education.

ÖZET

Bu çalışmanın amacı, WebQuest destekli eleştirel düşünme eğitiminin Türk İngilizce öğretmen adaylarının eleştirel düşünme eğilim seviyelerine ve İngilizce yazma becerilerine etkilerini araştırmaktır. Ayrıca, bu uygulama sonucunda öğretmen adaylarının eleştirel düşünme algılarında herhangi bir değişiklik olup olmadığının belirlenmesi amaçlanmış ve bu doğrultuda katılımcıların uygulama hakkındaki görüşleri alınmıştır. Çalışma, aşağıdaki soruları yanıtlamayı amaçlamaktadır.

1. WebQuest destekli eleştirel düşünme eğitimi İngilizce öğretmen adaylarının,
   a. eleştirel düşünme eğilim seviyelerinde anlamlı bir farklılığa neden olacak mıdır?
   b. İngilizce yazma becerilerinde anlamlı bir farklılığa neden olacak mıdır?
2. Çalışma sonunda, İngilizce öğretmen adaylarının eleştirel düşünme algılarında değişiklik olacak mıdır?
3. İngilizce öğretmen adaylarının WebQuest destekli eğitime ilişkin görüşleri nelerdir?

Çalışma verileri İstanbul, Türkiye'deki bir devlet üniversitesinde eğitim alan 1. sınıf İngilizce öğretmen adaylarından toplanmıştır. Toplamda 60 katılımcıdan 30'u deney grubu olarak belirlemiş ve bu grup WebQuest destekli eleştirel düşünme eğitimi almıştır. Kalan 30 katılımcı kontrol grubu olarak belirlenmiş ve bu grup geleneksel eğitim almıştır. Bu çalışma 6 hafta sürmüş ve veriler California Eleştirel Düşünme Eğilim Ölçeği'nin (Facione & Facione, 1992) Türkçe versiyonu Kökdemir, 2003), öğretmen adaylarının tartışmacı tarzdaki kompozisyonları, WebQuest Görüş Anketi (Prapinwong, 2008), ve odak grup görüşmeleri yoluyla elde edilmiştir.

Elde edilen bulgular, WebQuest destekli eleştirel düşünme eğitiminin, öğretmen adaylarının eleştirel düşünme eğilim seviyelerinde ve İngilizce yazma becerilerinde istatistikî açıdan anlamlı farklılıklar oluşturduğunu göstermiştir. Bunun yanı sıra, öğretmen adayları WebQuest destekli öğrenmeye yönelik olumlu görüşler bildirmiş ve adayların neredeyse tümü gelecekteki sınıflarında bu yöntemi kullanabileceklerini belirtmiştir. Ayrıca, çalışma sonunda öğretmen adaylarının eleştirel düşünme farkındalıklarının arttığı saptanmıştır.

Sonuç olarak, WebQuest destekli eleştirel düşünme eğitiminin, eleştirel düşünme eğilim seviyesini ve İngilizce yazma becerilerisini geliştiren etkin bir yaklaşım olarak benimsenebileceği görülmüştür.

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CHAPTER I: INTRODUCTION

This chapter discusses the background to the study, statement of the problem, significance of the study, and research questions in detail.

1.1. Background to the Study

With globalization and ceaseless changes in different areas such as technology and science in the 21st century, all domains of life have inevitably undergone a transformation and today the whole world has become "nothing but a global village" (Bizri, 2010, p. 12). Education is one of the domains deeply affected from this phenomenon since society and education have a mutual impact on each other. In that line, Rury (2009) stated that "influences run in both directions. Education clearly affects the course of social development, and schools also invariably reflect the impact of the larger social context" (p. 1). Especially the developments in cognitive and constructivist learning theories in the recent years have led to the emergence of new approaches and methods in learning. Thus, the role of teachers and learners has shifted from teaching what to think (transmission of knowledge) to teaching how to think (promotion of thinking skills) in order to help learners cope with the challenges of the modern era.

In the modern era, active life-long learning, problem solving and empowerment have been recognized as the necessary skills to survive (Akdere, 2012). To this end, there is a consensus that critical thinking helps individuals to become active and effective life-long learners, and effective problem solvers leading to empowerment (Kincheloe, 2004; Lai, 2009). Similarly, Gough (1991) claimed that thinking skills are "crucial for educated persons to cope with a rapidly changing world" (p. 1) and Halpern (2001) took a step further in this claim as he asserted that "critical thinking skills offer the greatest chance for creating and adjusting to change" (p. 284, as cited in Akdere, p. 1).

In spite of its potential benefits, critical thinking is claimed to be mostly ignored in educational systems (Hooks, 2010; Levy, 2010). Hooks (2010) claimed that "children's passion for thinking often ends when they encounter a world that seeks to educate them for conformity and obedience only" (p. 8). Along the same line, he added that students

coming from such educational systems are not aware of the importance of critical thinking and when they come to higher education settings; they tend to think that "all they need to do is consume information and regurgitate it at the appropriate moments" (Hooks, 2010, p. 8).

In Turkey, to meet the challenges of the modern era, an educational reform was initiated by the Ministry of Education in 2004. With this regulation, the National Curriculum adopted a student-centered learning approach with a list of basic generic skills including critical thinking to be treated as learning outcomes in every course. However, in 2012, the results of the most recently conducted PISA (The Program for International Student Assessment), which required test takers not only to use their current knowledge but also to use their critical thinking in novel situations, were not very promising for Turkish students as they were mostly reported to be between level 1 and level 2 out of 6 (OECD, 2014).

1.2. Statement of the Problem

As critical thinking is considered to be a vital skill for the 21st century, it has become a desirable educational outcome by educators (Lai, 2011). In the same line, the new regulation in the Turkish National Curriculum (2004) considers critical thinking as one of the generic skills that needs to be treated in every course. However, this target is yet to be reached since the critical thinking levels of Turkish university students have been reported to be between low and moderate (e.g. Bökeoğlu & Yılmaz, 2005; Dayıoğlu, 2003; Tümkaya, Aybek, & Aldağ, 2009). Similarly, the studies conducted with pre-service teachers (PTs) also indicate low or moderate critical thinking levels (e.g. Alagözlü & Süzer, 2010; Kürüm, 2002; Tümkaya, 2011; Zayif, 2008). As indicated by Ennis (2002), teacher is the most important agent in teaching critical thinking; thus, it is of utmost importance to provide PTs with critical thinking instruction and provide them with opportunities to practice this skill throughout the pre-service education.

1.3. Significance of the Study

It is acknowledged in the literature that teachers need to be critical thinkers themselves to be able to promote this skill in their classes (Ashton, 1988; Ten Dam & Volman, 2004; Kaye & Ragusa, 1998; Williams, 2005). Thus, conscious efforts should be spent on teaching critical thinking skills within teacher education programs.

To promote critical thinking skills of students, the effects of different instructional methods have been explored. Since technological innovations have affected the way how critical thinking is integrated into teaching environments, WebQuest, a Web-based classroom learning tool, has been suggested in the current study as one of the effective ways to inspire critical thinking skills in the classroom.

The effectiveness of WebQuest-supported instruction has been investigated in a number of studies conducted in L1 settings (e.g. Allan & Street, 2007; Bradshaw et al., 2002; Ikpeze & Boyd, 2007; Kanuka, 2005; MacGregor & Lou, 2006; Murry, 2006; Vidoni & Maddux, 2002). However, studies investigating the potential of WebQuest-supported instruction in developing the critical thinking skills of L2 learners are only a few (e.g. Bizri, 2010; Puthikanon, 2009). Additionally, although there are studies examining the effects of WebQuest-supported instruction on different language skills of EFL learners (e.g. Alshumaimeri & Almasri, 2012; Alshumaimeri & Bamanger, 2013; Chuo, 2007; Koçoğlu, 2010; Prapinwong, 2008; Tsai, 2005), this kind of studies conducted with PTs are also limited in number. The present study would, therefore, fill this gap in the literature with its focus on the development of PTs' critical thinking skills and L2 writing performance through WebQuest-supported instruction.

More specifically, the aim of this study is threefold: To examine the effects of WebQuest-supported critical thinkinginstruction on the critical thinking and L2 writing performance of Turkish PTs of English; to determine whether receiving WebQuest-supported critical thinkinginstruction leads to a change in the PTs' understanding of critical thinking; and finally to investigate the PTs' perceptions of the WebQuest integration.

1.4. Research Questions

The following research questions are addressed in this study:

1. Will there be a significant difference between the Turkish PTs of English who receive traditional instruction and those who receive WebQuest-supported critical thinking instruction in terms of their:

   a. critical thinking disposition levels?

   b. L2 writing performance?

2. Will there be a change in the PTs' understanding of critical thinking at the end of the study?

3. What are the PTs' opinions about the WebQuest-supported instruction?

CHAPTER II: REVIEW OF LITERATURE

This chapter presents a brief history of critical thinking, definitions of critical thinking, dimensions of critical thinking, assessment of critical thinking, research on critical thinking, WebQuest, and research on WebQuest in detail.

2.1. A Brief History of Critical Thinking

In their book, Paul, Elder, and Bartell (1997) provided a detailed historical background of critical thinking. The roots of critical thinking can be traced back to the time of Ancient Greece. The word 'critical' is derived from two Greek roots: 'kriticos', i.e. discerning judgment, and 'kriterion', i.e. standards. Thus, it etymologically refers to the development of "discerning judgments based on standards" (Paul et al., 1997, p. 2).

2500 years ago, Socrates pointed out the significance of "seeking evidence, reasoning and assumptions, analyzing basic concepts, and tracing out implications not only of what is said but of what is done as well" (p. 8) as he asserted that many people could not justify their confident claims rationally. Thus, Socrates started a tradition, now recognized as *Socratic Questioning*, in which he established the importance of asking probing questions prior to the acceptance of any ideas as worthy of belief. Socrates was followed by Plato, Aristotle, and the Greek skeptics, all of whom underlined that "things are often very different from what they appear to be and that only the trained mind is prepared to see through the way things look to us on the surface (delusive appearances) to the way they really are beneath the surface (the deeper realities of life)" (p. 8).

In the middle ages, in his work *Summa Theologica*, the Italian philosopher Thomas Aquinas underlined the necessity of reasoning which is systematically cultivated and cross-examined. He asserted that critical thinkers are the people who reject the ideas that lack reasonable basis.

In the 15th and 16th centuries, with the arrival of Renaissance, various subjects such as religion, art, society, human nature, and freedom were approached from a critical point of view by numerous scholars in Europe. Scholars like Colet, Erasmus, and More underlined the need for analysis and critique in real life. Bacon stressed the need for

'trained minds' as he claimed if the mind is left to its 'natural tendencies', most of the people would believe false assumptions and fallacies. Likewise, Descartes supported the idea of 'trained mind' and he developed a method of critical thought based on the principles of 'systematic doubt', which requires every part of thinking to be questioned, doubted, and tested. In the same period, Sir Thomas More proposed a new social order, *Utopia*, in which he suggested that every domain of the world, especially the social systems, was subject to critique. Similarly, Machiavelli criticized the politics of the day and laid the basis for modern critical political thought.

In the 16th and 17th centuries, Hobbes held the naturalistic view of the world and claimed that everything is to be explained through evidence and reasoning. Likewise, Locke argued the necessity of the examination of common life and thinking. He established the basis for critical thinking about basic human rights and governments' respect for the criticism of their citizens. Similarly, Robert Boyle and Sir Isaac Newton criticized egocentric views of the world and supported the ideas developed from carefully gathered evidence and sound reasoning. In the same line, Bayle, Montesquieu, Voltaire, and Diderot asserted that when the human mind is disciplined by reason, it can comprehend the nature of social and political world better. They also valued intellectual exchange in which all views are subject to serious analysis and critique.

In the 19th century, the idea of critical thinking was extended to various disciplines by different scholars. The vision of critical thinking showed itself in social and economic critique of Karl Marx regarding the problems of capitalism. In the domain of the history of human culture and biological life, it emerged in Darwin's *Descent of Man*. Applied to the unconscious mind, the idea of critical thinking was stressed in Sigmund Freud's works, too.

In the 20th century, the concept of critical thinking and its power became more explicit especially in education. In 1906, William Graham Sumner published *Folkways* and criticized sociocentric tendency of human mind and the parallel tendency of schools, which "make persons all on one pattern, orthodoxy. School education, will produce men and women who are all of one pattern, as if turned in a lathe... .The popular opinions always contain broad fallacies, half-truths, and glib generalizations"

(p. 630, as cited in Paul et al., 1997, p. 10). Sumner also underlined the need for critical thinking in education as follows:

> ...Education is good just so far as it produces well-developed critical faculty... A teacher of any subject who insists on accuracy and a rational control of all processes and methods, and who holds everything open to unlimited verification and revision is cultivating that method as a habit in the pupils. Men educated in it cannot be stampeded... They are slow to believe. They can hold things as possible or probable in all degrees, without certainty and without pain. They can wait for evidence and weigh evidence... They can resist appeals to their dearest prejudices... Education in the critical faculty is the only education of which it can be truly said that it makes good citizens. (pp. 632-633, as cited in Paul et al., 1997, p. 10)

In the same period of time, different educators such as John Dewey (to be discussed in the section 2.2.4.), Ludwig Wittgenstein, and Jean Piaget focused on different aspects of critical thinking: Dewey underlined the pragmatic basis of human thought; Wittgenstein stressed the importance of analyzing concepts and considering their power and limitations; and Piaget investigated egocentric and sociocentric tendencies of human thought.

2.2. Defining Critical Thinking

During its historical development, the concept of critical thinking has been defined in four primary disciplines: Philosophy, cognitive psychology, politics, and education. In the section below, the definition of critical thinking in each perspective is presented.

2.2.1. The Philosophical School of Thought

This school of thought emphasizes the norms of good thinking, the rational aspect of human thought, and the intellectual virtues necessary to approach the world in a fair and reasonable way (Paul, 1992).

Within the domain of philosophy, scholars tend to focus on reasoning and informal logical systems through argumentation in their perspectives of critical thinking. For example, according to Moore and Parker (1989), critical thinking was "the careful,

deliberate determination of whether we should accept, reject, or suspend judgment about a claim-and of the degree of confidence with which we accept or reject it" (p. 6). Epstein (2000) emphasized the formation of arguments by defining critical thinking as "evaluating whether we should be convinced that some claim is true or some argument is good, as well as formulating good arguments" (p. i). In his definition, Diestler (2001) highlighted the importance of basing on sound reasoning during the formulation of an argument and stated that "a critical thinker is someone who uses specific criteria to evaluate reasoning and make decisions" (p. 2). Hughes and Lavery (2008) defined critical thinking as "determining whether arguments are sound, i.e. whether they have true premises and logical strength" (p. 22). Although there are various definitions of critical thinking in the literature, the most widely-acknowledged definition belongs to Ennis (1987) who encompassed the majority of the definitions within the philosophical perspective and stated that critical thinking is "reasonable, reflective thinking that is focused on what to believe or do" (p. 6).

2.2.2. The Cognitive Psychological School of Thought

Within the domain of cognitive psychology, critical thinking is approached from two perspectives: Mental processes and the outcomes of thinking critically such as decision making and problem solving. To this end, Stenberg (1986) conceptualized critical thinking as "the mental processes, strategies, and representations people use to solve problems, make decisions, and learn new concepts" (p. 3). Likewise, Facione, Facione, and Giancarlo (1996) referred to critical thinking as "higher order reasoning used in reaching professionally informed judgments in high-stakes, time constrained, and many times, novel problem situations" (p. 41). Similarly, the term was defined by Halpern (2003) as "the use of those cognitive skills and strategies that increase the probability of a desirable outcome…purposeful, reasoned and goal directed- the kind of thinking involved in solving problems, formulating inferences, calculating likelihoods, and making decisions" (p. 5).

2.2.3. The Political School of Thought

In the domain of politics, critical thinking is regarded as "the capacity to recognize and overcome social injustice" (Ten Dam & Volman, 2004, p. 362) and considered to be essential for protection of individuals against being exploited economically and politically (Facione, 1998). Regarding critical thinking as a crucial means for either the maintenance or transformation of traditions, institutions, and ideologies, Freire (1993) defined the term as "thinking-which discerns an indivisible solidarity between the world and the people and admits of no dichotomy between them-thinking which perceives reality as process, as transformation, rather than as a static entity-thinking which does not separate itself from action, but constantly immerses itself in temporality without fear of the risks involved" (p. 92). Within this school of thought, critical thinking is also regarded as the heart of a democratic society (Brookfield, 1987; Facione, 1998). To this end, Kincheloe (2004) defined critical thinking as "the ability of individuals to disengage themselves from the tacit assumptions of discursive practices and power relations in order to exert more conscious control over their everyday lives" (p. 24).

2.2.4. The Educational School of Thought

In this school of thought, the American philosopher, psychologist, and educator John Dewey is considered as the founder of modern critical thinking (Fisher & Scriven, 1997). Dewey (1909) referred to critical thinking as 'reflective thinking' and conceptualized it as "an active, persistent, and careful consideration of a belief or supposed form of knowledge in the light of the grounds which support it and the further conclusions to which it tends" (p. 9).

In the 20th century, the Delphi Project (1988-1989) also made a valuable contribution to the idea of critical thinking in education. It was a long-term project supported by American Philosophical Association. For the project, 46 experts from various disciplines came together to reach a consensus on the conceptualization of critical thinking. Their aim was to "develop critical thinking assessment tool, prepare critical thinking program for college level students, and facilitate integration of critical thinking into K-12 curriculum and instructional environments" (as cited in Özen, 2013, p. 39). At the end of the project, the Delphi experts agreed on the dimensions of critical thinking, listed various recommendations regarding critical thinking instruction and assessment,

and offered a consensus definition for the term as "purposeful, self-regulatory judgment which results in interpretation, analysis, evaluation, and inference, as well as explanation of the evidential, conceptual, methodological, criteriological, or contextual considerations upon which that judgment is based" (Facione, 1990, p. 3).

Finally, Bloom's taxonomy of learning objectives has been used by many educators to define critical thinking within the domain of education. Benjamin Bloom, together with his colleagues, published a taxonomy regarding the educational objectives as presented in Figure 2.1.

Figure 2.1. Bloom's Taxonomy of Learning Objectives

As it can be seen in Figure 2.1, Bloom (1956) categorized cognitive domains according to six levels: *knowledge, comprehension, application, analysis, synthesis,* and *evaluation*, which were organized in a hierarchal way regarding their cognitive complexity. Bloom (1956) claimed that the taxonomy presents a cumulative hierarchy. In other words, to be able to exhibit the cognitive processes at a particular level, a person should pass all of the lower levels. According to their cognitive complexity levels, these domains were divided into two broad categories: *lower-order thinking skills*, i.e. knowledge, comprehension, and application, and *higher-order thinking skills*, i.e. analysis, synthesis, and evaluation. The description of each domain is as follows: *Knowledge* refers to the simple recall or identification of information. *Comprehension* refers to the organization and understanding of previously learned information. *Application* refers to the ability of applying previously learned information to a new situation. *Analysis* refers to the ability of finding evidence and making inferences to reach a reasonable conclusion. *Synthesis* refers to the ability of combining elements in a

new pattern or developing reasonable solutions. *Evaluation* refers to the ability of making judgments based on evidence (Clark, 1999; Whiteley, 2006). Considering their definitions and cognitive requirements, many scholars regard the higher order thinking skills, i.e. analysis, synthesis, and evaluation, as a synonym of critical thinking (e.g. Halpern, 1998; Kennedy, Fisher, & Ennis 1991; Kuhn, 1999; Whiteley, 2006).

To fulfill its relevance to the 21st century, Bloom's taxonomy was revisited and updated, in 2001, by a group of cognitive psychologists including David R. Krathwohl, who was also in the team developing the original version of the taxonomy. In the revised version, three main changes regarding organization, terminology, and hierarchal order were reported. First of all, despite the single dimensional nature of the original version, two dimensions, i.e. the knowledge and cognitive process, are present in the revised version. The knowledge dimension includes three sub-categories that were previously specified in the cognitive domain of Knowledge in the original version, i.e. factual knowledge, conceptual knowledge, and procedural knowledge. In the revised version, however, a new category, i.e. metacognitive knowledge, is added as a result of some developments in cognitive psychology after the original version was created. The metacognitive knowledge involves "knowledge about cognition in general as well as awareness of and knowledge about one's own cognition" (Krathwohl, 2002, p. 214). The cognitive process dimension in the revised version corresponds to six cognitive domains in the original version with changes in terminology and hierarchal order (see Figure 2.2).

Figure 2.2. Revised Version of the Bloom's Taxonomy

As can be seen in Figure 2.2, in order to underline the importance of the active processes in thinking, verbs instead of nouns are used to describe the cognitive domains as follows: *Remember, understand, apply, analyse, evaluate,* and *create*. As can be seen, the last change is related to the order of the domains since *create* (previously *synthesis*) took the place of *evaluate* (previously *evaluation*). The new cognitive domains are also arranged in a hierarchical structure but not as rigidly as in the original version since "the revision gives much greater weight to teacher usage, the requirement of a strict hierarchy has been relaxed to allow the categories to overlap one another" (Krathwohl, 2002, p. 215).

2.3. Dimensions of Critical Thinking

When the concept of critical thinking was first introduced, the 'pure skills' conception of critical thinking (Siegel, 1988) was prevalent. This tradition could be observed in the early characterization of a critical thinker by Ennis (1987), as he stated that "a person is a critical thinker if and only if she has the skills, abilities, or proficiencies necessary for the proper evaluation of statements" (as cited in Siegel, 1988, p. 6). Later on, the 'skills plus tendencies' conception of critical thinking (Siegel, 1988) was recognized. This tradition also showed itself again in Ennis' later addition of the "tendency to exercise the proficiency" to his definition (as cited in Siegel, 1988, p. 6). To this end, in the related literature, two dimensions of critical thinking have been identified as the *cognitive* and the *affective dimension*. While the former dimension includes critical thinking skills, the latter one is referred to as dispositions, i.e. a constellation of attitudes, intellectual virtues, and habits of mind (Facione, Sanchez, Facione, & Gainen, 1995).

Different frameworks involving the cognitive skills and/or dispositions inherent in critical thinking have been offered by various scholars (e.g. Beyer, 1988; Cheung, Rudowicz, Kwan, & Yue, 2002; Ennis, 1987; Facione, 1990; Johnson, 2000; Jones et al., 1995; Norris & Ennis, 1989; Paul, Binker, Martin,Vetrano, & Kraklau, 1989; Potts, 1994; Vargo & Blass, 2013; Watson & Glaser, 1980). For example, Ennis (1987), in his framework, asserted that thinking critically includes the following skills: Focusing on a question, analyzing arguments, asking and answering questions of

clarification and challenge, judging the credibility of a source, observing and judging deductions, inducing and judging inductions, making and judging value judgments, defining terms and judging definitions, identifying assumptions, deciding on an action, and interacting with others (p. 54). In addition, he used the term *critical spirit* to refer to the dispositional dimension of critical thinking and listed the traits that ideal critical thinkers are disposed to as follows: Seeking a statement of the thesis or question, seeking reasons, trying to be well-informed, using credible sources and mentioning them, taking into account the total situation, keeping their thinking relevant to the main point, keeping in mind the original or most basic concern, looking for alternatives, being open-minded, taking a position and changing a position when the evidence and reasons are sufficient to do so, seeking as much precision as the subject permits, dealing in an orderly manner with the parts of a complex whole, employing their critical thinking abilities, and being sensitive to feelings, level of knowledge, and degree of sophistication of others (Ennis, 1987, p. 56).

In another framework by Paul et al. (1989), the critical thinking skills were also listed. In this framework, the critical thinking skills were divided into two categories as *macro cognitive abilities* and *micro cognitive skills* with the purpose of enabling teachers to think about two levels of learning. The listed skills are as follows:

Table 2.1.
Dimensions of Critical Thought: Macro Abilities and Micro Skills

Macro Cognitive Abilities	Micro Cognitive Skills
1. Refining generalizations and avoiding oversimplifications	1. Comparing and contrasting ideals with actual practice
2. Comparing analogous situations	2. Thinking precisely about thinking: Using critical vocabulary
3. Developing one's perspective	3. Noting significant similarities and differences
4. Clarifying issues, conclusions or beliefs	4. Examining or evaluating assumptions
5. Clarifying and analyzing the meanings of words or phrases	5. Distinguishing relevant from irrelevant facts
6. Developing criteria for evaluation	6. Making plausible inferences, predictions, or interpretations
7. Evaluating the credibility of sources of information	7. Evaluating evidence and alleged facts
8. Questioning deeply	8. Recognizing contradictions
9. Analyzing or evaluating arguments, interpretations, interpretations, beliefs, or theories	9. Exploring implications and consequences
10. Generating or assessing solutions	
11. Analyzing or evaluating actions and policies	
12. Reading critically: Clarifying or critiquing texts	
13. Listening critically: The Art of Silent Dialogue	
14. Making interdisciplinary connections	
15. Practicing Socratic discussion	
16. Reasoning dialogically	
17. Reasoning dialectically	

Paul et al. (1989, p. 58)

Paul et al. (1989) explained the difference between the macro and micro cognitive skills by defining macro cognitive abilities as "those which generally require extended use of cognitive skills, emphasizing extended exploration of ideas, perspectives, and basic issues" and micro cognitive skills as "those which highlight a specific, usually brief, critical move" (pp. 13-14). In their frame, Paul et al. (1989) also referred to critical dispositions as affective strategies promoting "intellectual virtues, empathy, and understanding of obstacles to critical thought" (p. 13). They suggested the following affective strategies: Thinking independently, developing insight into egocentricity or sociocentricity, exercising fair-mindedness, exploring thoughts underlying feelings and feelings underlying thoughts, developing intellectual humility and suspended judgment, developing intellectual courage, developing intellectual good faith or integrity, developing intellectual perseverance, and developing confidence in reason (p. 58).

The cognitive skills with related sub-skills of critical thinking were also listed within the Delphi Project by several experts from various disciplines. Facione (1990), the director of the Delhi Project, reported the consensus list as follows:

Table 2.2.
Delphi Report: Consensus List of Critical Thinking Cognitive Skills and Sub-skills with Definitions

Skills	Sub-skills	Definitions
1. Interpretation	Categorization Decoding significance Clarifying meaning	"To comprehend and express the meaning or significance of a wide variety of experiences, situations, data, events, judgments, conventions, beliefs, rules, procedures or criteria" (p. 13).
2. Analysis	Examining ideas Identifying arguments Analyzing arguments	"To identify the intended and actual inferential relationships among statements, questions, concepts, descriptions or other forms of representation intended to express beliefs, judgments, experiences, reasons, information, or opinions" (p. 14).
3. Evaluation	Assessing claims Assessing arguments	"To assess the credibility of statements or other representations which are accounts or descriptions of a person's perception, experience, situation, judgment, belief, or opinion; and to assess the logical strength of the actual or intend inferential relationships among statements, descriptions, questions or other forms of representation" (p. 15).
4. Inference	Querying evidence Conjecturing alternatives Drawing conclusions	"To identify and secure elements needed to draw reasonable conclusions; to form conjectures and hypotheses; to consider relevant information and to deduce the consequences flowing from data, statements, principles, evidence, judgments, beliefs, opinions, concepts, descriptions, questions, or other forms of representation" (p. 16).
5. Explanation	Stating results Justifying procedures Presenting arguments	"To state the results of one's reasoning; to justify that reasoning in terms of the evidential, conceptual, methodological, criteriological and contextual considerations upon which one's results were based; and to present one's reasoning in the form of cogent arguments" (p. 18).
6. Self-regulation	Self-examination Self-correction	"Self-consciously to monitor one's cognitive activities, the elements used in those activities, and the results deduced, particularly by applying skills in analysis and evaluation to one's own inferential judgments with a view toward questioning, confirming, validating, or correcting either one's reasoning or one's results" (p. 19).

As can be seen in the given framework, six skills with 16 related sub-skills of critical thinking were suggested by the Delphi experts. They underlined that the list of skills and sub-skills is not prescribing any educational taxonomy or skill-hierarchy. It was also suggested that it is not a must to be proficient in every skill to be perceived as having critical thinking ability. The experts underlined the importance of dispositions as follows: "As water strengthens a thirsty plant, the affective dispositions are necessary for the CT skills identified to take root and to flourish in students" (Facione, 1990, p. 11). They claimed that an individual may have the competence in critical thinking skills but not have the dispositions to exercise them. Thus, two sets of affective dispositions of critical thinking were reported: A*pproaches to life and living in general* and *approaches to specific issues, questions or problems*. These are listed below:

Table 2.3.
Delphi Report: Affective Dispositions of Critical Thinking

I. Approaches to life and living in general
- Inquisitiveness with regard to a wide range of issues
- Concern to become and remain generally well-informed
- Alertness to opportunities to use critical thinking
- Trust in the processes of reasoned inquiry
- Self-confidence in one's own ability to reason
- Open-mindedness regarding divergent world views
- Flexibility in considering alternatives and opinions
- Understanding of the opinions of other people
- Fair-mindedness in appraising reasoning
- Honesty in facing one's own biases, prejudices, stereo-types, egocentric or sociocentric tendencies
- Prudence in suspending, making or altering judgments
- Willingness to reconsider and revise views where honest reflection suggests that change is warranted
II. Approaches to specific issues, questions or problems
- Clarity in stating the question or concern
- Orderliness in working with complexity
- Diligence in seeking relevant information
- Reasonableness in selecting and applying criteria
- Care in focusing attention on the concern at hand
- Persistence though difficulties are encountered
- Precision to the degree permitted by the subject and the circumstance

Facione (1990, p. 25)

The determined dispositions were later elaborated by Facione, the director of the Delphi Project, and his colleagues. They (1995) determined seven distinctive characteristics of a critical thinker, i.e. *truth-seeking, open-mindedness, analyticity, systematicity, self-confidence, inquisitiveness,* and *maturity*. Below, the description of each characteristic is given in detail.

- *Open-mindedness* is the disposition of "being tolerant of divergent views and sensitive to the possibility of one's own bias" (p. 6).

- *Systematicity* is the disposition of "being organized, orderly, focused, and diligent in inquiry" (p. 7).

- *Analyticity* is the disposition of "prizing the application of reasoning and the use of evidence to resolve problems, anticipating potential conceptual or practical difficulties, and consistently being alert to the need to intervene" (p. 7).

- *Truth-seeking* is disposition of "being eager to seek the best knowledge in a given context, courageous about asking questions, and honest and objective about pursuing inquiry even if the findings do not support one's self-interests or one's preconceived opinions" (p. 8).

- *Self-confidence* is the disposition of "the trust one places in one's own reasoning processes" (p. 8).

- *Maturity* is the disposition of "being judicious in one's decision-making" (p. 9).

- *Inquisitiveness* is the disposition of "one's intellectual curiosity and one's desire for learning even when the application of the knowledge is not readily apparent" (p. 6).

As can be seen in the aforementioned frameworks, there are both similarities and variations across the critical thinking skills and dispositions lists suggested by different scholars. The current literature today emphasizes the complementary nature of the skills and dispositions as an individual may have the competence in critical thinking skills but not have the dispositions to exercise them; or may have the the dispositions to display the habits of a critical thinker but not be cognitively competent enough to carry out necessary cognitive skills (Facione, 1990).

2.4. Assessment of Critical Thinking

To assess the previously-mentioned critical thinking skills and dispositions, various standardized tests have been developed. The most commonly used standardized tests assessing critical thinking are the Watson-Glaser Critical Thinking Appraisal (Watson & Glaser, 1980), the Ennis-Weir Critical Thinking Essay Test (1985), the California Critical Thinking Skills Test (Facione, 1990), and the California Critical Thinking Disposition Inventory (Facione & Facione, 1992).

The Watson-Glaser Critical Thinking Appraisal was developed by Watson and Glaser (1980) to assess five levels of intellectual activities, i.e. inference, recognition of assumptions, deductions, interpretation, and evaluation of arguments. The instrument has 80 multiple choice items. The intended audience is young adults and above.

The Ennis-Weir Critical Thinking Essay Test was developed by Ennis and Weir (1985) to assess critical thinking ability in the context of argumentation. Test takers are presented a letter that includes eight paragraphs written by the editor of a fictional newspaper. They are required to produce an essay as a response to the letter through evaluating the argument of each paragraph and the letter as a whole. The intended audience is high school and college students.

The California Critical Thinking Skills Test was developed by Facione (1990) to assess the core components of critical thinking, i.e. analysis, evaluation, inference, deductive reasoning and inductive reasoning skills, through 34 multiple choice items with four or five options. For each item, a short text is read and the related follow-up question is answered. The test is primarily intended for college undergraduates.

The California Critical Thinking Disposition Inventory was developed by Facione and Facione (1992) to assess the willingness of the college undergraduates to think critically through a 6-point likert-type scale. It consists of 75 items and seven subscales: analyticity, open-mindedness, inquisitiveness, self-confidence, truth-seeking, systematicity, and maturity.

Although there are also other critical thinking assessment tools such as the Cornell Critical Thinking Test (Ennis & Millman, 1985) and Halpern Critical Thinking Assessment (Halpern, 2010), the above-mentioned standardized tests are commonly used in most of the descriptive and experimental studies which are presented in the following sections.

2.5. Research on Critical Thinking

When the related literature is reviewed, two research focuses appear: *Descriptive studies* which aim to determine the critical thinking levels of participants and *experimental studies* which investigate the effects of different instructional methods on participants' critical thinking levels. Studies in both types will be presented in the following sections.

2.5.1. Descriptive Studies on Critical Thinking Levels

A number of descriptive studies compared the critical thinking levels of university students according to certain demographic and/or background variables. For example, Bökeoğlu and Yılmaz (2005) aimed to investigate Turkish university students' critical thinking levels across different variables. A total of 128 undergraduate students from the faculty of educational sciences participated in the study. Data were collected by means of the California Critical Thinking Disposition Inventory translated into Turkish by Kökdemir (2003). Results showed that the level of critical thinking skills of participants was low and significantly differed according to gender (in favor of males) and age (in favor of 21 year-olds).

Similarly, Lampert (2007) investigated the critical thinking levels of 141 undergraduate students at a state university in the USA. The critical thinking levels of the participating students were compared across discipline groups, i.e. arts and non-arts undergraduates, and class rank groups, i.e. freshmen and juniors/seniors. Data were collected by means of the California Critical Thinking Inventory (Facione & Facione, 1992). The critical thinking levels of the students were found to be between moderate and high. Results also

showed that while the critical thinking levels of the juniors/seniors were significantly higher than the freshmen, discipline group was not a significant variable.

Likewise, Tümkaya, Aybek, and Aldağ (2009) studied Turkish university students' critical thinking levels across different variables and the relationship between their critical thinking levels and perceived problem solving skills. In total, 353 students from different departments of a state university participated in the study. Data were collected by means of the California Critical Thinking Disposition Inventory (Facione & Facione, 1996) and the Problem Solving Inventory (Petersen, 1982). Findings showed that students' critical thinking levels were low and grade levels (in favor of senior classes) and field of study (in favor of the Social Sciences department) had a significant effect on their critical thinking levels. However, gender was not reported as a significant variable. It was also concluded that there was a significant positive correlation between students' critical thinking levels and perceived problem solving skills. In other words, students with higher disposition towards critical thinking had better problem solving skills.

Few studies have also been conducted with EFL learners. For example, Dayıoğlu (2003) conducted a study to investigate the critical thinking levels of students studying at the preparatory school of a state university in Turkey. A total of 193 students participated in the study. Data were collected by means of the Watson-Glaser Critical Thinking Appraisal Test translated into Turkish by Çıkrıkçı (1993), an informant form, and an English Proficiency Test developed by the testing unit of the preparatory school. Results showed that the critical thinking levels of EFL students were moderate and significantly differed according to major (in favor of science students), and proficiency level (in favor of pre-intermediate). On the other hand, gender, number of siblings, and the economic/educational status of parents were not reported as significant variables regarding participants' critical thinking levels. In addition, it was concluded that while there is a significant low correlation between participants' critical thinking levels and their L2 reading and writing skills, there was no significant relationship between their critical thinking levels and overall English proficiency levels.

Similarly, Fahim, Bagherkazemi, and Alemi (2010) studied the relationship between the critical thinking levels and L2 reading performance of a total of 83 advanced EFL learners from a private language institution in Iran. Data were collected by means of the Watson-Glaser Critical Thinking Appraisal (1980) and the reading section of the Paper-based TOEFL. Results showed that there was a significant positive correlation between students' critical thinking skills and L2 reading performance. In other words, students with higher levels of critical thinking skills showed better performance in L2 reading comprehension.

In a more recent study, Ghorbandordinejad and Heydari (2012) examined whether there was a correlation between IranianEFL students' critical thinking levels and L2 reading comprehension. In total, 120 undergraduate students from different majors such as Translation, English Literature, and English Language Teaching participated in the study. The data were collected by means of California Critical Thinking Skills Test (Form B) developed by Facione and Facione (1991) and the reading section of a TOEFL test. Results indicated a significant positive correlation between critical thinking levels and L2 reading comprehension.

There are also studies examining PTs' critical thinking levels (e.g. Beşoluk & Önder, 2010; Biber, Tuna, & İncikabi, 2013; Bilen, Ercan, & Akçaozoğlu, 2013; Dutoğlu & Tuncel, 2008; Kürüm, 2002; McBride, Xiang, & Wittenburg, 2002; McBride, Xiang, Wittenburg, & Shen, 2002; Seyhan-Yücel, M., 2013; Şen, 2009; Tümkaya, 2011; Türnüklü & Yeşildere, 2005; Yenice, 2011; Zayif, 2008). The sample size of the population is large in some of these studies. For example, Kürüm (2002) examined the critical thinking levels and the factors influencing critical thinking of Turkish PTs majoring in different programs. In total, 1047 PTs participated in the study and data were collected by means of the Watson-Glaser Critical Thinking Appraisal (Watson & Glaser, 1980). Results showed that PTs' critical thinking levels were moderate and significantly differed in many respects such as age (in favor of 18-21 year-olds), the high school they graduated from (in favor of Anatolian high school graduates), university entrance exam score (in favor of higher scorers), major (in favor of

Primary School Mathematics Teaching Department), their parents' educational and socio-economic status (in favor of higher education graduate and high-income parents), and the activities they were busy with to improve themselves (in favor of socio-cultural activities). On the other hand, gender and grade level were not reported as significant variables.

In the same line, McBride, Xiang, and Wittenburg (2002) examined the critical thinking levels of 202 pre-service physical education students from nine public universities in the U.S.A. Data were collected by means of the California Critical Thinking Inventory (Facione & Facione, 1992). Results showed that the critical thinking levels of the participating PTs were moderate and there was a significant gender difference on the critical thinking levels, in favor of female PTs.

Likewise, Zayif (2008) investigated Turkish PTs' critical thinking levels across gender, type of high school they graduated from, their majors, grade level, and academic achievement. A total of 502 PTs from the Faculty of Education at a state university participated in the study. Data were collected by means of the California Critical Thinking Disposition Inventory translated into Turkish by Kökdemir (2003). Findings showed that the critical thinking levels of PTs were low in general and there were significant differences in their critical thinking levels according to gender (in favor of males), major (in favor of science department), and grade level (in favor of junior classes). However, participants' academic achievement and type of school they graduated from did not affect their critical thinking levels significantly.

Similarly, Tümkaya (2011) aimed to find out the critical thinking levels of Turkish PTs with respect to different variables. In total, 650 PTs from different departments of a state university participated in the study. Data were collected by means of the California Critical Thinking Disposition Inventory translated into Turkish by Kökdemir (2003). Results showed that the critical thinking levels of the participants were low and the ones having higher academic success were significantly better than the others regarding the critical thinking levels. On the other hand, gender and grade levels of the participants had no significant effect on their critical thinking levels.

There are also studies specifically examining the critical thinking levels of Turkish PTs of English. For example, Alagözlü (2007) aimed to find out whether Turkish PTs of English displayed elements of critical thinking in their essays and how they perceived themselves in these elements. Data were collected from 76 PTs in a literature course by means of their argumentative essays, which were analyzed through the criteria by Stapleton (2001), and a questionnaire adapted from Stapleton (2001). Results showed that although participants reported that they had a high level of critical thinking, the analysis of their essays did not confirm this finding. In their essays, there were a lot of claims without enough reasons/evidence, and recognition/refutation of opposing arguments was neglected.

Similarly, Alagözlü and Süzer (2010) compared the critical thinking levels of Turkish PTs of English in their written texts both in Turkish (L1) and English (L2). A total of 30 PTs participated in the study and they were grouped on the basis of their GPA scores to ensure that the groups were homogenous. While the group 1 was supposed to write a Turkish essay as a response to the arguments in a letter, the group 2 was asked to write the respond letter in English. English essays were tested through the Ennis-Weir Critical Thinking Essay Test developed by Ennis and Weir (1985) and Turkish essays were tested with the back-translated Turkish version of it. Scores were analyzed by means of a checklist suggested by Ennis and Weir (1995). Results showed that the critical thinking levels of Turkish PTs of English were quite low. In spite of the researchers' expectations, the participants' critical thinking levels demonstrated in English essays were higher than their critical thinking levels in Turkish essays. However, this difference between the groups was not significant.

It can be concluded from the studies reviewed that the critical thinking levels reported in the studies conducted abroad and in Turkey were inconsistent. More specifically, mostly moderate and high levels of critical thinking were reported in the studies conducted abroad while low and moderate critical thinking levels were commonly found in the studies conducted in Turkey. Similarly, the findings regarding the impact of certain variables such as age, gender and grade level on the critical thinking levels were also

varied. Finally, it was seen that the studies conducted with Turkish EFL learners and PTs of English were limited in number.

2.5.2. Experimental Studies on Teachability of Critical Thinking

Considering the importance of critical thinking in education, several studies investigated the effects of different instructional methods on students' critical thinking levels. For example, Liaw (2007) studied the effects of content‑based reading and writing course on junior high school EFL students' critical thinking levels. The reason to choose content-based language instruction to promote critical thinking skills was given as "the pervasiveness of language in the teaching of all subjects and the close ties of oral and written language to thinking" (p. 48). A total of 32 Taiwanese students participated in the 5-week study. During the study, critical thinking tasks were designed through incorporating (1) the contextualized tasks from different cognitive domain levels, (2) students' prior knowledge and experience, and (3) frequent assessment of the students' progress. Data were collected by means of two instruments: Critical Thinking Test Level 1 (Yeh, 2013) which includes 25 multiple-choice questions on assumption identification, induction, deduction, interpretation, and argument evaluation and students' written works evaluated through Bloom's taxonomy. The comparison of pre- and post-scores in the critical thinking test showed that the difference between two scores was not significant. However, the examination of students' written works revealed that students could fulfill the requirement of all six cognitive domains identified by Bloom (1956).

Korkmaz and Karakuş (2009) investigated the effects of blended learning on Turkish high school students' critical thinking levels. A total of 57 students participated in the study and they were randomly assigned to the experimental and control groups. The study was conducted in a Geography course and lasted 4 weeks. The experimental group was instructed through both in-class and out-class activities with the help of a webpage designed specifically for the study. On the webpage, students were presented with extra explanations and examples. In addition, students from the experimental group were required to complete the activities supplied on the website and e-mail their assignments to

their teachers. However, the control group was instructed through the traditional method in which only in-class activities along with the lecture and question-answer sessions as led by the teacher were available. Data were collected by means of the Critical Thinking Disposition Inventory translated into Turkish by Kökdemir (2003) which was administered before and after the study. The comparison of the pre- and post-scores in critical thinking test revealed that the critical thinking levels of the experimental group students increased significantly at the end of the study. In addition, the comparison of the post-test scores of the groups showed that the blended learning model was more effective than the traditional method in improving critical thinking levels.

Aydede and Kesercioğlu (2010) conducted a study to examine the effects of active learning applications on Turkish students' critical thinking skills in a Science and Technology course. A total of 64 eight grade students participated in the study and they were assigned to the experimental and control groups. Data were collected by means of the Critical Thinking Skills Interview Form developed by Alkaya (2006) to assess students' critical thinking skills under three subsets: Affective strategies, cognitive strategies-micro skills, and cognitive skills-macro skills. During the 10-week study, while the control group had regular instruction designed according to Science and Technology course teaching description by Turkish Ministry of Education, the experimental group had instruction according to active learning applications (i.e. case studies, mind maps, projects, open-ended experiments, computer-assisted learning, observation, discussion/inquiry-based activities). Results showed that critical thinking scores of the experimental group were significantly better than the control group.

In the U.S, Çavdar and Doe (2012) conducted a study in a Comparative Politics course to examine the effects of a two-staged writing assignment with a reflection postscript on students' critical thinking skills. The two-staged writing model was developed by the researchers based on Watson-Glaser Critical Thinking Appraisal which includes five levels of intellectual activities, i.e. inference, recognition of assumptions, deductions, interpretation, and evaluation of arguments. In this model, students were required to write an essay in which they were to identify and evaluate solutions suggested by two political

ideologies, i.e. liberalism and social democracy, on the health care in the United States. The health care in the United States was previously covered neither in the class nor by the textbook. In other words, students had to think on this novel topic without being influenced from previously discussed materials. In the first part of their essays, students were required to explain both ideologies by only benefiting from the descriptions provided in the course material and find out their implicit assumptions and basic arguments (*recognition of assumptions*). In the second part, students were to apply the political ideologies to the health care issue and speculate on their possible positions in relation to this matter (*inference*). In the last part, students were to compare and contrast the arguments of both ideologies and make their own arguments (*interpretation and evaluation of arguments*). Once they received instructor's feedback on the first draft of their essays, students were asked to conduct an additional research on the issue and benefit from various sources in their final drafts. In that way, they had a chance to think critically on the conclusion they had previously drawn by considering new information (*deduction*). The final step of the model was writing a postscript which let students assess their own revisions, reflect on the process and the development of their ideas. The investigation of the written works indicated a great progress between two papers as the arguments of students, definitions and distinctions between the ideologies became clearer in the final papers. Furthermore, in the postscripts, students reported that they had a chance to comprehend the ideologies and the distinctions between them better with the help of the second stage of the writing assignment, to revisit and develop their arguments through the instructor's feedback and additional research, and to integrate theory and practice by means of considering real world consequences of various ideologies.

There are also studies examining the effectiveness of critical thinking strategy training on students' critical thinking levels. For example, Davidson and Dunham (1997) carried out an experimental study to investigate the effectiveness of critical thinking training on Japanese EFL students' critical thinking levels. A total of 36 first-year junior college students studying extensive academic English program participated in the study and they were assigned to the experimental and control groups. The experimental group students were instructed through content-based method and additional explicit instruction on the

critical thinking skills as suggested by Ennis and Norris (1989). These strategies were elementary clarification, basic support, inference, advanced clarification, and strategies and tactics. On the other hand, the control group students were instructed through traditional content-based method without any explicit or implicit emphasis on critical thinking skills. After a year of extensive academic English instruction, data were collected by means of the Ennis-Weir test (Ennis & Weir, 1985). Results showed that the critical thinking levels of the experimental group students were significantly better than the control group students.

Similarly, Çubukcu (2011) conducted a study to examine whether the critical thinking strategy training improves Turkish students' critical thinking skills. A total of 80 fifth graders participated in the study and they were assigned to the experimental group and control groups randomly. While the experimental group studied the given texts through critical thinking strategies based on Bloom's taxonomy, the control group studied them through comprehension questions and classroom discussions. The study lasted 3 weeks during which both groups were required to complete a template with steps such as identification of the problem, relevant assumptions, and resolutions for each reading text. Data were collected by means of the Holistic Critical Thinking Scoring Rubric by Facoine and Facoine (1996). Results showed that the experimental group outperformed the control group on critical thinking scores.

The effects of implementing critical thinking instruction on EFL students' different language skills have been investigated in a number of studies. For example, Şenkaya (2005) studied the effects of critical thinking skills on success in L2 writing. Two intact classes with 40 university students studying at a preparatory school in Turkey were randomly selected for the study. One class with 20 students was assigned to the experimental group and they were instructed through critical thinking skills as suggested by Paul et al. (1990), i.e. macro-cognitive abilities, micro-cognitive abilities, and affective strategies. The other class, on the other hand, was assigned to the control group and they used traditional writing methods. Data were collected by means of two progress tests, administered at the beginning and at the end of the study, and a researcher-made

rating scale to assess the writing parts of the tests. Results showed that the experimental group outperformed the control group on overall writing scores as well as the scores gained from all sub-sections: vocabulary, organization/content, and language use.

Fahim and Sa'eepour (2011) carried out a quasi-experimental study to examine the effect of the critical thinking strategy training on Iranian students' critical thinking skills and on reading comprehension ability. A total of 60 female high school and freshmen students at university participated in the study. Data were collected by means of the Critical Thinking Appraisal Test and a researcher-made reading comprehension test administered before and after the treatment. The study lasted 8 sessions and during the treatment, while the control group had traditional reading instruction, the experimental group studied the content through the principles of critical thinking with the help of implementing debate as a classroom activity. The debate sessions were as follows: (1) students were given relevant texts on a controversial issue to read at home and to equip themselves with relevant information, (2) students were expected to list pros and cons of the issue before they came to the class, (3) students were divided into small groups to share their ideas and think about the arguments of the other side, (4) debaters were divided into two opposing groups: Affirmative and negative, (5) debaters presented their arguments, (6) the instructor summarized students' opinions, assessed weaknesses/strengths, let students express their ideas on the side they found more convincing, and (7) student wrote about the overall conclusion of the lesson and their final decision on the issue. Results showed that the experimental group had significantly higher scores on reading comprehension test, yet there was no significant difference between the groups in terms of their critical thinking levels.

Moghaddam and Malekzadeh (2011) conducted a study to investigate the effects of explicit critical thinking instruction on L2 writing performance of 70 EFL learners in Iran. Participants were grouped as proficient learners (31 students) and less-proficient learners (39 students) according to their placement test scores. Both groups were presented an unfamiliar and a familiar topic to write a composition on, in order to measure the effect of background knowledge on the success in L2 writing. Having

written the first drafts of their compositions, students were taught four underlying principles of critical thinking suggested by Cottrell (2005): Evaluating the evidence for alternative points of view, considering and evaluation opposing arguments and evidence fairly, using techniques such as false logic and persuasive devices, and presenting a point of view in a structured and well-organized manner. After being taught these principles, students were asked to write about the same topics again. The analyses of compositions revealed that explicit teaching of critical thinking improved students' L2 writing ability qualitatively and quantitatively even for the compositions written on the unfamiliar topic. This implied that critical thinking remained useful regardless of the familiarity of the topic. Also, it was noted by the researchers that the treatment had a better effect on proficient learners.

Fahim, Barjesteh, and Vaseghi (2012) investigated the effects of critical thinking strategy training on undergraduate students' L2 reading comprehension levels. A total of 240 Iranian students majoring in the department of English Language and Literature participated in the study. Participants were assigned to the experimental and control groups. The experimental group received instruction on the critical thinking skills as suggested by Facione (1990), i.e. interpretation, analysis, evaluation, inference, explanation, and self-regulation. On the other hand, the control group followed the traditional instruction. Data were collected by means of a researcher-made reading comprehension test which was administered at the end of the study. Results showed that the experimental group was significantly better that the control group on L2 reading performance.

Fahim and Hashtroodi (2012) examined the effects of teaching techniques of critical thinking on Iranian university students' L2 writing performance. A total of 59 freshman university students participated in the study and they were assigned tothe experimental and control groups. The experimental group was instructed through a supplementary program called Thesis-Analysis-Synthesis key (TASK) developed by Unrau (1991) and two passages from the book *For and Against* by L. G. Alexander (1968). TASK aims to guide students "in the analysis and synthesis of thesis statements, in the construction of

antithetical arguments, in the search for good reasons to support both claims and counterclaims, and in the creation of a meaningful reading or of an organized composition" (Unrau, 1991, p. 16). On the other hand, the control group was instructed through traditional composition course. Data were collected by means of students' argumentative essays before and after the study. The comparison of the experimental group's pre- and post-test scores revealed that their critical thinking skills increased significantly at the end of the study. However, the difference between the post-test scores of the experimental and control groups was not significant.

Some studies focused on the effects of different instructional methods on PTs' critical thinking levels. For example, Kong (2006) examined the effects of a cognitive-infusion intervention on the critical thinking skills and dispositions of PTs from the primary school teaching program in Singapore. A total of 136 PTs participated in the study and they were assigned to the experimental and control groups. The experimental group was instructed through the Cognitive-Infusion Intervention Module (CIM) which focused on both theoretical and practical dimensions of thinking. This model attempts to include "both the contents (i.e. concepts, principles, generalizations, problems, facts, definitions, etc.) and processes (i.e. strategies and skills) without leaving out the motivational or effective dimension of teaching thinking" (p. 4). On the other hand, the control group was instructed through traditional instruction. The study lasted 10 weeks and data were collected by means of the Watson-Glaser Critical Thinking Appraisal developed by Watson and Glaser (1980) and the California Critical Thinking Disposition Inventory developed by Facione, Facione, and Giancarlo (2000). Results showed that the critical thinking skills and dispositions of the experimental group were significantly higher than the control group.

Akyüz and Samsa (2009) carried out a pre-test, post-test single group model experimental study to investigate the effects of a blended learning environment on the critical thinking skills of PTs from the Computer and Instructional Technology department at a state university in Turkey. A total of 44 PTs participated in the study and data were collected by means of the Watson-Glaser Critical Thinking Appraisal Test translated into Turkish

by Çıkrıkçı- Demirtaş (1993). The test measured PTs' critical thinking skills under five subsets: Inference, recognition of assumptions, deduction, interpretation, and evaluation of arguments. During the 5-week study, the blended learning environment for the course of Design and Use of Instructional Material was created through the use of chat rooms and forums. Students were required to participate in the classroom/online discussions, to reflect on the process, and to prepare a lesson plan on an instructional material presented in the curriculum. Results showed that there was no significant difference between the pre-test and post-test scores of the participants. In other words, blended learning instruction did not improve PTs' critical thinking levels significantly.

Tok and Sevinç (2010) studied the effects of Thinking Skills Training Program on the critical thinking skills of Turkish PTs and their perception of problem solving skills. A total of 101 senior PTs majoring in pre-school teaching program at a state university participated in the study. A quasi-experimental design was used and participating PTs were randomly assigned to one experimental group and two control groups. While the experimental group was instructed through the Successful Intelligence Method developed by Sternberg (1999) and Thinking-based Inquiry developed by Sternberg and Fisher (2003), control group 1 was instructed through only thinking-based inquiry, and control group 2 was instructed through traditional method without any specific instruction on either thinking or successful intelligence. Data were collected by means of Watson-Glaser Critical Thinking Appraisal translated into Turkish by Çıkrıkçı (1992) and the Problem Solving Inventory developed by Heppner and Petersen (1982). The comparison of the pre- and post-test scores of the experimental group showed that their critical thinking skills increased significantly at the end of the study. In addition, the experimental group outperformed both control groups in their post-critical thinking scores. However, the post-problem solving scores of the experimental group were found to be significantly less than both control groups.

Temel (2014) examined the effects of problem-based learning on the critical thinking skills and perceptions of problem-solving ability of Turkish PTs. In total, 49 PTs from the Department of Secondary Science and Mathematics Education at a state university

participated in the study. Participants were randomly assigned to the experimental and control groups. While the control group was instructed through traditional method, the experimental group was instructed through the principles and applications of problem-based learning through five stages. At the first stage, having been divided into five sub-groups, the experimental group students were presented a problem scenario by the researcher, asked to analyze it and determine what they know/do not know/need to know about it. They were also required to list the key issues to be learned and define a problem state in the problem scenario. At the end of the first stage, groups were to gather information regarding the key issues. At the second stage, groups presented what they had found as a result of their research. Through group discussions, each group negotiated on a single problem state. For example, as their topic was "acid-base", one of the consensus state problems was "*If a child drinks a corrosive substance by mistake, what should be done?*" (p. 8). Then, each group was to determine sub‑problems and form hypotheses about them. At the end of the second stage, groups were to gather information to address the areas of deficiency in their knowledge. At the third stage, all groups made summaries of the previous stages. They also revised their hypotheses and made corrections based on the research they had done. Finally, they were to determine solutions for their sub‑problems. At the fourth stage, the groups reflected on the whole process and prepared a list of things that they had done. In this stage, students were also asked to examine the solutions offered by other groups and decide on the best one. At the fifth stage, the groups were encouraged to consider problems, sub‑problems, hypotheses, and solutions. Then, they were to prepare a report on what they had learned about their problem scenario and present it in the classroom. Data were collected, at the beginning and at the end of the study, by means of the California Critical Thinking Disposition Inventory translated into Turkish by Kökdemir (2003) and the Problem‑Solving Inventory translated into Turkish by Savaşır and Şahin (1997). Results showed that the critical thinking levels of the participants were low and their problem-solving ability levels were moderate. The comparison of pre‑ and post‑test scores of the experimental group in the critical thinking test showed that although there was an improvement at the end of the study, this difference was not statistically significant. Regarding the

participants' perceptions of their problem‑solving ability, post‑test scores of the experimental group were reported to be significantly lower than their pre-test scores.

In sum, different instructional methods have been implemented to examine their effects on the critical thinking levels of the participants. The results, however, are found to be inconsistent as some of the methods created significant differences whereas some of them did not. In the current study, WebQuest, a Web-based classroom learning tool, was chosen as the instructional method to be implemented since it is regarded as effective in promoting critical thinking needed in today's technology‑oriented world by various studies in the literature.

2.6. WebQuest

WebQuest is a term coined by Bernie Dodge and described as "an inquiry-oriented activity in which some or all of the information that learners interact with comes from resources on the Internet" (Dodge, 1997, para. 2). Later, this definition was elaborated by Tom March, the co-creator of WebQuest, as "a scaffolded learning structure that uses links to essential resources on the World Wide Web and an authentic task to motivate students' investigation of a central, open-ended question, development of individual expertise, and participation in a final group process that attempts to transform newly acquired information into a more sophisticated understanding" (March, 2004, p. 42).

WebQuest design usually follows five main sections, namely "building blocks" (Dodge, 1998): (i) *introduction* is the step in which background information related to the topic of the WebQuest is provided to prepare learners to the assigned task, (ii) *task* is a description of the activity that learners are supposed to complete at the end of the process, (iii) *process* is a detailed guideline that provides step‑by‑step instruction and pre‑selected Internet resources to be followed in order to complete the assigned task, (iv) *evaluation* informs learners about how their products will be assessed in the form of a checklist or a rubric, and (v) *conclusion* gives learners a chance to reflect on both the process undertaken throughout the WebQuest and the end product of it. March (1998) underlined that learners do not get information collected from online sources directly in WebQuest,

but rather they transform it into something new as they need to analyze, synthesize, and evaluate information while considering an issue to suggest a solution. Furthermore, March (1998) asserted that this newly constructed understanding does not only connect to learners' schematic knowledge, but also builds new awareness that could be refined when they encounter similar problems in the future. Along the same line, Crawford and Brown (2002) claimed that WebQuest encourages critical thinking skills as it reinforces learners' complex cognitive processes during which learners are required to examine large amounts of information until they comprehend the problem (the main question of the WebQuest) and offer a solution (the main task of the WebQuest) to it.

2.7. Research on WebQuest

In the related literature, WebQuest studies have generally investigated the effects of WebQuest-supported instruction on students' achievement or/and attitude (e.g. Akçay & Şahin, 2012; Awada & Ghaith, 2014; Chang, 2007; Doğru & Şeker, 2012; Doğru, Şeker, & Gençosman, 2011; Gorrow, Bing, & Royer, 2004; Gökalp, 2011; Kightlinger, 2006; Kurtuluş & Kılıç, 2009; Ünal & Altıparmak, 2013) and motivation (e.g. Gowen, 2010; Halat, 2008; Halat & Peker, 2011; Halat & Karakuş, 2014; Nicol, 2009; Woodard, 2003). Yet, for the purposes of the current study, WebQuest studies specifically focusing on critical thinking and L2 language skills were included in the following sections.

2.7.1. Studies on Critical Thinking and WebQuest

Whether WebQuest improves critical thinking skills or not has been investigated in several studies so far. For example, Vidoni and Maddux (2002) compared the WebQuest format to a critical thinking framework proposed by Weinstein (2000) and concluded that WebQuest met all six of Weinstein's key concepts, i.e. skillful thinking, responsible thinking, non-routine thinking, employing criteria, self-correction, and sensitivity to context, and therefore could be seen as a powerful tool having the capacity to promote critical thinking skills in students.

Some studies focusing on critical thinking and WebQuest were designed in students' native languages in different subject areas such as Computer Technology, Mathematics, and Chemistry. For example, Kanuka (2005) conducted an action research to investigate the effectiveness of five instructional strategies, i.e. nominal group, debate, brainstorming, invited guest, and WebQuest, in higher levels of learning, namely critical thinking, problem-solving skills, and knowledge construction. Nineteen students enrolled in a fourth-year undergraduate program at a Western Canadian research university participated in the study and data were collected through observer notes and participants' essays assessed by another instructor using the SOLO (Structure of the Observed Learning) Outcome taxonomy (Biggs, 1999). The results of the study showed that the WebQuest was more effective than other instructional strategies at creating the conditions necessary for promoting higher levels of learning.

In another study, Murry (2006) investigated how a WebQuest promoted higher level thinking skills of 21 middle school students in Northwest Georgia. Data were collected in a Computer Technology course by means of teacher-made rubrics, student attitude surveys, a teacher journal, informal student interviews, and teacher observations. During 12 days of the intervention period, participants chose an Australian ethnic group and read specific information about it to be able to create a group PowerPoint presentation. The findings of the study showed that the WebQuest promoted higher level thinking skills of participating students through sequential activities which asked students to evaluate information provided to create an end product, the PowerPoint presentation, and evaluate the product through the given rubrics.

Yücel (2011) investigated the effects of WebQuest-supported Mathematics instruction on sixth grade students' critical thinking levels. In total, 37 students studying at a state primary school in Turkey participated in the study and they were assigned to the experimental and control groups. While the control group students were instructed through standard curriculum prescribed by the Ministry of National Education, the experimental group students were instructed through WebQuest-supported Mathematics instruction. The unit of "Prisms and Measurement" was chosen to be implemented in

both groups since it required students to use their abstract thinking effectively. In the experimental group, a sample procedure for the topic "surface area of prism" was as follows: Students were to decide on their dream houses' plans (i.e. how many rooms etc.). They drew their plans on graph papers. They were also asked to create a model of their plans based on the real sizes. Then, they explored the provided links given on the WebQuest to determine the calculation of surface area, the amount of paint to be used, and money to be spent accordingly. Finally, the students prepared a report on their project based on the information they had gained throughout the process and they shared their reports with the rest of the class. The study lasted 4 weeks and data were collected by means of the Critical Thinking Skills Scales (Demir, 2006) measuring participants' critical thinking skills under six subsets: Analysis, evaluation, inference, interpretation, explanation, and self-regulation. Results showed that there was no significant difference between the experimental and control groups regarding their critical thinking levels at the end of the study.

Zhou et al. (2012) studied the effectiveness of integrating WebQuest into Chemistry instruction to promote students' critical thinking levels. A total of 50 students studying at a high school in China participated in the study. During the study, four chemistry topics were implemented through the following steps: The teacher introduced the topic within a scenario. Then a complex task was assigned to the students. The teacher provided some resources relevant to the topic on the WebQuest. The students were also required to find their own resources to complete the assigned task in groups of five. Once they completed their research, students were asked to make an oral presentation. The last step was class discussion to make a conclusion regarding the studied issue. The study lasted 4 months and data were collected by means of the California Critical Thinking Disposition Inventory (Facione & Facione, 1996) and the California Critical Thinking Skills Test (Facione, 1994). The comparison of pre- and post-scores in the instruments revealed a significant improvement in participants' critical thinking skills and dispositions at the end of the study.

Compared to the studies conducted in students' native languages in different subject areas, the number of studies examining the effects of WebQuest-supported instruction on critical thinking skills in EFL classes is scarce. For example, Puthikanon (2009) conducted a study to investigate the extent to which the EFL students with intermediate English proficiency used critical thinking when completing a WebQuest task in a reading course. In total, 39 students studying at a university in Thailand participated in the study. During the 3-month study, three WebQuests were implemented as follows: In class, the teacher introduced a controversial topic (e.g. euthanasia) with the help of an article or a YouTube video posted on the WebQuest. Then, they discussed the article or video in groups of four and answered the questions provided on the WebQuest. Once they discussed the article or video and related questions as a whole-class, the students were to choose one of the perspectives, i.e. a doctor, a lawyer, a terminally ill patient/their family, provided on the WebQuest and read the assigned resources at home. After that, students studying the same perspectives formed groups in class and went over the articles they had read and exchanged ideas. In that way, they internalized their own perspectives. In the following lesson, students representing different perspectives came together and discussed euthanasia. This allowed students to become familiarized with the other perspectives of the topic. After all, each group was required to pool their research findings to form a group opinion regarding the main topic of the WebQuest, which is a complex and open-ended question (e.g. Should euthanasia be legalized in Thailand?), to prepare a PowerPoint and to share it with the rest of the class. Finally, they were required to write about a question similar to the main question of the WebQuest at home as homework. Data were collected by means of classroom observations, students' group discussions, students' written products, interviews, and background questionnaires. To determine how students used critical thinking while completing the WeQuest task, students' group discussions and oral presentation sessions were recorded and transcribed. The transcriptions were analyzed based on a rubric which includes five dimensions: Understanding the main problem of the WebQuest, considering relevant contexts (e.g. social, cultural, legal contexts), developing group position, summarizing and analyzing supporting data and evidence from each viewpoint, and discussing/integrating

information from relevant perspectives. Students' written products were evaluated using a rubric which, similarly, focuses how students synthesize information from different perspectives and support their individual positions with evidence. Classroom observations and interviews were used to triangulate the data. The results of the study showed that regardless of their proficiency levels, students used critical thinking during the WebQuest activity at a relatively high level. However, while higher proficiency students were able to transfer their opinions and reasoning into the end products of the WebQuest, students with lower proficiency seemed to find such tasks hard to do.

Similarly, Bizri (2010) investigated the effects of WebQuest-supported instruction on Lebanese high school students' critical thinking skills. A total of 48 students in an English language summer course at a private school participated in the study. During the 3-month study, a WebQuest on the dangers of drinking and driving was implemented as follows: Students conducted a research by using the given links on the WebQuest to answer some pre-prapered questions such as "What makes teenagers drink?" and "What programs are available to help people with drinking addiction?". In that way, they gained background knowledge on the issue. Then, they were asked to examine the other links provided on the WebQuest to prepare a brochure about the myths and realities of drinking and driving. After that, in order to understand the effects of advertisements on teenage drinking behavior, the students analyzed some promotional alcohol advertisement as linked from the WebQuest and answered pre-prepared questions such as "Are there obvious messages you can find?", "Are there any hidden messages?", "What is the target audience?". As a final product, the students were to consider their previous research and write a persuasive letter to one of their friends on the threshold of committing to drinking. Data were collected before and after the study by means of the Cornell Critical Thinking Test (Ennis & Millman, 1985) and results showed that WebQuest-supported English instruction led to a significant increase in the critical thinking levels of the participants.

2.7.2. Studies on WebQuest and Language Skills

The effects of WebQuest on different L2 language skills have been examined in various studies. For example, Tsai (2005) aimed to find out the effects of WebQuest-supported instruction on Taiwanese EFL college students' vocabulary acquisition and reading performance in a reading course. A quasi-experimental research designed was employed and 90 junior-year EFL students (44 students in the experimental group and 46 students in the control group) participated in the study. While the experimental group had WebQuest-supported instruction, the control group had traditional instruction for 4 weeks. Data were collected through the researcher-designed reading comprehension assessment before and after the treatment. The findings showed that the experimental group had higher vocabulary and story reading performance than the control group, yet there was no significant difference between the groups in their thematic reading performances.

Chuo (2007) conducted a study to investigate the effects of the WebQuest Writing Instruction (WQWI) program on Taiwanese EFL learners' writing performance and writing apprehension. Two intact junior college classes with 54 students in each were randomly assigned as the experimental and control groups. While the experimental group received WebQuest-supported writing instruction, the control group received traditional classroom writing instruction. The data were collected by means of the Writing Performance Test developed by the researcher and the Daly-Miller Writing Apprehension Test (Daly & Miller, 1975). The results of the study showed that the experimental group outperformed the control group on writing performance. In addition, the experimental group experienced significant reduction in writing apprehension. However, no significant difference in reduced apprehension could be found between the two groups.

Prapinwong (2008) aimed to examine the effects of WebQuest-supported instruction on students' vocabulary acquisition. Data were collected from 18 Thai university students in an English reading course by means of students' vocabulary pre-tests and post-tests. Results showed that the use of WebQuest had statistically significant positive effects on students' vocabulary acquisition.

Koçoğlu (2010) compared the reading and writing performances of first‑year ELT students who used WebQuest in instruction to the ones who received traditional teacher‑led reading/writing tasks. A total of 27 Turkishstudents (13 students in the experimental group and 14 students in the control group) participated in the study. Data were collected by means of a reading performance test and a writing performance test administered before and after the treatment. Results showed that the experimental group outperformed the control group on reading scores. However, both group showed equal performances in writing tests.

Alshumaimeri and Almasri (2012) investigated the effects of WebQuest-supported instruction on Saudi male EFL students' reading performances. A total of 83 students (42 students in the experimental group and 41 students in the control group) participated in the study and data were collected through pre‑ and post‑reading comprehension tests. While the experimental group received WebQuest‑supported instruction, the control group received traditional instruction for 4 weeks. The findings indicated that the post‑tests scores of the experimental group were significantly better than the control group.

Alshumaimeri and Bamanger (2013) explored the effects of WebQuest-supported instruction on Saudi EFL students' writing performances. A total of 14 Saudi male students, who were randomly assigned to the experimental and control groups, participated in the study. While the experimental group students had WebQues-supported writing instruction, the control group students continued with the traditional instruction for 5 weeks. Data were collected through pre‑ and post‑writing tasks. Results showed that the writing performances of the experimental group students were significantly better than the control group students in terms of length, vocabulary and grammar.

To summarize, as reviewed above, the research on WebQuest show that WebQuest-supported instruction has been mostly found to be effective in promoting critical thinking skills of learners in different subject areas such as Computer Technology, Mathematics, and Chemistry. The studies conducted with EFL learners were limited in number and reported different findings. While some of the studies showed significant improvement in language skills, others did not. Similarly, although it is acknowledged that teachers need to be critical thinkers themselves to be able to promote this skill in their classes, the studies conducted with PTs of English were also limited in number.

Thus, the present study aims to fulfill this gap in the literature by addressing the following research questions:

1. Will there be a significant difference between the Turkish PTs of English who receive traditional instruction and those who receive WebQuest-supported critical thinking instruction in terms of their:
   a. critical thinking disposition levels?
   b. L2 writing performance?
2. Will there be a change in the PTs' understanding of critical thinking at the end of the study?
3. What are the PTs' opinions about the WebQuest-supported instruction?

CHAPTER III: METHODOLOGY

This chapter discusses context and participants of the study, research design, data collection and data analysis procedures employed in detail.

3.1. Context

This study was conducted in the English Language Teaching Department of a state university in Istanbul, Turkey. Following the curriculum proposed by the Higher Education Council, the 4-year English Language Teaching Program offers basic skills courses such as *Contextual Grammar I-II, Advanced Reading* and *Writing I-II,* and methodology courses such as *Approaches to ELT I-II* and *Second Language Acquisition*. This study was conducted in *Advanced Reading and Writing I* course which is described in the following section.

3.2. Advanced Reading and Writing I Course

Advanced Reading and Writing I is one of the compulsory courses offered to freshman PTs in the first term for three hours a week. This course aims to enhance PTs' proficiency in academic reading and writing through integrated instruction of these skills. Throughout the term, PTs first learn sub-skills of academic writing, such as writing a topic sentence, generating supporting ideas, developing a thesis statement and a concluding sentence. Following that, they focus on paragraph writing, i.e. unity, coherence, and outlining. Finally, PTs read various academic reading passages written in different genres on various topics and learn how to write cause and effect, and argumentative essays. Process writing approach is followed in the course. PTs write their essays on the topic of the readings, get peer feedback on the first draft of their essays, get teacher feedback on the second draft of their essays, and submit the final version to the instructor for evaluation. The essays are evaluated out of 100 points based on a rubric measuring students' writing performance under three subsets: organization, useof language, and content.

3.3. Participants

In the department where the study was conducted, all classes are held in four sections. For the present study, two intact classes were randomly chosen from four classes. All participating PTs, ranging from 18 to 25 years of age, were native speakers of Turkish and only a few of them had stayed in English speaking countries more than a week. Forty of them graduated from Anatolian teacher high schools (66.6%) and 20 of them graduated from Anatolian high schools (33.3%). Only three PTs (5%) received language preparatory education previous year while the rest (95%) had passed the proficiency exam by getting the required scores for B1 level as defined within the CEFR (Common European Framework of Reference). Advanced Reading and Writing I course was offered to the randomly-assigned experimental group (N=30: F_{emale}=25; M_{ale}=5) by the researcher while the control group (N=30: F_{emale}=23; M_{ale}=7) was taught by another instructor of the department.

3.4. Data Collection Instruments

For the purposes of this study, both quantitative and qualitative data were gathered. Quantitative data were collected by means of the Turkish version (Kökdemir, 2003) of the California Critical Thinking Disposition Inventory (Facione & Facione, 1992), PTs' argumentative essays, and the closed items of the WebQuest Opinion Survey developed by Prapinwong (2008). Qualitative data came from the open-ended questions of the WebQuest Opinion Survey (Prapinwong, 2008) and focus group interviews.

3.4.1. California Critical Thinking Disposition Inventory-Turkish (CCTDI-T)

To find out whether there will be a significant difference between the PTs who received traditional instruction and those who received WebQuest-supported critical thinking instruction in terms of their critical thinking disposition levels, the Turkish version of the California Critical Thinking Disposition Inventory (CCTDI-T) was administered before and after the study.

The CCTDI was originally developed by Facione and Facione (1992) as one of the products of the Delphi Project run by the American Philosophy Association. As discussed before, within this project, 46 experts from different disciplines aimed to conceptualize critical thinking and its components. The CCTDI aims to assess critical thinking skills of the college undergraduates through a 6-point likert-type scale ranging from 1 (strongly disagree) to 6 (strongly agree). It consists of 75 items and seven subscales: Analyticity (11 items), open-mindedness (10 items), inquisitiveness (11 items), self-confidence (9 items), truth-seeking (12 items), systematicity (12 items), and maturity (10 items). The Cronbach alpha coefficient of the original inventory is .90 and the internal consistency reliability for the subscales ranges from .57 to .78.

In the present study, the Turkish version of the California Critical Thinking Disposition Inventory (CCTDI-T) translated by Kökdemir (2003) was used. Based on the findings of statistical analyses, the CCTDI-T consisted of 51 items and six subscales, i.e. analyticity, open-mindedness, inquisitiveness, self-confidence, truth-seeking, and systematicity (see Appendix A). In the CCTDI-T, *analyticity* (items 2, 3, 12, 13, 16, 17, 24, 26, 37, 40, 46, 50) refers to be alert to potential problems, to anticipate the consequences, and to approach even challenging problems objectively within reason; *open-mindedness* (items 5, 7, 15, 18, 22, 33, 36, 41, 43, 45, 47) refers to be respectful and tolerant towards different opinions and to be sensitive to the possibility of one's bias; *inquisitiveness* (items 1, 8, 30, 31, 32, 34, 38, 39, 42) refers to one's intellectual curiosity to learn something new without expecting any profit; *self-confidence* (items 14, 29, 35, 44, 48, 51) refers to one's trust to one's own reasoning process; *truth-seeking* (items 6, 11, 20, 25, 27, 28, 49) refers to be eager to ask questions to find the truths and to willing to keep

questioning even in the times the opposing ideas are existent; and *systematicity* (items 4, 9, 10, 19, 21, 23) is about being organized and focused while making decisions by passing through knowledge-based steps (Kökdemir, 2003). The Cronbach alpha coefficient of the Turkish version of the inventory is .88 and the internal consistency reliability scores for the subscales are as follows: Analyticity, .75; open-mindedness, .75; inquisitiveness, .88; self-confidence, .77; truth-seeking, .61; and systematicity, .75. For the present study, the Cronbach alpha coefficient of the inventory was .84 and the following reliability scores were found for each sub-scale: Analyticity, .62; open-mindedness, .64; inquisitiveness, .77; self-confidence, .84; truth-seeking, .61; and systematicity .42.

According to Kökdemir (2003), a total score of 300 points or above obtained from the inventory indicates high level of critical thinking levels, a total score between 240 points and 299 points indicates moderate level of critical thinking levels, and a total score of 239 points or below indicates low level of critical thinking levels.

3.4.2. PTs' Argumentative Essays

To find out whether there will be a significant difference between the PTs who received traditional instruction and those who received WebQuest-supported critical thinking instruction in terms of their L2 writing performance, the PTs in the experimental and control groups were asked to write an argumentative essay on the death penalty as the requirement of the course at the end of the term. The final versions of PTs' essays were evaluated by the researcher and a second rater using a rubric developed by the instructors working in the department (see Appendix B). The rubric consisted of three main categories, i.e. *organization* (e.g. Is there a well-written thesis statement stating the writer's claim clearly?), *use of language* (e.g. Is there a variety of word choice?), and *content* (e.g. Does the writer integrate contrary interpretations to justify his/her own view?).

3.4.3. WebQuest Opinion Survey

In order to find out the PTs' opinions about the WebQuest-supported instruction, the WebQuest Opinion Survey was administered to the experimental group PTs at the end of the study. The WebQuest Opinion Survey was developed by Prapinwong (2008) to elicit students' perceptions of WebQuest. The survey consists of two parts: Part I includes 26 statements scored on a 5-point likert response scale ranging from 1 (strongly disagree) to 5 (strongly agree) and six subscales: *Ease of use* (items 1, 6, 20, 24) aims at measuring students' perceptions regarding the appearance, topic, logical structure, and instruction of the WebQuest; *multiple sources* (items 2, 7, 12, 17, 21) focuses on the extent to which students prefer various information sources; *student negotiation* (items 3, 8, 13, 18) aims at measuring the extent to which students prefer the exchange of ideas with their peers; *critical judgment* (items 5, 10, 15) focuses on the extent to which students perceive the WebQuest as an opportunity for evaluating the Internet information critically; *Internet and research skills* (items 4, 9, 14) aims at measuring the extent to which students perceive the WebQuest as an opportunity for practicing their Internet search skills; and *English learning perceptions* (items 11, 16, 19, 22, 23, 25, 26) aims at measuring students' perceptions of the usefulness of the WebQuest as an English learning tool (Prapinwong, 2008). For the purposes of the present study, the first part of the WebQuest Opinion Survey was used without any changes and administered in English.

The second part of the survey consists of three open-ended questions. For the purposes of the study, two of the questions (i.e. 1. What do you like most about the WebQuest?, 2. What are the things you do not like about the WebQuest?) were used without any changes. However, the third question (i.e. After the WebQuest lesson, would you prefer to continue to learn English using this approach?) was omitted in the current study since a similar question was administered in the focus group interviews. Instead, another open-ended question (i.e. How did studying in a planned and guided way affect your learning?) was added to the survey in order to gain deeper understanding of the PTs' experience with the WebQuest instruction (see Appendix C for the interview questions). The open-ended questions were administered in Turkish. The answers were translated

into English by the researcher and the translations were verified by two reviewers currently working as English instructors in the department. After that, each participant was asked to review and approve the translated versions in order to ensure accuracy and reliability.

3.4.4. Focus Group Interviews

Qualitative data came from the focus group interviews which were conducted at the beginning and end of the study (see Appendix D).

In order to understand the possible changes in PTs' perception of critical thinking, semi-structured pre- and post-focus group interviews were conducted with 10 volunteer PTs from the experimental group. In both pre- and post-interviews, PTs were asked to define critical thinking; to identify characteristic of a critical thinker; to tell whether critical thinking is a teachable concept; and to tell how to teach critical thinking.

In the post-focus group interviews, PTs were also asked about their opinions on the WebQuest-supported instruction. More specifically, they were asked to tell whether they found WebQuest as a useful learning tool; whether WebQuest-supported instruction had improved their critical thinking levels and/or their L2 writing performance; and whether they would use WebQuest in their future teaching career.

The sessions, each of which lasted 30-35 minutes, were conducted in Turkish and voice recorded with the participants' permission. After that, interviews were transcribed and translated into English by the researcher and the translations were verified by two reviewers currently working as English instructors in the department. Finally, each participant was asked to review and approve the translated versions in order to ensure accuracy and reliability.

3.5. Procedure

A quasi-experimental research design with a control group was employed in the present study. Quasi-experimental design, defined as a type of experimental design without random assignment of participants to groups (Fraenkel & Wallen, 2003), was preferred since the classes were arranged by the administration on the basis of the surnames at the beginning of the academic year and random assignment of participants was not possible for this specific study.

The study took place in the first term of the 2013-2014 academic year and lasted 6 weeks. During the study, while the experimental group received WebQuest-supported critical thinking instruction, the control group received traditional text-only instruction.

3.5.1. Instruction in the control group

At the time of the study, the topic was the death penalty. While the original coursepack included a reading text on the history of the death penalty, it lacked how the different parties such as victims' families, human rights activists, wrongfully convicted people's families, and religious functionaries approach this issue. Thus, for the purposes of this study, one extra article for each perspective of the topic was added to the coursepack. The topic was introduced to the PTs via brainstorming activity in which they were asked to share what came to their minds about the death penalty. Following the brainstorming activity, the reading text on the history of the death penalty was assigned as homework. By doing so, the PTs' background knowledge on the issue was activated. The following 6-week instruction was as follows: On the first week, during the first hour, the volunteer PTs were asked to summarize the assigned reading text and then the PTs revised the related vocabulary items by means of various activities such as multiple choice, matching and fill in the blanks in order to eliminate any misunderstanding and to build the required lexical knowledge about the issue. Then, the PTs answered comprehension questions about the text. Once the PTs had any difficulty or further questions about the given answers, the instructor interfered and helped them understand the issue better. For the second and third hours, the PTs were asked to read the death penalty text from the

perspective of the victims' families and to answer vocabulary and comprehension questions. Through the end of the third hour, for approximately 15 minutes, the PTs were encouraged to reflect on the text they had read and express their opinions accordingly. More specifically, the PTs were asked to share whether they considered the ideas discussed in the text before and they still had opposition to any of the ideas in the text. Following the discussion, the death penalty text from the perspective of the religious functionary was assigned as homework. As for the second week, the same pattern was followed. In other words, the vocabulary and comprehension questions of the assigned reading text were completed by the PTs during the first hour. Another reading text from the perspective of human rights activists was read in the class and related activities were completed for the second and third hours. Unlike the first-week discussion, the PTs were asked to compare the arguments of all the perspectives discussed by then. As homework, the reading text from the perspective of the wrongfully convicted people's families was assigned for the following week. On the third week, while the first hour was allocated to the assigned text and related activities, the second and third hours focused on the writing instruction. To put it another way, the PTs discussed the death penalty from four different perspectives and they had the chance to be familiar with various aspects of the issue. However, the nature of the discussions in the control group differed from the ones in the experimental group in two ways: The PTs in the control group merely relied on the restricted information presented in the texts and they were not encouraged for further research outside the classroom. On the same week, for the second and third hours, PTs were instructed on how to write an argumentative essay and they prepared an outline on the topic of the death penalty (i.e. Should the death penalty be legalized or not?) during the lesson. In the same class time, the teacher gave feedback on PTs' outlines individually. PTs wrote the first draft of their essays at home. The fourth week focused on the peer feedback. Although the PTs were used to giving peer feedback, rubric specific training was given by the instructor in this lesson and PTs checked each other's first drafts accordingly (see Appendix B). As home assignment, PTs were expected to write the second draft of their essays based on the feedback they had received from their peers. On the fifth week, PTs received teacher feedback on the second draft of their essays in

the class and were asked to finalize them at home. Finally, on the sixth week, PTs submitted the final version of their essays to the teacher.

3.5.2. Instruction in the Experimental Group

For the purposes of the present study, a WebQuest about the death penalty was designed and implemented as a treatment in the experimental group. This particular topic was purposefully chosen from the topics covered in the coursepack as it is a controversial issue. The construction process of the WebQuest is explained in the following part.

3.5.2.1. WebQuest Construction

The WebQuest implemented in the present study was constructed following a rubric developed by Puthikanon (2009). This rubric aims to determine the extent to which a WebQuest promotes critical thinking. It includes the following aspects: the main task/question, roles/perspectives, process, and resources of a WebQuest, each of which is described in three tiers, i.e. low, medium, and high, according to the order of thinking skills suggested in Bloom's taxonomy (1956) (see Appendix E for the rubric). For a WebQuest, higher ratings on the aspects of the rubric means being more likely to be useful in promoting critical thinking. The following table illustrates how the WebQuest in the present study aimed to fulfill the requirements to get high ratings as follows:

Table 3.1.
WebQuest Evaluation Rubric

Aspect	High Rating Criteria	The Death Penalty WebQuest
The main task/question	• The main task/question encourages students to develop all of the three higher order thinking skills.	Assigning an argumentative essay writing (the task) in which the PTs were required to include supporting and opposing ideas regarding a controversial topic, i.e. whether the death penalty should be legalized or not (the question).
Roles/perspectives	• Roles provide multiple perspectives from which to view the topic and they possibly evoke conflict.	Presenting the topic to the PTs from four different, realistic and conflicting perspectives, i.e. *victims' families, a religious functionary, human rights activists,* and *wrongfully convicted people's families*, and asking them to assume the respective roles to do research on.
Process that requires analysis thinking	• The process goes beyond simple analysis. It requires speculation or inference about the similarities and differences of the information.	Supplying multiple sources, some of which had information supporting the death penalty whereas some of them were against it, for a single perspective. (For instance, for the perspective of the victim families, while one article focused on a sad but real story of a victim and the grief of her family in support of the idea of the death penalty, the other one gave some reasons to prove that the death penalty was not a desirable option for them).
Process that requires synthesis thinking	• The process requires students to synthesize information from different resources and rewrite or reorganize the information to form their own opinions.	Asking the PTs to read various sources and re-organize information by answering reflection questions such as *"Did my opinions about the legalization of the death penalty change after reading the article? If yes, how?"*.

Table 3.1. (continued)
WebQuest Evaluation Rubric

Process that requires synthesis thinking	• The process requires students to form their own opinions by incorporating divergent views into their account.	By means of group discussions, enabling the PTs to see and consider divergent views while deciding on their final judgment regarding the legalization of the death penalty.
Process that requires evaluation thinking	• The process clearly requires students to examine, evaluate, and judge information from different sources/perspectives. • Students critique ordebate and make judgment on each side of a controversial issue.	In their essays, asking the PTs to come to an ultimate decision regarding the legalization of the death penalty by means of - synthesizing both the opposing and supporting ideas regarding the topic, - objectively presenting different perspectives, - evaluating the strengths and weaknesses of the presented ideas.
Resources	• There are enough resources for students to gather information. • Most resources provided contain useful/specific information pertaining to the issues. • Most of the links are working.	Supplying two specific articles and two links to websites focusing on the death penalty for each perspective. Preparing all of the sources with a colleague and double checking them to ensure that they were working.

3.5.2.2. Implementation of the WebQuest

The experimental group, similar to the control group, was supposed to write an argumentative essay on the death penalty. However, they received 6-week WebQuest-supported critical thinking instruction which required them to work individually and in groups both in and outside the classroom. The WebQuest was based on understanding the death penalty from different perspectives and writing an argumentative essay on it. The following steps were followed weekly:

3.5.2.2.1. Week 1

The instructor talked about the effects of WebQuest-supported instruction to promote critical thinking levels and explicitly stated that the following 6 weeks were allocated for a WebQuest-supported design on the topic of death penalty. After that, with the help of a projector, the instructor introduced the designed WebQuest, shared its address, and showed the PTs how to navigate through the pages and informed the PTs about the task to be completed.

Following that, the PTs read the definitions of the death penalty on the "Introduction" section of the WebQuest (see Figure 3.1.) and shared what came to their minds about the death penalty in the whole-class brainstorming activity led by the teacher. The aim was to see what PTs already knew about the topic and activate their background knowledge.

The death penalty, or capital punishment, is defined by several resources as:

"a legal process whereby a person is put to death by the state as a punishment for a crime" (Wikipedia)

"the legally authorized killing of someone as punishment for a crime" (Oxford Dictionaries)

"punishment by death, as ordered by a legal system " (Cambridge Dictionaries)

To be able to have a healty position, several perspectives of it should be considered. With this WebQuest, you have a chance to approach this issue from many different angles!

Figure 3.1.The Introduction Section of the WebQuest

Then, a researcher-made survey about the death penalty was distributed to the PTs and they were asked to work individually in order to complete it. The survey was created to help PTs think about the death penalty from a broader perspective. The survey had five statements and PTs were supposed to rate them from 1 to 5 according to their level of agreement with each of them. Contradictory statements were chosen for the survey to make PTs think deeply about the topic (e.g. 1. The death penalty is an act of human rights violation, 2. The death penalty is an act of justice). PTs were also asked to justify their choices on the survey to ensure that their choices were based on reasoned arguments. Upon the completion of the survey questions, PTs worked in groups of four and compared their opinions with their group members and they tried to form a group opinion. Later, each group chose a spokesperson to share their group opinion with the rest of the class so that PTs could hear different opinions on the topic.
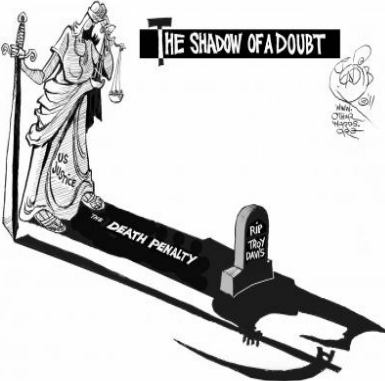
After completing the survey and discussing its items, PTs were supposed to read a text on the history of the death penalty distributed in class. Before reading, a researcher-made quiz on the history of the death penalty was distributed to them to complete so that they had a reason to read the coming text. The PTs read the text on the history of the death penalty from the given handouts to check their answers to the quiz and to build their background knowledge on the death penalty. After reading, PTs answered some comprehension questions.

Through the end of the lesson, the instructor focused on the "Task" section of the WebQuest and gave detailed information about the argumentative essay writing on the death penalty (i.e. Should the death penalty be legalized or not?) by considering four different and conflicting perspectives, i.e. *victims' families*, *a religious functionary*, *human rights activists*, and *wrongfully convicted people's families* (see Figure 3.2).

Figure 3.2.The Task Section of the WebQuest

The instructor, then, specifically focused on the "Process" section of the WebQuest to provide the PTs with step-by-step instruction in order to complete the assigned task (see Figure 3.3.).

Process

STEP 1 (2 - 6 DECEMBER)

In Class (3 hours):

1. Brainstorm on 'the death penalty' (whole class activity).

2. Complete an opinion survey about the death penalty individually (see *File 1: Opinion Survey*).

3. Work in group of 4 and compare your answers with your group members.

4. Choose a spokesperson to share the opinions of your group members with the rest of the class.

5. Answer the quiz questions about the history of the death penalty individually (*see File 2: Quiz - The History of the Death Penalty*).

6. Work in pairs and compare your answers.

7. Read a text about the history of the death penalty to check your answers (see *File 3: Reading Passage - The History of the Death Penalty*).

8. Read the text again and answer the comprehension questions (*see File 4: Comprehension Questions - The History of the Death Penalty*).

9. Decide on your group members to work together throughout the project (4 people in one group) .

10. Each member of your group will choose one of the following perspectives: **a victim's family, a religious functionary, a human rights activist,** and **a wrongfully convicted person's family.**

Assignments (Deadline - 9 December):

1. Read the articles for your own perspective.

2. Examine the links to general websites on the death penalty and find relevant information to your own perspective (Note that you are free to do extra research)

3. Read the resources about your perspective in detail and prepare an outline for each (*see File 5: Outline for reading sources*).

4. Answer the questions in the reflection handout for each resource (*see File 6: Reflection Questions*).

5. Bring your materials to the class.

* Victim's Family

Article 1: *Death Penalty Would End Punishment of Victim's Family*

Article 2: *How The Death Penalty Fails Victims' Families*

Website 1: http://www.deathpenaltyinfo.org/

Website 2: http://deathpenalty.procon.org/

* Religious Functionary

Article 1: BBC Ethics Guide: Capital Punishment **(Islam and Christianity)**

Article 2: BBC Ethics Guide: Capital Punishment **(Judaism and Buddhism)**

Website 1: http://www.deathpenaltyworldwide.org/

Website 2: http://deathpenalty.procon.org/

* Human Rights Activist

Article 1: Center For Constitutional Rights: The Death Penalty Is A Human Rights Violation

Article 2: The Progressive - The Death Penalty Is A Human Rights Abuse

Website 1: http://www.deathpenaltyworldwide.org/

Website 2: http://www.antideathpenalty.org/

Figure 3.3. The Process Section of the WebQuest

* Wrongfully Convicted Person's Family
Article 1: 10 Famous Cases Of Wrongful Execution (Please, only read 5 cases)
Article 2: The Guardian: 'I Wasn't Going To_Be Defeated'
Website 1: http://www.antideathpenalty.org/

Website 2: http://www.prodeathpenalty.com/

STEP 2 (9 - 13 DECEMBER)
In Class (3 hours):
1. From other groups, find 3 people with the same perspective and share your reflection ideas.
2. Take notes of your friends' answers.
3. Return to your original group and report what you have found / noted.
4. Take notes of your group members' opinions for the coming writing task.
5. Examine the following resources to learn how to write an argumentative essay.

Teacher-designed tutoring slides (*see File 7: How to write an argumentative essay?*).

Tutoring video: Youtube / How to write a good argumentative essay: Logical structure
Sample argumentative essays: Purdue OWL - Online Writing Lab
                                            Writing Center - New York University

Assignment (Deadline - 16 December):
Decide whether the death penalty should be legalized or not in your own opinion and prepare an outline for your argumentative essay (*see File 8: Outline - Argumentative essay*).

STEP 3 (16- 20 DECEMBER)
In Class (3 hours):
Get feedback from your teacher for your outline.
Assignment (Deadline - 23 December):
Write the first draft of your essay.

STEP 4 (23 - 27 DECEMBER)
In Class (3 hours):
Give feedback to your pairs for their essays and get feedback from them for yours.
Assignment (Deadline - 30 December):
Write the second draft of your essay according to the peer feedback you get.

STEP 5 (30 DECEMBER - 5 JANUARY)
In Class (3 hours):
Get feedback from your teacher for the second draft of your essay.
Assignment (Deadline - 6 January):
Write the final version of your essay and submit it to your teacher.

File 1: Opinion Survey about the Death Penalty
Rate the statements in the survey according to your opinions about the death penalty.

File 2: Quiz - The History of the Death Penalty
Answer the questions to see what you have known about the history of the death penalty.

File 3: Reading Passage - The History of Death Penalty
Read the text to learn about the history of the death penalty.

File 4: Comprehension Questions - The History of the Death Penalty
Answer the questions according to the text 'The History of the Death Penalty'.

File 5: Outline for Reading Sources
Use this template while preparing an outline for each resource about your perspective.

File 6: Reflection Questions
Answer these reflection questions after you read each resource about your perspective in detail.

File 7: How to write an argumentative essay?
Follow the steps to learn how to write an argumentative essay.

File 8: Outline for the Argumentative Essay
Follow the steps to prepare an outline for your argumentative essay.

Figure 3.3. (continued)The Process Section of the WebQuest

As can be viewed from the figure above, on the process page, there were uploaded articles presenting the topic from four different and conflicting perspectives, i.e. *victims' families*, *a religious functionary*, *human rights activists*, and *wrongfully convicted people's families.* In class, PTs were asked to form groups of four and each student in the groups was to choose one role/perspective to focus on in order to complete the steps described in the Process section of the WebQuest. After deciding on the perspective to focus on, PTs were supposed to read two articles uploaded for the relevant perspective at home. PTs were also supposed to examine the links to general websites on the death penalty and depict the articles specifically related to their own perspectives. Thus, they were expected to filter the information on the issue. PTs were also free to find extra resources using the search engines so that they would build more on their understanding of the issue.

Based on their readings, at home, PTs were asked to complete an outline as a while‑reading activity (see Appendix F) and answer some reflection questions as a post‑reading activityfor each resource (i.e. articles, websites, etc.) (see Appendix G). The outline included the main argument/problem, the reasons to support the argument/problem, the way the arguments were supported, and the drawn conclusion in it. In their reflection, the PTs were supposed to answer some questions prepared to develop their higher order thinking skills (i.e. analysis, synthesis, and evaluation). Example questions included "*What has the article convicted me of specifically?*" (analysis), "*If you were the writer of the article, what points could you omit? And what different points could you add to them? Why?*"(synthesis), and "*Would you recommend this article to other readers? Why or why not?*"(evaluation).

3.5.2.2.2. Week 2

PTs came to the second lesson having read about the topic from the perspective they had chosen and done the related tasks. PTs first formed new groups with peers who had focused on the topic from the same perspective. As a group of students with the same perspective chosen, they went over the resources they had read. During the discussion

sessions, the experimental group PTs were supposed to objectively focus on the issue by means of outlines and to share their personal opinions on the issue by means of the reflection questions given on the WebQuest. Because of the further research that the PTs had done, some of the sources were different while some of them were the same. Thus, the perspective discussions were important for the PTs to comprehend and internalize the perspective they had chosen.When they were confused or needed clarification on the related issue, the PTs had a chance to ask some further questions to their peers. Some sample questions directed were as follows: "What do you mean?; Could you please clarify your point?; Why do you think so?; I do not agree with you. How did you come to this conclusion?" and so forth (see Appendix H for sample classroom discussion extracts).

After discussing the issue from the perspective they had chosen with their peers, PTs returned to the groups they had formed on the first week. In this grouping, each of four different perspectives was presented by one PT. This meant that PTs presented their own perspectives as detailed as possible and had the opportunity of looking at the issue from different perspectives. PTs were free to ask questions to each other and to take notes during these group discussion sessions to use for the coming writing task. During the discussions, although the PTs were not expected to convince their peers, they were encouraged to present their reflections via sound justifications from the assigned texts and their further research. Therefore, when the PTs did not agree with an opinion, they tried to understand it better by asking extra questions. In the case of sharing the same opinions, they still went on discussing and expressing their ideas. To sum up, the researcher designed the discussion sessions to enhance the PTs' critical thinking and critical reading skills by providing an area to discuss and share their opinions on a certain topic, which was namely the death penalty in this study.

When the PTs were engaged in group discussions, the instructor/researcher was moving around the class and making the PTs know that she was available to help. She monitored all groups and listened to the ongoing discussions but did not intervene a lot. However, to make the PTs think more about the issue, she sometimes asked some further questions

such as *"Have you known that ...?, Is there any surprising information for you?, Why is it surprising for you?, What made you think like that?"*, *"What about the .....?"*, *"Have you ever considered..."*and so on.

At the end of the second lesson, the instructor explicitly said that the PTs were required to follow the out-of-class activities shared on the WebQuest for the task of argumentative writing unlike their previous experiences with the cause and effect essay writing during which only in-class teacher explanations were possible. On the WebQuest, PTs were provided with researcher-prepared slides on explaining argumentative essay writing, links to websites tutoring how to write an argumentative essay and example essays on different topics. There was also an outline template uploaded to the WebQuest (see Appendix I). At home, PTs were to read the slides, search the given links and read the example essays to enhance their knowledge on argumentative essay writing and then create an outline of their own essay topic.

3.5.2.2.3. Week 3

In Week 3, PTs were invited to ask any questions related to argumentative essay writing. After clarifying questions about the organization of argumentative essay writing, the teacher checked each PT's outline individually and gave feedback on both content and form. Based on the feedback they received, PTs wrote the first draft of their essays at home.

3.5.2.2.4. Week 4

Week 4 focused on peer feedback. Although the PTs were used to giving peer feedback, rubric specific training was given by the instructor in this lesson and PTs checked each other's first drafts accordinglyin the class and gave feedback using the rubric shared on the WebQuest (see Appendix B). The instructor pointed out that this rubric was also available in the "Evaluation" section the WebQuest since the final versions of PTs' essays were to be evaluated using it by the instructor in the following weeks. Based on

the feedback they received from their peers, PTs wrote the second draft of their essays at home.
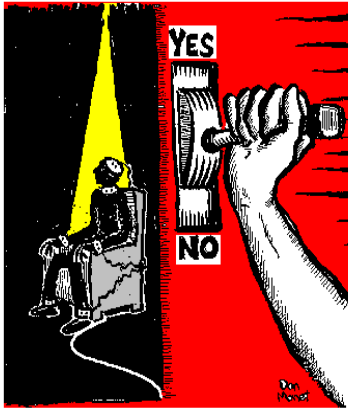
3.5.2.2.5. Weeks 5 and 6

PTs received teacher feedback on the second draft of their essays in the class and submitted the final versions a week after. After all, the instructor focused on the "Conclusion" section of the WebQuest to sum up the whole process and encourage the PTs reflect on both the process and the result (see Figure 3.4.).

Figure 3.4.The Conclusion Section of the WebQuest

Instructions of the experimental and control groups are summarized in the table below.

Table 3.2.
Instructions in the Experimental and Control Groups

Week / Hours	Groups	
	Experimental	**Control**
Week 1 / 3 hours	In-class - Focusing on the "Introduction" section of the WebQuest. - Brainstorming on the death penalty. - Completing an opinion survey on the death penalty. - Forming and sharing a group opinion based on the opinion surveys. - Taking a quiz on the history of the death penalty. - Reading a text on the history of the death penalty and answering comprehension questions. - Focusing on the "Task" section of the WebQuest. - Focusing on the "Process" section of the WebQuest. - Choosing one perspective of the death penalty to focus on. Out-of-class - Reading the uploaded articles and do research on the chosen perspective. - Completing an outline for each reading material. - Answering reflection questions for each reading material.	In-class* - Brainstorming on the death penalty. Out-of-class* - Reading a text on the history of the death penalty. In-class - Exercising vocabulary items and answering comprehension questions of the assigned reading text. - Reading an article on the death penalty from the perspective of victims' families. - Exercising vocabulary items and answering comprehension questions of the reading text. - Participating in classroom discussion on the ideas in the reading text. Out-of-class - Reading an article on the death penalty from the perspective of the religious functionaries.

*: One week before the treatment

Table 3.2.(continued)
Instructions in the Experimental and Control Groups

Week 2 / 3 hours	<u>In-class</u> - Having group discussions on the topic. <u>Out-of-class</u> - Studying argumentative essay writing. - Preparing an outline for the essay.	<u>In-class</u> - Exercising vocabulary items and answering comprehension questions of the assigned reading text. - Reading an article on the death penalty from the perspective of the human rights activists. - Exercising vocabulary items and answering comprehension questions of the reading text. - Participating in classroom discussion to compare the arguments of all the perspectives. <u>Out-of-class</u> - Reading an article on the death penalty from the perspective of the wrongfully convicted people's families.
Week 3 / 3 hours	<u>In-class</u> - Receiving teacher feedback on the outlines. <u>Out-of-class</u> - Writing the first drafts of the essays.	<u>In-class</u> - Exercising vocabulary items and answering comprehension questions of the assigned reading text. - Participating in classroom discussion on the death penalty by considering four perspectives. - Receiving instruction on how to write an argumentative essay. - Preparing an outline. - Receiving teacher feedback on the outlines. <u>Out-of-class</u> - Writing the first drafts of the essays.

Table 3.2.(continued)
Instructions in the Experimental and Control Groups

Week 4 / 3 hours	<u>In-class</u> - Receiving rubric specific training for peer feedback. - Receiving peer feedback on the essays. -Focusing on the "Evaluation" section of the WebQuest.	<u>In-class</u> Receiving rubric specific training for peer feedback. - Receiving peer feedback on the essays.
	<u>Out-of-class</u> - Writing the second drafts of the essays.	
Week 5 / 3 hours	<u>In-class</u> - Receiving teacher feedback on the essays. <u>Out-of-class</u> - Finalizing the essays.	
Week 6 / 3 hours	<u>In-class</u> -Submitting the essays to the teacher.	

As can be seen in the table, although both the experimental and control groups studied the same topic from different perspectives, the groups differed in the following ways: While the course instruction was limited to classroom setting in the control group, instruction could be transferred to outside the classroom and scaffolded with step-by-step guidance provided in each section of the WebQuest. PTs in the experimental group also studied the researcher-designed slides on explaining argumentative essay writing, links to websites tutoring how to write an argumentative essay and example essays on different topics shared on the WebQuest on their own at home. Another point increasing PTs' autonomy in the experimental group was the way they found the sources. During the study, the control group PTs read specific articles on the topic and answered comprehension or discussion questions led by the teacher. On the other hand, PTs in the experimental group were supposed to examine the websites shared on the WebQuest and do some additional

research to find information relevant to their perspectives, which required them to approach sources critically. Also, through WebQuest tasks PTs' critical thinking skills were promoted as they were asked to answer not only comprehension questions but also reflection questions which required them to formulate inferences, calculate likelihoods, and make decisions.

3.6. Data Analysis Procedure

For the purposes of the study, data collected from previously mentioned instruments were analyzed by means of both quantitative and qualitative methods. Lynch (1996) calls this combination a mixed study design and claims that it provides more complete understanding of research problems since data are validated through triangulation of different instruments.

To decide on the data analysis methods to be used, the normality of distribution of scores was assessed by means of the Kolmogorov‑Smirnov test. The results indicated that the data followed a normal distribution (*z=1.28; p=.07*), so parametric tests were warranted.

3.6.1. Quantitative Data Analysis

3.6.1.1. California Critical Thinking Disposition Inventory

As aforementioned, California Critical Thinking Disposition Inventory consists of 51 items scored on a 6-point likert response scale (1=strongly disagree, 2=disagree, 3=partially disagree, 4=partially agree, 5=agree, 6=strongly agree). However, it should be noted that 22 items (items 5, 6, 9, 11, 15, 18, 19, 20, 21, 22, 23, 25, 27, 28, 33, 36, 41, 43, 45, 47, 49, 50) in the inventory are negatively worded, thus require reverse coding.

Statistical Package for the Social Sciences (SPSS) 15.0 was used to analyze quantitative data coming from CCTDI-T. The CCTDI-T was administered to the PTs in both groups once at the beginning and once at the end of the study. The independent samples t-test, defined as a parametric technique used "to compare the mean scores of two different groups of people or conditions" (Pallant, 2005, p. 205), was applied to find out the

differences between the experimental and control groups regarding their critical thinking disposition levels before and after the study. The significance level was set at p<.05.

3.6.1.2. PT's Argumentative Essays

As aforesaid, the PTs in both groups were asked to write an argumentative essay on the death penalty and these essays were evaluated by two raters. The Pearson's Product-Moment Correlation test, defined as a parametric technique "to explore the strength of the relationship between two continuous variables" (Pallant, 2005, p. 95), was applied to the PTs' scores by two raters to assess inter-rater reliability in the essay evaluation process.

In order to calculate the differences between the experimental and control groups, an independent samples t-test was applied to the PTs' average writing scores in total and in sub-categories, i.e. organization, use of language, and content, obtained from the two raters. The significance level was set at p<.05.

3.6.1.3. WebQuest Opinion Survey: Part I

As aforementioned, Part 1 of the WebQuest Opinion Survey has 26 statements scored on a 5-point likert response scale (1=strongly disagree, 2=disagree, 3=undecided, 4=agree, 5=strongly agree). For the analysis, descriptive statistics were applied to the data. The value of mean above 3.00 indicates positive tendency while mean below 3.00 indicates negative tendency. However, it is noteworthy that there are seven items requiring reverse coding (items 5, 7, 10, 13, 17, 18, 21) in this part.

3.6.2. Qualitative Data Analysis

3.6.2.1.WebQuest Opinion Survey: Part II

As aforesaid, Part 2 of the WebQuest Opinion Survey includes four open-ended questions. Qualitative data coming from the open-ended questions of the WebQuest Opinion Survey were analyzed by means of pattern coding (Miles & Huberman, 1994). Miles and Huberman (1994) identified three stages for qualitative data analysis: Data

reduction, data display, and conclusion drawing/verification. Data reduction refers to the process of organizing the mass of data through discarding all irrelevant information and coding the raw data into conceptual categories. Data display refers to the representation of the data in the forms of tables, charts, and other formats. Drawing and verifying conclusions is about the process of developing conclusions regarding the study and ensuring that the findings are valid through a number of strategies such as referring to the existing field notes or further data collection.

The researcher, working collaboratively with another English instructor of the department, reduced the responses given to the interview questions into smaller units to examine the emerging themes of answers.

3.6.2.2. Focus Group Interviews

As aforementioned, focus group interviews were conducted in two phases, before and after the study, to identify any changes in PTs' initial perceptions and their reactions to the intervention. The focus group interviews were audio-taped and the recorded data were transcribed by the researcher. Data coming from group focus interviews were analyzed by means of pattern coding as suggested by Miles and Huberman (1994). The same procedure with the analysis of the second part of the WebQuest Opinion Survey was followed.

CHAPTER IV: RESULTS

In this section, the research findings will be presented in two main parts: In the first part, quantitative data results obtained from the California Critical Thinking Disposition Inventory, PTs' argumentative essays, and WebQuest Opinion Survey (Part I) will be presented. In the second part, qualitative data obtained from the WebQuest Opinion Survey (Part II) and focus group interviews will be discussed in detail.

4.1. Quantitative Data Results

4.1.1. The results of the CCTDI-T scores

In order to examine whether the experimental and control groups were homogenous in terms of their critical thinking levels at the beginning of the study, an independent samples t-test was applied to the pre-CCTDI-T scores.According to the results of the t-test, no significant differences were found between the groups in terms of their overall CCTDI-T scores ($p=.662; t=-.44$) and CCTDI-T sub-scales, i.e. inquisitiveness ($p=.843; t=.20$), analyticity ($p=.695; t=-.39$), systematicity ($p=.918; t=.10$), open-mindedness ($p=.492; t=-.69$), truth seeking ($p=.287; t=-1.08$), and self-confidence ($p=.662; t=-.44$).

To see whether there were any significant differences between the experimental and control groups in terms of their overall critical thinking disposition levels after the treatment, an independent samples t-test was applied to the gain scores of PTs in both groups. The following table illustrates the difference between the groups in terms of their critical thinking disposition levels at the end of the study.

Table 4.1.
Differences between the Groups (N=60) in terms of Their Overall CCTDI-T Scores

Scale	Group	Test	M	SD	t-value	Df	p
CCTDI-T	Experimental	Pre	223.37	17.23	-2.44	58	.018*
		Post	228.00	21.33			
	Control	Pre	221.07	22.86			
		Post	213.47	27.62			

*p<.05

The results of the t-test showed that the experimental group significantly outperformed the control group at the end of the study. In other words, the critical thinking disposition gains of the experimental group PTs were significantly higher than the control group PTs.

In addition, to see whether there were any significant differences between the experimental and control groups in terms of their critical thinking disposition levels in the CCTDI-T sub-scales after the treatment, independent samples t-tests were applied to the gain scores of PTs in both groups for each sub-scale seperately. The following table illustrates the differences between the groups in terms of their critical thinking disposition levels at the end of the study.

Table 4.2.
Differences between the Groups (N=60) in terms of Their CCTDI-T Sub-scale Scores

Sub-scale	Group	Test	M	SD	t-value	Df	p
Inquisitiveness	Experimental	Pre	38.60	5.54	-2.46	43	.018*
		Post	41.53	5.67			
	Control	Pre	38.93	7.31			
		Post	37.80	8.68			
Analyticity	Experimental	Pre	59.47	4.40	-2.86	58	.006*
		Post	60.53	5.50			
	Control	Pre	58.90	6.52			
		Post	55.43	6.90			
Systematicity	Experimental	Pre	24.73	3.57	-.67	58	.506
		Post	25.07	4.01			
	Control	Pre	24.83	3.87			
		Post	24.53	4.34			
Open-mindedness	Experimental	Pre	51.73	5.06	-1.29	46	.205
		Post	51.17	7.31			
	Control	Pre	50.53	8.05			
		Post	47.47	8.76			
Truth seeking	Experimental	Pre	26.47	5.40	2.22	58	.030*
		Post	24.77	5.83			
	Control	Pre	24.87	6.11			
		Post	25.63	7.07			
Self-confidence	Experimental	Pre	22.37	4.00	-2.83	48	.007*
		Post	25.07	3.72			
	Control	Pre	23.00	6.36			
		Post	24.53	5.18			

*p<.05

As can be seen in Table 4.2., the results of the t-tests indicated significant differences between the experimental and control groups in terms of their level of critical thinking disposition in four sub-scales: Inquisitiveness, analyticity, self-confidence, in favor of the experimental group (*p<.05*) and truth-seeking, in favor of the control group (*p<.05*). Although there were no significant differences between the groups regarding their level of critical thinking in systematicity and open-mindedness (*p>.05)*, the PTs in the experimental group had greater gains than the control group at the end of the study.

4.1.2. The Results of the PTs' Argumentative Essay Scores

As discussed before, the PTs in both groups were asked to write an argumentative essay on the death penalty and these essays were evaluated by two raters using the rubric developed by the instructors in the department considering the needs of the PTs and expectations of the course. The rubric consists of three main categories, i.e. organization, use of language, and content. While the first two categories include 5 items for each, the last category includes 10 items all scored on 5-point likert scale. The minimum score that can be gained from this rubric is 20 points and maximum score is 100 points (see Appendix B).

In order to see whether inter-rater reliability was established in the essay evaluation process, a Pearson's Product-Moment Correlation test was applied to the PTs' scores obtained from two raters. The results revealed a significant positive correlation between the raters regarding their essay ratings in both the experimental (*r=.86; p<.05*) and the control groups (*r=.83; p<.05*).

In an attempt to investigate whether there were any significant differences between the experimental and control groups in terms of their L2 writing performance after the treatment, an independent samples t-test was applied to the PTs' average writing scores in total and in the sub-categories obtained from the two raters. The following table illustrates the differences between the groups in terms of their L2 writing performance.

Table 4.3.
Differences between the Groups (N=60) in terms of Their L2 Writing Performance

Sub-category	Group	M	SD.	t-value	Df	p
Organization	Experimental	16.84	5.64	1.18	58	.039*
	Control	13.31	7.30			
Use of Language	Experimental	18.06	5.80	-.54	46	.047*
	Control	15.72	8.47			
Content	Experimental	38.16	4.06	-2.13	58	.024*
	Control	33.10	5.79			
OVERALL	Experimental	73.07	16.69	-2.40	58	.019*
	Control	62.13	18.50			

*$p<.05$

The results of the t-test showed that the experimental group PTs significantly outperformed the control group PTs on the L2 writing scores both in total and in all sub-categories at the end of the study.

4.1.3. WebQuest Opinion Survey: Part I

In order to gain an understanding of PTs' perceptions of the WebQuest project, the WebQuest Opinion Survey (Prapinwong, 2008) was administered to the experimental group. As discussed before, Part 1 of the WebQuest Opinion Survey has 26 statements scored on a 5-point likert response scale.

For the analysis of the quantitative part, negatively-worded items (items 5, 7, 10, 13, 18, 21) were reverse coded. In other words, all 1's on the items were transformed to 5's and all 2's to 4's, and vice versa.

As aforementioned, the value of mean above 3.00 indicates agreement, i.e. positive tendency, while below 3.00 indicates disagreement, i.e. negative tendency. On the other hand, a score below 3.00 shows positive tendency for the negatively-worded items.

The following table illustrates the mean value of each sub-scale of the WebQuest Opinion Survey, i.e. ease of use, multiple sources, student negotiation, critical judgment, Internet

and research skills, and English learning perceptions. In the table, higher mean score shows more favorable perception toward the particular aspect of WebQuest learning.

Table 4.4.
Average Mean Values for Each Aspect of WebQuest Learning

Sub-scale	No. of items	M	SD
Ease of Use	4	4.18	.56
Student Negotiation	4	4.13	.46
English Learning Perceptions	7	4.08	.42
Multiple Sources	5	4.00	.46
Internet and Research Skills	3	3.70	.91
Critical Judgment	3	3.37	.39
TOTAL	26	3.96	.33

As can be seen in Table 4.4., the overall average mean value for the six sub-scales ($M=3.96$) indicates relatively positive perceptions of the PTs towards WebQuest learning. According to the table, ease of use had the highest mean ($M=4.18$) whereas critical judgment had the lowest mean ($M=3.37$).

The next section presents each aspect of the WebQuest learning from the highest to the lowest mean scores.

4.1.3.1. Ease of Use

This group of items aims at measuring PTs' perceptions regarding the appearance, topic, logical structure, and instruction of the WebQuest. The following table illustrates the mean values for ease of use items.

Table 4.5.
Mean Values for Ease of Use Items

Statements	M	SD
24. I could easily follow the instructions given in the WebQuest.	4.27	.74
1. I could easily find what I needed from the WebQuest page.	4.23	.73
20. The WebQuest topic interested me.	4.17	.75
6. It took me only a short time to understand how the WebQuest lesson worked.	4.07	.74
TOTAL	4.18	.56

This sub-scale received the highest positive rating among all the aspects of WebQuest learning (*M=4.18*). Once the table analyzed, it can be seen that the mean values of all the items were over 3.00, which shows a positive tendency. The average scores in items 1 and 24 revealed that navigation through the WebQuest pages were found to be easy by the PTs and they found the instructions clear enough to follow. Similarly, the mean value in item 6 illustrated that the PTs understood the logic and structure of the WebQuest well. Finally, the average score in item 20 showed that the topic of the WebQuest was interesting for the PTs.

4.1.3.2. Student Negotiation

The items within this sub-scale measure the extent to which PTs preferred to exchange ideas with their peers. In the following table, mean values for student negotiation items will be presented.

Table 4.6.
Mean Values for Student Negotiation Items

Statements	M	SD
*18. I felt left out during group work.	4.33	.76
3. I liked working in a small group during the WebQuest lessons.	4.30	.60
8. I liked interacting with peers when engaging in the WebQuest activities.	4.10	.66
*13. It took too much time to share my ideas with other students during the WebQuest lessons.	3.80	.71
TOTAL	4.13	.46

*: Negatively-worded items (reverse items)

As Table 4.6.shows, the negotiation aspect of the WebQuest received a quite high rating (*M=4.13*). When items 3 and 8 were analyzed, it was found out that the PTs favored peer interaction during the group work activities in the WebQuest lessons. Accordingly, the strong disagreement with items 18 and 13 indicated that the PTs felt involved in group work activities and they stated that sharing their ideas with their peers did not require too much time during the WebQuest lessons.

4.1.3.3. English Learning

The following group of items asses the PTs' perceptions of the usefulness of the WebQuest as an English learning tool. The table below illustrates mean values for the items in this sub-scale.

Table 4.7.
Mean Values for English Learning Items

Statements	M	SD
26. I learned new English words/expressions from the WebQuest lessons.	4.27	.69
16. I was more motivated to learn English through WebQuest than through the regular method.	4.10	.71
22. I practiced my English speaking in a small group during the WebQuest lessons.	4.07	.52
25. WebQuest gave me more chances to practice English.	4.03	.56
23. WebQuest helped me learn English in a meaningful way.	4.03	.61
11. I enjoyed learning English through the WebQuest.	4.03	.67
19. WebQuest lessons improved my English reading ability.	4.03	.72
TOTAL	4.08	.42

As can be seen, the PTs had fairly high positive perceptions of this sub‑scale (*M=4.08*). The analysis shows that mean values of all the items under this sub‑scale were over 3.00. In other words, the PTs considered the WebQuest as a motivating and useful tool for both practicing and improving their English.

4.1.3.4. Multiple Sources

The following group of items focuses on the extent to which PTs preferred various information sources. Mean values for the items in this sub-scale will be presented in the table below.

Table 4.8.
Mean Values for Multiple Sources Items

Statements	M	SD
2. I liked finding nformation from multiple sources on the Web.	4.40	.67
12. Compiling information from multiple sources increased my knowledge of the topic of the WebQuest lessons.	4.33	.55
***7.** During the WebQuest lessons, I prefer to get answers from a single source.	4.03	.89
***21.** I often lost my way in the sea of information on the Web during the WebQuest lessons.	3.77	.90
***17.** The variety of Internet resources contained in the WebQuest was overwhelming for me.	3.47	.97
TOTAL	4.00	.46

*: Negatively-worded items (reverse items)

According to Table 4.8., the PTs had positive perceptions of this sub-scale (*M=4.00*). Items 2 and 7 indicated that the PTs were in favor of accessing to various sources rather than using one single source on the Web to get information. Furthermore, the PTs believed that compiling information from multiple sources enhanced their knowledge of

the topic. Likewise, the PTs reported that they did not experience any difficulty to deal with the information presented in the WebQuest lessons.

4.1.3.5. Internet and Research Skills

The items belonging to this sub-scale define the extent to which PTs perceived the WebQuest as an opportunity for practicing their Internet search skills. The following table illustrates mean values for the items in this sub-scale.

Table 4.9.
Mean Values for Internet and Research Skills Items

Statements	M	SD
9. WebQuest enhanced my research skills, and I learned about the process of doing research.	4.17	.65
14. I learned Internet search skills through the WebQuest lessons.	3.50	1.22
4. The process of searching for information via the Web enhanced my technological skills.	3.43	1.22
TOTAL	3.70	.91

As it can be seen in Table 4.9., the average mean of this sub-scale indicated PTs' slightly positive perceptions (*M=3.70*). When the table was analyzed, it can be seen that the mean values of all the items under this sub-scale were over 3.00. In other words, the PTs were of the opinion that the use of WebQuest enhanced their research skills, technological skills as well as their Internet search skills.

4.1.3.6. Critical Judgment

The items under this sub‑scale assess the extent to which PTs perceived the WebQuest as an opportunity for evaluating the Internet information critically. Mean values for critical judgment items will be presented in the following items.

Table 4.10.
Mean Values for Critical Judgment Items

Statements	M	SD
15. During the WebQuest lessons, I examined a variety of online information before making my judgment.	4.33	.71
***5.** During the WebQuest lessons, I found it difficult to decide whether or not the information that I had found was useful.	3.77	.94
***10.** I believe that all resources on the WebQuest were reliable.	2.00	.74
TOTAL	3.37	.39

*: Negatively-worded items (reverse items)

Table 4.10. shows that the critical judgment sub-scale received the lowest positive rating among all the aspects of WebQuest learning (*M=3.37*). Item 15 revealed that the majority of the PTs agreed that they could review several different sources before they came to a decision. Moreover, item 5 indicated that the PTs could distinguish between the useful and useless information presented through the WebQuest lessons. However, item 10 demonstrated that the PTs unquestionably trusted all resources on the WebQuest.

4.2. Qualitative Data Results

4.2.1. WebQuest Opinion Survey: Part II

As aforesaid, data coming from the three open-ended questions in Part II of the WebQuest Opinion Survey were analyzed by means of pattern coding as suggested by Miles and Huberman (1994). The results of each open-ended question will be presented separately in the following section.

4.2.1.1. Question 1: What do you like most about the WebQuest?

When the PTs were asked about the features of the WebQuest they favored most, three themes emerged: The user-friendly nature of the WebQuest, its promotion of English learning, and its promotion of active learning.

Below are some of the responses of the PTs regarding the WebQuest as a user-friendly tool:

> The WebQuest was practical and well-organized. Namely, the instructions were clear, comprehensible, and well-presented. Thus, I did not get lost at any part of the project.

> The most advantageous aspect of the WebQuest was its guidance. It enabled me to easily follow the flow of the lessons as it presented the content in a step-by-step manner.

> It saved plenty of time since I had the chance to access to the WebQuest pages anytime even from my mobile or iPad. I also did not have to carry bunches of papers with me since the course content and all the materials used were supplied on the WebQuest.

> Having various sources on the WebQuest was time-saving. I did not have to waste my time for accessing to relevant sources on the Web at the very beginning of the study, when I was not familiar with the topic at all.

Below are some of the responses of the PTs that underlined the potential of the WebQuest in fostering English learning:

> Authentic reading texts supplied on the WebQuest helped me enrich my lexical knowledge in English. Studying various types of texts such as articles and columns also improved my reading skills.

> WebQuest lessons gave me the opportunity to practice English with both my group members and classmates.

> I could learn new phrases, idioms, and specific expressions about legal processes thanks to the authentic reading texts.

> I improved my English writing skill through the assigned writing tasks such as preparing an outline for the given sources and taking notes during the classroom or group discussions.

> I was able to accomplish the task of writing an argumentative essay thanks to online writing tutor links, slides, and sample essay links provided on the WebQuest.

Below are some of the responses of the PTs indicating the benefits of the WebQuest in encouraging active learning:

> We could participate in our own learning process actively as not the teacher but we did research, write, revise, discuss, and most importantly decide.

> We came to the class prepared because we could revise not only the previous steps but also the next ones. As we had known what we were supposed to do during the process, we could take more responsibility for our own learning.

> During the group works, everybody had their own responsibility to do as all group members read different perspectives. In that way, not just only the most extroverted ones but every single person could express their opinions.

4.2.1.2. Question 2: What are the things you do not like about theWebQuest?

When the PTs were asked about the features of the WebQuest they do not like, they mentioned two points: Need for an Internet connection and poor visual support on the WebQuest. Below are some of their responses:

> This project required us to have an Internet connection. Although, it was not a problem for most of my friends, it was for me. Since I am living in a dormitory, it is hard for me to access. In my opinion, need for an Internet connection was the only pitfall of this WebQuest project.

> I think the WebQuest was not visual enough. It was plain a bit. More multimedia forms were needed. For example, using videos might have been a better idea to get our attention.

4.2.1.3. Question 3: How did studying in a planned and guided way affect your learning?

The answers of the PTs to the question asking how they were affected by studying in a planned and guided way during the WebQuest project were classified under two main categories: Affective and motivational factors. Affective factors included the PTs' emotions regarding the guided nature of the WebQuest. The following quotations summarize their affective reasons:

> Knowing every single step during the process made me feel safe as I knew what I was supposed to do both inside and outside the classroom.

> Step-by-step guidance helped me relax as I could see my way to go throughout the project.

> The WebQuest provided a very well organized plan for us to follow. In that way, I felt quite confident about what I was doing.

> There were obvious steps to be passed for each week. Not being asked to do everything at once relieved our anxiety throughout the project. Otherwise, I wouldn't manage my time that much effectively.

Motivational factors expressed by the PTs referred to their eagerness to complete the tasks during the project. Below are some of their responses:

> The precise plan made on the WebQuest increased my motivation as I had a clear purpose to take every single step during the project. For example, I knew I would use different perspectives in my essay, so I behaved accordingly in my own research and group work.

> Studying in a planned way satisfied me as I could see the concrete outcome at the beginning of the process, during which I believed all tasks were meaningful.

4.2.2. Focus Group Interviews

As aforesaid, focus group interviews were conducted with randomly selected 10 volunteer PTs from the experimental group, before and after the study, to identify any changes in PTs' initial perceptions of critical thinking and their reactions to the intervention. In the section below, each interview question will be discussed separately.

4.2.2.1. Definition of Critical Thinking

Pre-focus group interviews indicated that the PTs found it difficult to define critical thinking. Their definitions were vague and mostly referred to the requirements for critical thinking instead. Open-mindedness, tolerance to different or conflicting opinions, and objectivity were among the common underlying prerequisites mentioned by the interviewees. Below are some of their responses:

> Critical thinking is important. It should be constructive but not destructive (Pre-interview).

> Being open-minded and tolerant to others' opinions are necessary for critical thinking (Pre-interview).

On the other hand, once the post-focus group interviews were analyzed, it was seen that the PTs could elaborate their definition of critical thinking better. Unlike their responses in the pre-focus interviews, the PTs could explain the meaning of critical thinking rather than stating different aspects of the term.

> Critical thinking means creating one's own ideas by evaluating multiple perspectives objectively (Post-interview).

> It is the process of forming the third view by synthesizing two different ideas with an open-mind and sound justifications (Post-interview).

In summary, based on the PTs' responses in the post-interviews, critical thinking was defined as a process including objective evaluation and synthesis through having acceptable reasons to come an ultimate decision.

4.2.2.2. The Required Characteristics of a Critical Thinker

When the PTs were asked to identify characteristics of a critical thinker, the common features such as being objective, open-minded, tolerant, and unprejudiced emerged in both interview sessions. The following quotes from the pre- and post-interviews illustrate these points:

> People should respect each other and therefore welcome different opinions if they own critical thinking skills themselves. In other words, we should make sure that different aspects of the issue have been considered thoroughly before we come to a conclusion about an issue. This eventually lets us become broad-minded and indulgent individuals rather than bigots (Pre-interview).

> In order to criticize one's work or comment on an issue, one needs to take only the facts into account rather than his own feelings or past experiences. Thus, we can express what we think fairly. However, it is still not possible to adopt ideas which are new or contradictory without a tendency for a critical stance (Post-interview).

Additionally, PTs mentioned being knowledgeable, curious and skeptical as the required characteristics for a person to become a critical thinker for the first time in the post-interviews. Below are some of their responses:

> To think critically, a person should have enough information or background knowledge. Otherwise, how could it be possible to defend or rethink one's own position and refute/support the claims of others? (Post-interview).

If a person is not well-informed enough, he cannot criticize his own and others' opinions. Actually, he can but should not. Without a good base, criticizing is nonsense (Post-interview).

Critical thinker is a person who is curious. Curiosity is necessary to discover multiple perspectives of the issue (Post-interview).

A person should be curious if he wants to be a critical thinker. If he is not curious about others' opinions, he is likely to be obsessed with his own ideas, which kills critical thinking (Post-interview).

In the post-interviews, being skeptical was taken into consideration from two angles by the PTs: Being skeptical about one's own opinions and others' opinions. Below are some of their responses:

Critical thinking includes being critical to one's own ideas. I mean without being skeptical about one's own ideas and questioning them, a person cannot be said to think critically (Post-interview).

Critical thinker is a person who is questioning all the present ideas. Namely, not only opposing ideas but also supporting ideas should be questioned by a person if he really wants to be a critical thinker (Post-interview).

4.2.2.3. Teachability of Critical Thinking

Once the pre- and post-interviews were analyzed, it was found out that PTs' opinions on the teachability of critical thinking did not vary much.

The pre-interviews indicated that a vast majority of the participants were found to be in favor of the idea that critical thinking can be taught whereas a few respondents were not. The PTs, who responded this question positively, underlined that critical thinking is an outcome and there is no prescription for it. They, on the contrary, stated that critical thinking eventually emerges only if two conditions are created: Promoting the required characteristics for a critical thinker in the environment in which people are brought up and giving them enough chance to practice these characteristics. Below are some of their responses:

To me, the environment where one grows up has the utmost importance in the enhancement of critical thinking. To illustrate, it is highly possible to teach critical thinking skills to a person as long as he is encouraged to express his ideas in a welcoming environment so that he can become much more tolerant to others' opinions and hence appreciate them (Pre-interview).

As long as a person lives in an environment where his objective, open-minded and tolerant approaches are appreciated, he is likely to learn how to think critically (Pre-interview).

By the family or the people around, it should be accepted that the opinions of people differ in many ways as they are not the same in their physical appearance either. Otherwise, it is not possible to teach critical thinking since people are not tolerant to others' opinion enough and thus cannot overcome their prejudices (Pre-interview).

I think critical thinking is not something unattainable but is a long-term acquisition. Thus, suitable conditions should be created to make a person practice the required characteristics (Pre-interview).

Another theme emerging in the pre-interviews was the age factor. The PTs who stated that critical thinking is a teachable concept claimed that age is a crucial point in this sense. They pointed out pre-school and primary school years as the most appropriate years to teach this skill. Below are some of their responses:

I believe that critical thinking can be taught. However, age plays a key role in teaching critical thinking. Namely, the earlier we start teaching, the better outcomes we may have in the end (Pre-interview).

I can't give an exact age but if we can teach a child how to be objective and tolerant to others' opinions in his early years, maybe in primary school years, he is more likely to think critically in the following years (Pre-interview).

The PTs' beliefs related to the age factor differed in the post-interviews.Unlike the pre-interview results, the PTs stated that the practice of teaching critical thinking is not specific to earlier ages, but it is also possible to teach it at university level or even at further stages. Below are some of their responses:

I had believed that we had to teach critical thinking in pre-school years or maybe during primary school years before the project. Even high school years had seemed to be late to do this, however during the project I could see that people can learn how to think critically even in their university years as we did (Post-interview).

Before the project, I had assumed that all of the victims' families supported the death penalty but after I read various sources, I saw that the reverse situation was also possible. This truly shocked me. In short, what I am trying to say is that I am thinking more deeply and critically now. As I did it at university level, why should it be late or impossible for others? (Post-interview).

The quotations indicate that the PTs' experiences during the project had an impact on their opinions regarding the age to start teaching critical thinking.

The PTs, who claimed critical thinking is not teachable, supported their position on the assumption that critical thinking is an inborn capacity and some hereditary factors determine it. Some of their responses are presented below:

Critical thinking is like ... either you have it or not. We must accept the fact that some people are gifted, and others are not. That is so simple (Pre-interview).

Critical thinking is not a teachable concept because this skill is an inborn capacity… A person can or cannot think critically and education cannot change this fact (Pre-interview).

Although inborn capacity was accepted as a reason to refute the possibility of teaching critical thinking in the pre-interviews, mental capacity was stated as a condition which determined the level of learnability of thinking critically in the post-interviews. The following response by one of the PTs summarizes this position:

We can definitely teach how to think critically to a person if we consider the requirements. However, the person's level of acquisition of this skill is closely related to his mental capacity. In short, critical thinking is a teachable concept but learnability is quite related to the cognitive maturity of a person (Post-interview).

At the end of the study, some PTs' opinions on the teachability of critical thinking changed positively based on their experiences during the project. Below is one of the participants' responses:

> In the first interview, I said that critical thinking is not a teachable concept but my opinion has changed. I have seen that even I can think critically (more critically) after this project… Within such a short time… If I can learn, the others can do it, too (Post-interview).

Additionally, unlike the pre-interviews, the teacher factor was highlighted by the PTs for the first time in the post-interviews. The PTs viewed teachers both as a barrier and a facilitator to teach critical thinking. The quotations below illustrate both points of views:

> The claim that critical thinking is attainable through instruction reflects a contradiction in itself. Namely, how can one make sure that the teacher conveys an objective and pure understanding of critical thinking? (Post-interview).

> To be able to teach how to think critically, the teacher should be a critical thinker himself. Otherwise, how can it be possible to create required conditions and guide the learner effectively? (Post-interview).

4.2.2.4. How to Teach Critical Thinking

When the PTs were asked to tell how critical thinking could be taught, in both pre- and post-interviews, they said that the characteristics required for a critical thinker should be fostered both at home and in the school environment. The following quotes from the pre- and post-interviews illustrate these points:

> Curiosity is very important to think critically. Thus, we should ask a child what he thinks about a particular issue to encourage his curiosity (Pre-interview).

> We should welcome a child's constant questioning the world in his early ages and appreciate it (Post-interview).

Besides, in the post-interviews, the PTs suggested debates and assigning different sources which contain conflicting ideas to read as the critical thinking activities in the school context. In the post-interviews, they also underlined the importance of having

role-models around, which is consistent with their ideas about having a teacher who is critical thinker himself. One of the PTs' response was as follows:

I think seeing critical thinkers around is important. In that way, an individual can observe and experience the standards and characteristics required for thinking critically in daily life (Post-interview).

4.2.2.5. WebQuest as a Learning Tool

When the PTs were asked to tell whether they found WebQuest as a useful learning tool, all of them, except one, responded positively. The PTs who found WebQuest useful gave several reasons such as its practicality, collaboration with the teacher and peers both in- and out-of class, enhancement of active learning, improvement of English proficiency levels, fostering critical judgment skills as well as the Internet and research skills. The only participant who didn't agree with the idea that WebQuest is an effective learning tool stated her reason as follows:

I admit that WebQuest is a supplementary material for us as learners. Yet I don't believe that it is an effective learning tool as its contribution to my overall performance does not seem to be valid in long-term. To illustrate, WebQuest learning is context-dependent and I still strive for writing a well-organized essay when I am asked to write about another topic instead of the death penalty.

4.2.2.6. The Relationship between Using WebQuest and Critical Thinking

When the PTs were asked to tell whether using WebQuest had improved their critical thinking in the post-interviews, all of the PTs responded positively. They asserted that having access to multiple sources from different points of view allowed them to think more critically. Below are some of their answers:

I think people progressively become more critical as they read. Since the WebQuest provided us with numerous different reading sources, we had the chance to review the topic from different points of view before we started to write an essay. This enabled us to synthesize the presented information and reflect on the issue much more critically

I read about different opinions related to the death penalty with the help the WebQuest. So, I could understand what different parties thought about the issue by putting myself in their shoes. In that way, I became more tolerant and appreciated their positions.

As you know, being objective is the key to critical thinking. In order for one to become objective, he needs to be knowledgeable by examining all the available resources as much as possible. So, I believe that WebQuest is one of the effective tools which let the learners not only access to the presented information, but also to some others thanks to the links to different websites.

4.2.2.7. The Relationship between Using WebQuest and L2 Writing Performance

When the PTs were asked to tell whether using WebQuest had improved their L2 writing performance in the post-interviews, all of them responded positively. They underlined the advantage of having access to course materials/slides and tutoring websites in their responses, which are presented below:

> While studying, I could visit the websites listed on the WebQuest again and again and learned how to write an argumentative essay. As I know how to organize my paper properly now, I believe that I have truly improved my English writing skills after the study.

> I believe that the WebQuest contributed much to my writing performance. To illustrate, I had the chance to review all the key points highlighted by the teacher thanks to the course materials and slides shared on the WebQuest.

4.2.2.8. Future Implementation of WebQuest

When the PTs were asked to tell whether they would use WebQuest in their future teaching career in the post interviews, all of them, except one, stated that they would be willing to implement it. The basic reason to prefer using WebQuest was reported as its encouragement of students' awareness and active participation in their learning processes. Below are some of their responses:

I think, I will use it in my future teaching because WebQuest lets the learners access all the course materials whenever they want. Therefore, they can review the topics beforehand and come to the class ready. In short, WebQuest seems to be a very effective tool to create a learner-centered classroom.

I will definitely use it. Thanks to the detailed steps of WebQuest, my students will have clear minds. Having clear-minded students will lessen my work-load as a teacher.

I really would like to use it because it expands learning beyond the classroom walls. I think active learners are not just the ones participating in the learning process in class but also outside the classroom.WebQuest definitely creates a suitable atmosphere for this.

On the other hand, one PT underlined that he would not use WebQuest in his future classes because of its demanding nature for a teacher. Below is his response:

In my future career, I will not use WebQuest because it seems very hard to construct. I, as a teacher, should organize most of the sources. Every step should be clear. That is too much. It is truly time-consuming and heavy work load for a teacher.

CHAPTER V: DISCUSSION AND CONCLUSION

The present study aimed to explore the possible effects of WebQuest-supported critical thinking instruction on the critical thinking disposion level and L2 writing performance of Turkish PTs of English at a state university. It also attempted to find out whether receiving WebQuest-supported critical thinking instruction leads to a change in the PTs' understanding of critical thinking. Finally, the PTs' perceptions of the WebQuest integration were examined.

5.1. Discussion of the Findings

The results of each research question of the present study will be discussed separately in the following sections.

5.1.1. RQ1/a: Will there be a significant difference between the Turkish PTs of English who receive traditional instruction and those who receive WebQuest-supported critical thinking instruction in terms of their critical thinking disposition levels?

The California Critical Thinking Disposition Inventory administered to both the experimental and control groups revealed that the PTs were homogenous in terms of their critical thinking disposition levels at the beginning of the study.

At the end of the study, the comparison of the experimental and control group PTs' gain scores on the critical thinking test indicated that the overall critical thinking disposition levels of the experimental group PTs were significantly higher than the control group PTs. This finding is in line with the studies conducted by Kanuka (2005), Murry (2006), Puthikanon (2009), Bizri (2010) and Zhou et al. (2012) who also designed experimental studies and concluded that the WebQuest-supported instruction significantly promoted critical thinking levels of participating students. However, this result contradicts with the findings of Yücel's (2011) study, in which the control group students who received traditional instruction had higher critical thinking levels than experimental group students, though this difference was not significant.

Regarding the sub-scales of the critical thinking test, significant differences between the groups in inquisitiveness, analyticity, and self-confidence (*p<.05*) were found in favor of the experimental group. Different factors might have led to these differences. In the experimental group, the PTs' sense of inquiry was encouraged in a number of ways. For example, the experimental group PTs took a quiz on the history of the death penalty on the first week. As they did this before they read the facts, their curiosity and eagerness to learn might have been fostered at the very beginning of the treatment. Likewise, they answered some reflection questions after they examined the assigned sources. One of the reflection questions was about the questions they would ask to the author if they could. This question seems to fulfill their "desire for learning even when the application of the knowledge is not readily apparent", which directly appears in the description of the sub-scale of inquisitiveness. Another factor that promoted the PTs' inquisitiveness might be their research on the Internet to find extra sources for reading.

The sub-scale of analyticity includes the use of reasoning and evidence. Throughout the treatment, the experimental group PTs were encouraged to use their reasoning in different ways. For example, they were required to consider different perspectives on the death penalty and examine multiple sources including conflicting ideas for a single perspective. In that way, they could compare different pieces of information in terms of their similarities and differences. Likewise, they were supposed to examine the websites shared on the WebQuest to find information relevant to their perspectives. Moreover, the experimental group PTs were consistently asked to justify their ideas with sound justifications during the treatment. For example, they took an opinion survey about the death penalty on the first week. They were supposed to rate the contradictory statements according to their level of agreement with each of the statements. While doing this, they were also asked to justify their choices on the survey to ensure that their choices were based on reasoned arguments. Similarly, nearly all of the reflection questions had why/why not parts to make the PTs use evidence to support their positions.

Finally, taking the student-centered nature of the WebQuest project into consideration, the experimental group PTs' improvement in the sub-scale of the self-efficacy was

expected. They had the freedom to express their opinions from the very beginning of the treatment. For example, as the opinion survey about the death penalty asked for the PTs' opinions rather than imposing facts, they might have felt that their opinions were appreciated. Also, as every PT had a voice in role and group discussions, their sense of self-confidence might have been promoted. This fact also emerged in the focus group interviews. One PT said that not just only the attentive students but every single person could express their opinions in group works. Throughout the treatment, the experimental group PTs took the responsibility of their own learning. They were supposed to follow the steps on the WebQuest to achieve the final task. At the end of the study, the PTs had comprehensive knowledge of the death penalty as they read a lot and discussed its different aspects during the process. Thus, being relatively knowledgeable about a topic might have also promoted their sense of self-confidence.

Although there were no significant differences between the groups regarding their level of critical thinking in open-mindedness and systematicity, the PTs in the experimental group had greater gains than the control group PTs at the end of the study. The reason why the groups did not differ in the sub-scale of open-mindedness might be because of the fact that the control group PTs also read the articles from different perspectives on the death penalty. Their tolerance to divergent views and sensitiveness to the possibility of their own biases, as stated in the description of the sub-scale of open-mindedness, might have also been encouraged. Furthermore, both groups had to write an argumentative essay at the end of the study. This task also required them to consider both opposing and supporting views to come to an ultimate decision.

For the sub-scale of systematicity, "being organized, orderly, focused, and diligent in inquiry" is fundamental. The guided nature of the WebQuest and having sources relevant to their perspectives on it was highly appreciated by the experimental group PTs as they mentioned in the WebQuest Opinion Survey and focus group interviews. Although the experimental group PTs had greater gains than the control group PTs in systematicity, the difference was not significant. This result might be due to the duration of the study. As

pointed out by Norris (2003), considerable practice in different contexts is needed to acquire critical thinking dispositions.

On the other hand, the control group PTs' scores in truth-seeking were significantly higher than the experimental group PTs at the end of the treatment. Taking the description of this sub-scale, "being eager to seek the best knowledge in a given context", into consideration, the excessive number of the sources to be read might have overwhelmed the experimental group PTs and led to this result.

5.1.2. RQ1/b: Will there be a significant difference between the Turkish PTs of English who receive traditional instruction and those who receive WebQuest-supported critical thinking instruction in terms of their L2 writing performance?

In relation to the writing performance, the analysis of the PTs' argumentative essays indicated that there was a significant difference between the groups, in favor of the experimental group. In other words, the experimental group PTs outperformed the control group PTs in terms of their L2 writing performance. This finding resonates with the study of Chuo (2007) and Alshumaimeri and Bamanger (2013), who also designed experimental studies to investigate the effects of WebQuest-supported instruction on EFL students' writing performance and concluded significant improvements. However, it is inconsistent with the results of Koçoğlu's (2005) study which reported that students having WebQuest-supported instruction and the ones having traditional instruction showed equal performances in writing tests.

The significant positive effect of the WebQuest-supported instruction on the L2 writing performance of the Turkish PTs of English might be due to the kind of language input that the PTs were exposed to. Doughty and Long (2002) claimed that computer technology has the capacity to provide language input which has "linguistic complexity, quality, quantity, variety, genuineness, and relevance" to language learners. This argument was supported by Torres (2007) and Laborda (2009) who stated that WebQuest is an effective tool for practicing writing as it lets students work with authentic materials in the target language. Being exposed to such language input with the help of coming

from the materials and pre-selected websites shared on the WebQuest is likely to enrich the experimental group PTs' written products.

Another interpretation of this finding might be related to the amount of the reading materials presented on the WebQuest. The experimental group PTs read an abundance of materials about the death penalty by using the WebQuest materials as they were required to choose a perspective and assume the respective role. This reading to write approach is supported by Krashen (1985), who claimed that comprehensive and rich reading input is needed for learning to write.

5.1.3. RQ2: Will there be a change in PTs' understanding of critical thinking at the end of the study?

The results of the focus group interviews indicated that while the PTs had no clear understanding of critical thinking at the beginning of the study, they demonstrated clearer awareness of the concept and provided more precise definitions at the end of the study. In their post-definitions, they were aware of the importance of objective evaluation and synthesis of multiple perspectives with sound justifications for thinking critically. This might show that the PTs regarded the idea of thinking critically as a process. This finding is in line with the study of Turuk-Kuek (2010) who investigated Sudanese university students' perception about critical thinking before and after the instruction in which integrative reading and writing approach was adopted in an L2 writing classroom. The PTs' initial limited understanding of critical thinking may be due to the emphasis on memorization and rote-learning instead of problem-solving, analysis and the logical evaluation of acquired knowledge in Turkish educational system.

In the focus group interviews, when the PTs were asked to identify characteristics of a critical thinker, being objective, open-minded, tolerant, and unprejudiced emerged in both interview sessions. Additionally, being knowledgeable, curious and skeptical was mentioned for the first time in the post-interviews. In the post-interviews, most of the PTs stated that without being curious, understanding others' opinions is not likely to happen; without being skeptical and constant questioning, discovering multiple perspectives is difficult; and without being well-informed, it is not probable to defend one's own

position and refute/support the claims of others. The experimental group PTs might have understood the value of the latter characteristics as they examined various sources and links shared on the WebQuest or on the Internet and they were consistently encouraged to justify their choices throughout the study.

Regarding the teachability of critical thinking in both pre- and post-interview sessions, most of the PTs were found to be in favor of the idea that critical thinking can be taught. Furthermore, some of the PTs mentioned that their opinions on the teachability of critical thinking changed positively based on their experiences during the project. This finding may imply that the PTs were aware of their improvement in terms of critical thinking and this positive experience let them reflect on the concept of critical thinking. Since they regarded critical thinking as teachable, they were willing to integrate it into their future teaching practices. To achieve this aim, the PTs suggested activities such as debates and assigning different sources which contain conflicting ideas. The PTs' opinions related to some factors such as age and inborn capacity of individuals influencing critical thinking ability changed from pre-interviews to post-interviews. For example, they mentioned pre-school and primary school years as the most appropriate years to teach this skill in the pre-interview sessions. However, in the post-interview sessions, they claimed that it was still possible to teach critical thinking at further levels of education based on their own progress during the treatment. This finding may imply that this positive experience changed their opinions about the age factor as a barrier to acquire critical thinking skills. In the pre-interviews, the PTs, who claimed critical thinking is not teachable, supported their position on the assumption that critical thinking is an inborn capacity and some hereditary factors determine it. However, mental capacity was stated as a condition which determined the level of learnability of thinking critically in the post-interviews. This might imply that the WebQuest-supported critical thinking instruction broadened the PTs' horizons and let them see multiple aspects of a single theme. Furthermore, teacher factor was highlighted by the PTs for the first time in the post-interviews. As the post-interviews were conducted at the end of the term, the PTs might have had better understanding of teacher role in teaching/learning practices.

5.1.4. RQ3: What are the PTs' opinions about the WebQuest-supported instruction?

The PTs who received WebQuest-supported critical thinking instruction reported relatively positive perceptions towards WebQuest learning both in the WebQuest Opinion Survey and focus group interviews. This finding echoes the results of several studies (e.g. Chuo, 2007; Prapinwong, 2008; Tsai, 2005; Uslu, 2011).

One of the aspects of WebQuest learning that the PTs appreciated was its encouragement of student negotiation. This positive perception might have been encouraged by means of working in groups, sharing their knowledge with the other group members, and listening to them for more information. Since the PTs had to take the information provided by each member into consideration to complete the whole task, they had a sound reason to participate in group discussion actively.

Another aspect of WebQuest learning valued by the PTs was its contribution to English learning. They asserted that the authentic reading texts they could access to with the help of the WebQuest enriched their lexical knowledge in English. This result supports the arguments of Horst (2005), Pigada and Schmitt (2006), and Pino-Silva (2006) who underlined the importance of extensive reading in expanding vocabulary knowledge. In the same line, when the PTs were asked whether WebQuest-supported instruction had improved their L2 writing performance in the post-interviews, all of them responded positively and pointed out the advantage of having access to course materials/slides and tutoring websites on how to write an argumentative essay. This finding is consistent with the PTs' responses stating that encouragement of active participation of learners was one of the most powerful aspects of WebQuest learning. As the participants were PTs, their understanding of responsibility sharing between teachers and students are important for their future practices in their classes.

When the PTs were asked about the relationship between using WebQuest and the concept of critical thinking, they mentioned a positive relationship and asserted that having access to multiple sources from different points of view allowed them to think more critically. In addition to the sources provided on the WebQuest, PTs were encouraged to do some extra research on the Internet. To equip the learners with the

necessary skills to evaluate the quality of online resources, explicit teaching of online source evaluation might be an effective approach. In that way, they can "verify credibility of the sites by examining the bias, relevancy, and accuracy of the information" (Prapinwong, 2008, p. 171).

Finally, when the PTs were asked to tell whether they would use WebQuest in their future teaching, a majority of them responded positively. Because the PTs experienced this teaching method as learners and learned by doing, their willingness to implement WebQuest is likely to affect their way of teaching and decision making mechanism as teachers in future. This argument is supported by Pope, Hare, and Howard (2005) who suggested that "preservice teachers need opportunities to learn with the technology by being exposed to authentic, learner-centred activities that allow them to construct their own understanding of the learning outcomes" (p. 574). For effective teaching practices, training on the instructional use of WebQuest should be included in teacher education programs since "merely knowing how to use technology is not the same as knowing how to teach with it" (Mishra & Koehler, 2006, p. 1033).

5.2. Limitations and Suggestions for Further Research

The present study has a number of limitations. First of all, the duration of the study was one of the limitations. Because of the pre-determined syllabus of the Advanced Reading and Writing I course, only 6 weeks could be allocated for the implementation of the WebQuest-supported critical thinking instruction. If more time had been available, a pilot WebQuest could have been implemented. Thus, for the PTs who have not received any training on using WebQuest before, a pilot WebQuest can be implemented in further studies to familiarize the PTs with the WebQuest-supported instruction procedures.

Another limitation was the way the PTs' essays were evaluated. Because of the number of the participants (N=60), only quantitative analysis methods were employed in the current study. Hence, further studies can utilize qualitative methods to determine the extent to which PTs display elements of critical thinking in their essays.

For the current study, a quasi-experimental design, in which pre-data were collected one week before the treatment and post-data were collected one week after the treatment, were used. In further studies, the long-term effects of the training can be measured if a delayed post-test is administered.

Finally, in a further study, classroom discussions can be audio-recorded to observe how PTs of English use critical thinking when completing a WebQuest task. In that way, how they interpret, analyze, synthesize, evaluate, and reflect on the information can be investigated.

REFERENCES

Akçay, A., & Şahin, A. (2012). WebQuest (Web Macerası) öğrenme yönteminin Türkçe dersindeki akademik başarı ve tutuma etkisi [Effects of WebQuest learning method on academic success and attitude in Turkish lessons]. *Eğitim Bilimleri Araştırmaları Dergisi*, *2*(2), 33-45.

Akdere, N. (2012). *Turkish pre-service teachers' critical thinking levels, attitudes and self-efficacy beliefs in teaching for critical thinking* (Unpublished doctoral dissertation). Middle East Technical University, Ankara, Turkey.

Akyüz, H. İ., & Samsa, S. (2009). The effects of blended learning environment on the critical thinking skills of students. *Procedia-Social and Behavioral Sciences*, *1*(1), 1744-1748.

Alagözlü, N. (2007). Critical thinking and voice in EFL writing. *Asian EFL Journal*, *9*(3), 118-136.

Alagözlü, N., & Süzer, S. S. (2010). Language and cognition: Is critical thinking a myth in Turkish educational system? *Procedia-Social and Behavioral Sciences*, *2*(2), 782-786.

Allan, J., & Street, M. (2007). The quest for deeper learning: An investigation into the impact of a knowledge-pooling WebQuest in primary initial teacher training. *British Journal of Educational Technology, 38,* 1102-1112.

Alshumaimeri, Y. A., & Bamanger, E. M. (2013).The effects of WebQuest writing instruction on the writing performance of Saudi male EFL learners. *Procedia-Social and Behavioral Sciences*, *83*, 960-968.

Alshumaimeri, Y. A., & Almasri, M. M. (2012). The effects of using WebQuests on reading comprehension performance of Saudi EFL students. *Turkish Online Journal of Educational Technology-TOJET*. *11*(4), 295-306.

Ashton, P. (1988). *Teaching higher-order thinking and content: An essential ingredient in teacher preparation.* Gainesville: FL: University of Florida Press.

Awada, G., & Ghaith, G. (2014). Impact of using the WebQuest technological model on English as a Foreign Language (EFL) writing achievement and apprehension. *Arab World English Journal*, *1*, 81-93.

Aydede, M. N., & Kesercioğlu, T. (2010). Aktif öğrenme uygulamalarının öğrencilerin eleştirel düşünme becerilerine etkisi [The effect of active learning applications on students' critical thinking skills]. *Dokuz Eylül Üniversitesi Buca Eğitim Fakültesi Dergisi*, 27, 14-22.

Beşoluk, Ş., & Önder, İ. (2010).Öğretmen adaylarının öğrenme yaklaşımları, öğrenme stilleri ve eleştirel düşünme eğilimlerinin incelenmesi [Investigation of teacher candidates' learning approaches, learning styles and critical thinking dispositions]. *İlköğretim Online*, *9*(2), 679-693.

Beyer, B. K. (1988). Developing a scope and sequence for thinking skills instruction. *Educational Leadership, 45*(5), 26-30.

Biber, A. C., Tuna, A., & Incikabı, L. (2013). An investigation of critical thinking dispositions of Mathematics teacher candidates. *Educational Research*, *4*(2), 109-117.

Bilen, K., Ercan, O., & Akçaözoğlu, E. (2013). Identification of critical thinking dispositions of teacher candidates. *Anthropologist*, *16*(3), 435-448.

Bizri, Z. A. (2010). *The effect of language WebQuest on the higher order thinking skills of Labanese high school students* (Unpublished master's thesis). Labanese American University, Beirut, Lebanon.

Bloom, B. S., Engelhart, M. D., Furst, E. J., Hill, W. H., & Krathwohl, D. R. (1956). *Taxonomy of educational objectives: The classification of educational goals. Handbook 1: Cognitive domain.* New York: David McKay.

Bökeoğlu, O. Ç., & Yılmaz, K. (2005). Üniversite öğrencilerinin eleştirel düşünmeye yönelik tutumları ile araştırma kaygıları arasındaki ilişki [The relationship between attitudes of university students towards critical thinking and research anxieties]. *Kuram ve Uygulamada Eğitim Yönetimi, 41*, 47-67.

Bradshaw, A. C., Bishop, J. L., Gens, L. S., Miller, S. L., & Rogers, M. A. (2002). The relationship of the World Wide Web to thinking skills. *Educational Media International, 39*, 275-284.

Brookfield, S. D. (1987). *Developing critical thinkers*. San Francisco: Jossey Bass Publishers.

Chang, A. L. (2007). *Effects of WebQuest learning activities on social studies' learning attitudes and academic achievement of sixth graders* (Unpublished master's thesis). National PingTung University of Education, PingTung City, Taiwan.

Chuo, T. W. I. (2007). The effects of the WebQuest writing instruction program on EFL learners' writing performance, writing apprehension, and perception. *TESL-EJ*, *11*(3), 1-27.

Crawford, C. M., & Brown, E. (2002). *Focusing upon higher order thinking skills: WebQuests and the learner-centered Mathematical learning environment*. Retrieved from ERIC database. (ED474086)

Clark, D. (1999). Bloom's taxonomy of learning domains. Retrieved from http://www.nwlink.com/~donclark/hrd/bloom.html

Cheung, C., Rudowicz, E., Kwan, A. S. F., & Yue, X. D. (2002). Assessing university students' general and specific thinking. *College Student Journal, 36*(4), 504- 525.

Çavdar, G., & Doe, S. (2012). Learning through writing: Teaching critical thinking skills in writing assignments. *PS: Political Science & Politics*, *45*(2), 298-306.

Çubukçu, F. (2011). Critical thinking strategies in reading. P*orta Linguarum*, *16*, 7-17.

Davidson, B., & Dunham, R. (1997). Assessing EFL student progress in critical thinking with the Ennis-Weir Critical Thinking Essay Test. *JALT Journal, 19*(1), 43-57.

Dayıoğlu, S. (2003). *A descriptive study on the critical thinking levels of the students at the unit of English preparatory school at Hacettepe University* (Unpublished master's thesis). Middle East Technical University, Ankara, Turkey.

Dewey, J. (1909). *Moral principles in education*. Boston: Houghton Mifflin.

Diestler, S. (2001). *Becoming a critical thinker*: *A user friendly manual* (3rd ed.). New Jersey: Prentice Hall.

Dodge, B. (1998). *WebQuests: A strategy for scaffolding higher level learning.* Retrieved from http://webquest.sdsu.edu/necc98.htm

Dodge, B. (1997). *Some thoughts about WebQuests.* Retrieved from http://webquest.sdsu.edu/about_webquests.html

Doğru, M., & Şeker, F. (2012). The effect of use of WebQuest in science education on persistency and attitude levels for science and technology lesson. *Çukurova University Faculty of Education Journal*, *41*(1), 95-104.

Doğru, M., Şeker, F., & Gençosman, T. (2011).The effect of use of WebQuest in science education on success, self-efficacy and web-based education attitudes of primary school students. *Practice and Theory in Systems of Education, 6*(4), 403-414.

Doughty, C., & Long, M. H. (2002). *Creating the optimal learning environment in a DL language course*. Paper presented at Title VI conference on distance learning of the less commonly taught languages. Retrieved from http://langinnovate.msu.edu/commpapers.html#doughty

Dutoğlu, G., & Tuncel, M. (2008). Aday öğretmenlerin eleştirel düşünme eğilimleri ile duygusal zekâ düzeyleri arasındaki ilişki [The relationship between candidate teachers' critical thinking tendecies and their emotional intelligence levels]. *Abant İzzet Baysal Üniversitesi Eğitim Fakültesi Dergisi, 8*(1), 11-32.

Ennis, R. H. (1987). A taxonomy of critical thinking dispositions and abilities. In J. Baron & R. Sternberg (Eds.), *Teaching thinking skills: Theory and practice (pp.* 9-26). New York: W.H. Freeman.

Ennis, R. H. (2002). Goals for a critical thinking curriculum and its assessment. In Arthur L. Costa (Ed.), *Developing minds* (3rd Ed.) (pp. 44-46). Alexandria, VA: ASCD.

Ennis, R. H., & Weir, E. E. (1985). *The Ennis-Weir Critical Thinking Essay Test: An instrument for teaching and testing*. Midwest Publications.

Epstein, R. L. (2000). *The pocket guide to critical thinking*. Wadsworth/Thomson Learning.

Facione, P. A. (1998). *Critical thinking: What it is and why it counts*. California: California Academic Press.

Facione, P. A. (1990). *The California Critical Thinking Skills Test-College Level. Technical Report# 1. Experimental validation and content validity*. Retrieved from ERIC database. (ED327549)

Facione, P. A., Sánchez, C. A., Facione, N. C., & Gainen, J. (1995). The disposition toward critical thinking. *The Journal of General Education, 44*(1), 1-25.

Facione, P. A., Facione, N. C., & Giancarlo, C. A. (1996). *The California Critical Thinking Disposition Inventory Test Manual*. Milbrae, CA, California Academic Press.

Facione, P. A., & Facione, N. C. (1992). *The California Critical Thinking Disposition Inventory.* Millbrae, CA: The California Academic Press.

Facione, P. A. (1990). *Critical thinking: A statement of expert consensus for purposes of educational assessment and instruction. Research findings and recommendations*. Retrieved from ERIC database. (ED315423)

Fahim, M., Barjesteh, H., & Vaseghi, R. (2012). Effects of critical thinking strategy training on male/female EFL learners' reading comprehension. *English Language Teaching, 5*(1), 140-145.

Fahim, M., & Hashtroodi, P. (2012). The effect of critical thinking on developing argumentative essays by Iranian EFL university students. *Journal of Language Teaching and Research*, *3*(4), 632-638.

Fahim, M., & Sa'eepour, M. (2011). The impact of teaching critical thinking skills on reading comprehension of Iranian EFL learners. *Journal of Language Teaching and Research*, *2*(4), 867-874.

Fahim, M., Bagherkazemi, M., & Alemi, M. (2010). The relationship between test takers' critical thinking ability and their performance on the reading section of TOEFL. *Journal of Language Teaching and Research*, *1*(6), 830-837.

Fisher, A., & Scriven, M. (1997). *Critical thinking: Its definition and assessment*. CA: Edge Press.

Fraenkel, J. R., & Wallen, N. E. (2003). *How to design and evaluate research in science education.* NY: McGraw-Hill.

Freire, P. (1993). *Pedagogy of the oppressed*. London: The Continuum Int. Pub. Comp.

Ghorbandordinejad, F., & Heydari, M. (2012). On the relationship between Iranian EFL students' critical thinking ability and their reading comprehension micro-skills. *Philippine ESL Journal, 9*, 24-37.

Gorrow, T., Bing, J., & Royer, R. (2004). Going in circles: The effects of a WebQuest on the achievement and attitudes of prospective teacher candidates in education foundations. In R. Ferdig et al. (Eds.), *Proceedings of Society for Information Technology & Teacher Education International Conference 2004* (pp. 2189-2195).

Gough, D. (1991). *Thinking about thinking.* Retrieved from ERIC database. (ED327980)

Gowen, D. C. (2010). *The relationship of motivation and multiple intelligence preference to achievement from instruction using WebQuests* (Doctoral dissertation). Avaliable from ProQuest Dissertations and Theses database. (UMI No. 3403343)

Gökalp, M. S. (2011). *Effects of WebQuest based instruction ninth grade students' achievement in and attitude towards force and motion* (Unpublished doctoral dissertation). Middle East Technical University, Ankara, Turkey.

Halat, E. (2008). The effects of designing WebQuests on the motivation of pre-service elementary school teachers. *International Journal of Mathematical Education in Science and Technology*, *39*(6), 793-802.

Halat, E., & Karakuş, F. (2014). Integration of WebQuest in a social studies course and motivation of pre-service teachers. *The Georgia Social Studies Journal, 4*(1), 20-31.

Halat, E., & Peker, M. (2011). The impacts of mathematical representations developed through WebQuest and spreadsheet activities on the motivation of pre-service elementary school teachers. *Turkish Online Journal of Educational Technology-TOJET*, *10*(2), 259-267.

Halpern, D. F. (2003). *Thought & knowledge: An introduction to critical thinking (4th ed)*. London: Laurance Erlbaum Associates Publishers.

Halpern, D. F. (1998). Teaching critical thinking for transfer across domains: Dispositions, skills structure training, and metacognitive monitoring. *American Psychologist*, *53*, 449-445.

Horst, M. (2005). Learning L2 vocabulary through extensive reading: A measurement study. *The Canadian Modern Language Review, 6* (3), 355-382.

Hooks, B. (2010). *Teaching critical thinking: Practical wisdom*. New York: Routledge.

Hughes, W., & Lavery, J. (2008). *Critical thinking: An introduction to the basic skills*. Broadview Press.

Ikpeze, C. H., & Boyd, F. B. (2007). Web-based inquiry learning: Facilitating thoughtful literacywith WebQuests. *The Reading Teacher, 60*(7), 644-654.

Johnson, A. P. (2000). *Up and out: Using creative and critical thinking skills to enhance learning*. Boston: Ally & Bacon.

Jones, E. A., Hoffman, S., Moore, L. M., Ratcliff, G., Tibbetts, S., & Click, B.A. (1995). *National assessment of college student learning: Identifying college graduates' essential skills in writing, speech and listening, and critical thinking.* Retrieved from ERIC database. (ED383255)

Kanuka, H. (2005). An exploration into facilitating higher levels of learning in a textbased internet learning environment using diverse instructional strategies. *Journal of Computer-Mediated Communication, 10*(3). Retrieved from http://onlinelibrary.wiley.com/doi/10.1111/j.1083-6101.2005.tb00256.x/full

Kaye, C., & Ragusa, G. (1998). *Boal's Mirror: Reflections for Teacher Education.* Retrieved from ERIC database. (ED419787)

Kennedy, M., Fisher, M. B., & Ennis, R. H. (1991). Critical Thinking: Literature Review and Needed Research. In Idol, L. and Jones, B.P. (Eds.). *Educational Values and Cognitive Instruction: IlIlplicatiolls for Reform.* Hillsdale, N.J.: Lawrence Erlbaum.

Kightlinger, V. L. (2006). *Constructivism: Using WebQuest to promote student achievement in 4th grade social studies* (Unpublished doctoral dissertation). Northwestern State University of Louisiana, Los Angeles, ABD.

Kincheloe, J. L. (2004). In to the great wide open: Introducing critical thinking. In J. L. Kincheloe & D. Weil (Eds.), *Critical thinking and learning: An encyclopedia for parents and teachers*. Greenwood Press: Westport, Connecticut, London.

Koçoğlu, Z. (2010). WebQuests in EFL reading/writing classroom. *Procedia-Social and Behavioral Sciences*, *2*(2), 3524-3527.

Kong, S. L. (2006). Effects of a cognitive-infusion intervention on critical thinking skills and dispositions of pre-service teachers. Paper presented at AARE Conference, Adelaide, Australia.

Korkmaz, O., & Karakuş, U. (2009). The impact of blended learning model on student attitudes towards Geography course and their critical thinking dispositions and levels. *Turkish Online Journal of Educational Technology-TOJET*, *8*(4), 51-63.

Kökdemir, D. (2003). *Belirsizlik durumlarında karar verme ve problem çözme* [Decision making and problem solving under uncertainity] (Unpublished doctoral dissertation). Ankara University, Ankara, Turkey.

Kuhn, D. (1999). A developmental model of critical thinking. *Educational Researcher*, *28*, 16-25.

Kurtuluş, A., & Kılıç, R. (2009). The effects of WebQuest-assisted cooperative learning method on the achievement towards Mathematics lesson. *NWSA: Education Sciences*, *4*(1), 62-70.

Kürüm, D. (2002). *Öğretmen adaylarının eleştirel düşünme gücü* [Critical thinking abilities of teacher trainees] (Unpublished master's thesis). Anadolu University, Eskişehir, Turkey.

Krashen, S. D. (1985). *The input hypothesis: Issues and implications*. New York: Longman.

Krathwohl, D. R. (2002). A revision of Bloom's taxonomy: An overview. *Theory into Practice*, *41*(4), 212-218.

Laborda, J. G. (2009). Using WebQuests for oral communication in English as a foreign language for Tourism Studies. *Educational Technology & Society*, 12(1), 258-270.

Lai, E. R. (2011). Critical thinking: A literature review. *Pearson's Research Reports*, *6*, 40-41.

Lai, Y. K. (2009). Assessing students' critical thinking performance: Urging for measurements using multi-response format. *Thinking Skills and Creativity, 4*(1), 70-76.

Lampert, N. (2007). Critical thinking dispositions as an outcome of undergraduate education. *The Journal of General Education*, *56*(1), 17-33.

Levy, D. A. (2010). *Tools of critical thinking: Metathoughts for psychology* (2nd ed.). Illinois: Wavelend Press.

Liaw, M. (2007). Content-based reading and writing for critical thinking skills in an EFL context. *English Teaching and Learning*, *31*(2), 45-87.

Lynch, B. K. (1996). *Language program evaluation.* Cambridge: Cambridge University Press.

MacGregor, S. K., & Lou, Y. (2005). Web-based learning: How task scaffolding and web site design support knowledge acquisition? *Journal of Research on Technology in Education, 37*(2), 161-175.

March, T. (2004). The learning power of WebQuests. *Educational Leadership*, *61*(4), 42-47.

March, T. (1998). *Why WebQuest: An introduction.* Retrieved from http://tommarch.com/writings/why-webquests/

Miles, M. B., & Huberman, A. M. (1994). *Qualitative data analysis.* Thousand Oaks, CA: Sage.

McBride, R. E., Xiang, P., & Wittenburg, D. (2002). Dispositions toward critical thinking: The pre-service teacher's perspective. *Teachers and Teaching: Theory and Practice*, *8*(1), 29-40.

McBride, R. E., Xiang, P., Wittenburg, D., & Shen, J. (2002). An analysis of pre-service teachers' dispositions toward critical thinking: A cross-cultural perspective. *Asia-Pacific Journal of Teacher Education*, *30*(2), 131-140.

Mishra, P., & Koehler, M. J. (2006). Technological pedagogical content knowledge: A framework for teacher knowledge. *Teachers College Record, 108*(6), 1017-1054.

Moghaddam, M. M., & Malekzadeh, S. (2011). Improving L2 writing ability in the light of critical thinking. *Theory and Practice in Language Studies*, *1*(7), 789-797.

Moore, N. B., & Parker, R. (1989). *Critical thinking: Evaluating claims and arguments in everyday life.* Kentucky: Mayfield Publishing Co.

Murry, R. (2006). *WebQuests celebrate 10 years: Have they delivered?* Retreved from http://teach.valdosta.edu/are/vol5no1/Thesis%20PDF/MurryR_ARE.pdf

Norris, S. P. (2003). The meaning of critical thinking test performance: The effects of abilities and dispositions on scores. In D. Fasko (Ed.), *Critical Thinking and Reasoning: Current Research, Theory, and Practice* (pp. 315-329). Cresskill, NJ: Hampton Press, Inc.

Norris, P. S., & Ennis, R. (1989). *Evaluating critical thinking*. Pacific Grove, CA: Critical Thinking Press and Software.

Nicol, J. (2009). *Using WebQuests to increase student achievement and motivation in a ninth grade social studies classroom* (Unpublished doctoral dissertation). Saginaw Valley State University, Michigan, ABD.

OECD (2014). *PISA 2012 results in focus.* Retrieved from http://www.oecd.org/pisa/keyfindings/pisa-2012-results-overview.pdf

Özen, M. (2013). *Investigation of pre-service Mathematics teachers' critical thinking processes through statistical and probabilistic knowledge in the context of popular media texts* (Unpublished master's thesis). Middle East Technical University, Ankara, Turkey.

Pallant, J. (2005). *SPSS survival manual: A step by step guide to data analysis using SPSS for Windows (Version 12)*. Sydney: Allen & Unwin.

Paul, R. W., Elder, L., & Bartell, T. (1997). *California teacher preparation for instruction in critical thinking: Research findings and policy recommendations.* Retrieved from ERIC database. (ED437379)

Paul, R. W. (1992). Critical thinking: What, why, and how? *New Directions for Community Colleges, 77*, 3–24.

Paul, R. W., Binker, A., Martin, D., Vetrano, C., & Kreklau, H. (1989).*Critical thinking handbook: 6th-9th grades. A guide for remodeling lesson plans in language arts, social studies and science.* Retrieved from ERIC database. (ED308481)

Pigada, M., & Schmitt, N. (2006). Vocabulary acquisition from extensive reading: A case study. *Reading in a Foreign Language*, *18*(1), 1-28.

Pino-Silva, J. (2006). Extensive reading through the Internet: Is it worth the while? *The Reading Matrix, 6*(1).85-96.

Pope, M., Hare, D., & Howard, E. (2005). Enhancing technology use in students teaching: A case study. *Journal of Technology in Teacher Education, 13*(4), 573- 618.

Potts, B. (1994). *Strategies for critical thinking.* Retrieved from ERIC database. (ED385606)

Prapinwong, M. (2008). *Constructivist language learning through WebQuests in the EFL context: An exploratory study* (Doctoral dissertation). Available from ProQuest Dissertations and Theses database. (UMI No. 3331410)

Puthikanon, N. (2009). *Examining critical thinking and language use through the use of WebQuests in an EFL reading class* (Doctoral dissertation). Available from ProQuest Dissertations and Theses database. (UMI No. 3390298)

Rury, J. L. (2009). *Education and social change: Contours in history of American schooling.* NY: Routledge.

Siegel, H. (1988). *Educating reason: Rationality, critical thinking, and education*. New York: Routledge.

Şen, Ü. (2009). Türkçe öğretmeni adaylarının eleştirel düşünme tutumlarının çeşitli değişkenler açısından değerlendirilmesi [An evaluation about Turkish teacher candidates' critical thinking attitude's in terms of different variable]. *Journal of world of Turks*, *1*(2), 69-89.

Seyhan-Yücel, M. (2013). Critical thinking disposition of German and English foreign language teacher candidates. *Hacettepe University Journal of Education, 28*(2), 377-393.

Sternberg, R. J. (1986). *Critical thinking: Its nature, measurements, and improvement*. Washington DC: National Institute of Education.

Şenkaya, E. (2005). *Yabancı dil öğretiminde eleştirel düşünme becerilerinin kullanılmasının başarıya etkisi* [The effect of using critical thinking skills on success in teaching writing in a foreign language] (Unpublished master's thesis). Hacettepe University, Ankara, Turkey.

Ten Dam, G., & Volman, M. (2004). Critical thinking as a citizenship competence: Teaching strategies. *Learning and Instruction*, *14*(4), 359-379.

Temel, S. (2014). The effects of problem-based learning on pre-service teachers' critical thinking dispositions and perceptions of problem-solving ability. *South African Journal of Education*, *34*(1), 1-20.

Tok, E., & Sevinç, M. (2010). Düşünme becerileri eğitiminin eleştirel düşünme ve problem çözme becerilerine etkisi [The effects of thinking skills education on the critical thinking and problem solving skills of pre-school teacher candidates]. Pamukkale Üniversitesi Eğitim Fakültesi Dergisi, 27(27), 67-82.

Torres, I. P. (2007). WebQuest: a collaborative strategy to teach content and language on the Web. Retrieved from http://sites.google.com/site/vsportal2007/isabelperez

Turuk-Kuek, M. C. (2010). *Developing critical thinking skills through integrative teaching of reading and writing in the L2 writing classroom* (Unpublished doctoral dissertation). Newcastle University, Newcastle, England.

Tümkaya, S. (2011). Fen bilimleri öğrencilerinin eleştirel düşünme eğilimleri ve öğrenme stillerinin incelenmesi [Comparison of college science major students' learning styles and critical thinking disposition]. *Ahi Evran Üniversitesi Kırşehir Eğitim Fakültesi Dergisi*, *12*(3), 215-234.

Tümkaya, S., Aybek, B., & Aldağ, H. (2009). An investigation of university students' critical thinking disposition and perceived problem solving skills. *Eurasian Journal of Educational Research*, *36*, 57-74.

Türnüklü, E. B., & Yeşildere, S. (2005). A profile from Turkey: Critical thinking dispositions and abilities of pre-service Mathematics teachers of 11-13 year. *Ankara University, Journal of Faculty of Educational Sciences*, *38*(2), 167-185.

Tsai, S. H. E. (2005). *The effect of efl reading instruction by using a webquest learning module as a CAI enhancement on college students' reading performance in Taiwan* (Doctoral dissertation). Avaliable from ProQuest Dissertations and Theses database. (UMI No. 3193423)

Uslu, S. (2011). *Learner perceptions about WebQuest: A case study in a language classroom* (Unpublished master's thesis). Middle East Technical University, Ankara, Turkey.

Ünal, A., & Altıparmak, M. (2013). The effects of WebQuests on elementary school seventh grade students' science achievement, attitude towards science and attitude towards web based education while teaching science subjects. E*dulearn13 Proceedings*, 4165-4173.

Unrau, N. J. (1991). The effects of explicit instruction on critical reading and argumentative writing: The TASK of reading and writing. Retrieved from ERIC database. (ED3367337)

Vargo, M., & Blass, L. (2013). *Pathways. Reading, writing, and critical thinking.* National Geographic Learning.

Vidoni, K. L., & Maddux, C. D. (2002). WebQuests: Can they be used to improve critical thinking skills in students? *Computers in the Schools, 19*(1/2), 101-117.

Watson, G., & Glaser, E. M. (1980). *Watson-Glaser Critical Thinking Appraisal*. Cleveland, OH: Psychological Corporation.

Whiteley, T. (2006). Using the Socratic Method and Bloom's Taxonomy of the Cognitive Domain to enhance online discussion, critical thinking, and student learning. *Developments in Business Simulation and Experiential Learning, 33*, 65-70.

Williams, R. L. (2005). Targeting critical thinking within teacher education: The potential impact on society. *The Teacher Educator*, *40*(3), 163-187.

Woodard, K. T. (2003). *Effects of WebQuest activities on student motivation in fourth and fifth grade students* (Unpublished doctoral dissertation). Northwestern State University of Louisiana, Los Angeles, ABD.

Yenice, N. (2011). Investigating pre-service science teachers' critical thinking dispositions and problem solving skills in terms of different variables. *Educational Research and Reviews*, *6*(6), 497-508.

Yücel, Z. (2011). *WebQuest destekli matematik öğretiminin altıncı sınıf öğrencilerinin eleştirel düşünme becerilerine etkisi* [The effects of WebQuest-supported Mathematics instruction on sixth grade students' critical thinking skills] (Unpublished master's thesis). Süleyman Demirel University, Isparta, Turkey.

Zayif, K. (2008). *Öğretmen adaylarının eleştirel düşünme eğilimleri* [Critical thinking dispositions of teacher candidates] (Unpublished master's thesis). Abant İzzet Baysal University, Bolu, Turkey.

Zhou, Q., Ma, L., Huang, N., Liang, Q., Yue, H., & Peng, T. (2012). Integrating WebQuest into Chemistry classroom teaching to promote students' critical thinking. *Creative Education*, *3*(3), 369-374.

APPENDICES

APPENDIX A
The Sub-scales of the CCTDI-T

1	2	3	4	5	6
Hiç Katılmıyorum	Katılmıyorum	Kısmen Katılmıyorum	Kısmen Katılıyorum	Katılıyorum	Tamamen Katılıyorum

Analyticity

2. İnsanların iyi birdüşünceyi savunmak için zayıf fikirlere güvenmeleri beni rahatsız eder.	1	2	3	4	5	6
3. Cevap vermeye kalkışmadan önce, her zaman soruya odaklanırım.	1	2	3	4	5	6
12. Kişisel harcamalarımın dikkatlice kaydını tutmak benim için önemlidir.	1	2	3	4	5	6
13. Büyük bir kararla yüzyüze geldiğimde, ilk önce, toplayabileceğim tüm bilgileri toplarım.	1	2	3	4	5	6
16. Diğer insanların çeşitli konularda neler düşündüklerini anlamak benim için önemlidir.	1	2	3	4	5	6
17. İnandıklarımın tümü için dayanaklarım olmalı.	1	2	3	4	5	6
24. İnsanların, bir başkasının fikrine karşı çıkacaklarsa, nedenlere ihtiyacı vardır.	1	2	3	4	5	6
26. Ortaya yaratıcı seçenekler koyabilmekten gurur duyarım.	1	2	3	4	5	6
37. Beni mantıklı olarak tanımlayabilirsiniz.	1	2	3	4	5	6
40. Elimizdeki sorun hakkında açık bir fikir edinmek ilk önceliklidir.	1	2	3	4	5	6
46. Öğrenebileceğin her şeyi öğren, ne zaman işe yarayacağını bilemezsin.	1	2	3	4	5	6
50. Diğerleri kendi fikirlerini ortaya koyarlar ama benim onları duymaya ihtiyacım yok.	1	2	3	4	5	6

Open-mindedness

5. Dört lehte, bir aleyhte görüş varsa, lehte olan dört görüşe katılırım.	1	2	3	4	5	6
7. Sadece ezberi değil düşünmeyi gerektiren sınavlar benim için daha iyidir.	1	2	3	4	5	6
15. Açık fikirli olmak neyin doğru olup olmadığını bilmemek demektir.	1	2	3	4	5	6
18. Okumak, mümkün olduğunca, kaçtığım birşeydir.	1	2	3	4	5	6
22. Yabancılar sürekli kendi kültürlerini anlamaya uğraşacaklarına, bizim kültürümüzü çalışmalılar.	1	2	3	4	5	6
33. Görüşlerimi destekleyecek gerçekleri ararım, desteklemeyenleri değil.	1	2	3	4	5	6
36. Benzetmeler ve analojiler ancak otoyol üzerindeki tekneler kadar yararlıdır.	1	2	3	4	5	6
41. Çelişkili konulardaki fikrim genellikle en son konuştuğum kişiye bağlıdır.	1	2	3	4	5	6
43. Sorunları çözmenin en iyiyolu, cevabı başkasından istemektir.	1	2	3	4	5	6
45. Farklı dünya görüşlerine karşı açık fikirli olmak, insanların düşündüğünden daha az önemlidir.	1	2	3	4	5	6
47. Her şey göründüğü gibidir.	1	2	3	4	5	6

Inquisitiveness

1. Tüm hayatım boyunca yeni şeyler çalışmak harika olurdu.	1	2	3	4	5	6
8. Diğer insanlar entelektüel merakımı ve araştırıcı kişiliğimi takdir ederler.	1	2	3	4	5	6
30. Zorlayıcı şeyler öğrenmeye istekliyimdir.	1	2	3	4	5	6
31. Yabancıların ne düşündüklerini anlamaya çalışmak oldukça anlamlıdır.	1	2	3	4	5	6
32. Meraklı olmam en güçlü yanlarımdan birisidir.	1	2	3	4	5	6
34. Karmaşık problemleri çözmeye çalışmak eğlencelidir.	1	2	3	4	5	6
38. Her şeyin nasıl işlediğini anlamaya çalışmaktan gerçekten hoşlanırım.	1	2	3	4	5	6
39. İşler zorlaştığında, diğerleri problem üstünde çalışmayı sürdürmemi isterler.	1	2	3	4	5	6
42. Konu ne hakkında olursa olsun daha fazla öğrenmeye hevesliyimdir.	1	2	3	4	5	6

Self-confidence

14. Kurallara uygun biçimde karar verdiğim için, arkadaşlarım karar vermek için bana danışırlar.	1	2	3	4	5	6
29. Diğerleri, kararların uygulanmasında mantıklı standartların belirlenmesi için bana başvurular.	1	2	3	4	5	6
35. Diğerlerinin düşüncelerini anlama yeteneğimden dolayı takdir edilirim.	1	2	3	4	5	6
44. Karmaşık problemlere düzenli yaklaşımımla tanınırım.	1	2	3	4	5	6
48. Diğer insanlar, sorunun ne zaman çözümleneceği kararını bana bırakırlar.	1	2	3	4	5	6
51. Karmaşık problemlerin çözümüne yönelik düzenli planlar geliştirmede iyiyimdir.	1	2	3	4	5	6

Truth-seeking

6. Pek çok üniversitedersi ilginç değildir ve almaya değmez.	1	2	3	4	5	6
11. Ben dahil herkes kendi çıkarı için tartışır.	1	2	3	4	5	6
20. Üniversitedeki zorunlu dersler vakit kaybıdır.	1	2	3	4	5	6
25. Kendi fikirlerimi tartışırken tarafsız olmam imkânsızdır.	1	2	3	4	5	6
27. Neye inanmak istiyorsam ona inanırım.	1	2	3	4	5	6
28. Zor problemleri çözmek için uğraşmayı sürdürmek o kadar da önemli değildir.	1	2	3	4	5	6
49. Ne düşündüğümü biliyorum, o zaman neden seçenekleri değerlendiriyor gibi davranayım.	1	2	3	4	5	6

Systematicity

4. Büyük bir netlikle düşünebilmekten gurur duyuyorum.	1	2	3	4	5	6
9. Mantıklıymış gibi davranıyorum, ama değilim.	1	2	3	4	5	6
10. Düşüncelerimi düzenlemek benim için kolaydır.	1	2	3	4	5	6
19. İnsanlar çok acele karar verdiğimi söylerler.	1	2	3	4	5	6
21. Gerçekten çok karmaşık bir şeyle uğraşmak zorunda kaldığımda benim için panik zamanıdır.	1	2	3	4	5	6
23. İnsanlar benim karar vermeyi oyaladığımı düşünürler.	1	2	3	4	5	6

APPENDIX B
Argumentative Essay Grading Rubric

ORGANIZATION **(25 points)**	• Is it a good opening that draws the reader into the work? 1 2 3 4 5 • Is there a well-written thesis statement stating the writer's claim clearly? 1 2 3 4 5 • Does each paragraph start with a topic sentence? 1 2 3 4 5 • Do the ideas stated in the main body match the thesis statement and do the paragraphs seem relevant to each other? 1 2 3 4 5 • Does the paper have a conclusion and does it conclude the work as a reminder of the direction that the entire paper has taken? 1 2 3 4 5

USE OF LANGUAGE **(25 points)**	• Are suitable linking words used? 1 2 3 4 5 • Is there a variety of word choice? 1 2 3 4 5 • Are sentences constructed with correct grammar? 1 2 3 4 5 • Is there a variety of grammatical structures? 1 2 3 4 5 • Is correct punctuation and spelling used? 1 2 3 4 5

CONTENT **(50 points)**	• Does the writer identify and assess the key assumptions? 1 2 3 4 5 • Does the writer appropriately identify his/her own position? 1 2 3 4 5 • Does the writer address diverse perspectives of the issue? 1 2 3 4 5 • Does the writer integrate contrary interpretations to justify his/her own view? 1 2 3 4 5 • Is the analysis of other positions accurate and respectful? 1 2 3 4 5 • Does the writer use a variety of sources? 1 2 3 4 5 • Are the source materials smoothly integrated into the text? 1 2 3 4 5 • Does the writer identify and consider the influence of the context* on the issue? 1 2 3 4 5 • Does the writer identify and discuss conclusions, implications, and consequences? 1 2 3 4 5 • Is there any evidence of reflection and self-assessment? 1 2 3 4 5

* context: cultural/social, scientific, educational, economic, technological, ethical, political, and personal experiences

APPENDIX C
The Sub-scales of the WebQuest Opinion Survey

Part I

Read the following statements and rate them based on the five-point scale below.

      1 = Strongly disagree (SD)   **4** = Agree (A)

      2 = Disagree (D)   **5** = Strongly agree (SA)

      3 = Undecided (U)

Ease of use

1. I could easily find what I needed from the WebQuest page.	1	2	3	4	5
6. It took me only a short time to understand how the WebQuest lesson worked.	1	2	3	4	5
20. The WebQuest topics interested me.	1	2	3	4	5
24. I could easily follow the instructions given in the WebQuest.	1	2	3	4	5

Multiple sources

2. I liked finding information from multiple sources on the web.	1	2	3	4	5
7. During the WebQuest lessons, I prefer to get answers from a single source.	1	2	3	4	5
12. Compiling information from multiple sources increased my knowledge of the topic of the WebQuest lessons.	1	2	3	4	5
17. The variety of Internet resources contained in the WebQuest were overwhelming for me.	1	2	3	4	5
21. I often lost my way in the sea of information on the web during the WebQuest lessons.	1	2	3	4	5

Student Negotiation

3. I liked working in a small group during the WebQuest lessons	1	2	3	4	5
8. I liked interacting with peers when engaging in the WebQuest activities.	1	2	3	4	5
13. It took too much time to share my ideas with other students during the WebQuest lessons.	1	2	3	4	5
18. I felt left out during group work.	1	2	3	4	5

Critical judgment

5. During the WebQuest lessons, I found it difficult to decide whether or not the information that I had found was useful.	1	2	3	4	5
10. I believe that all resources on WebQuest were reliable.	1	2	3	4	5
15. During the WebQuest lessons, I examined avariety of online information before making my judgment.	1	2	3	4	5

Internet and research skills

4. The process of searching for information via theWeb enhanced my technological skills.	1	2	3	4	5
9. WebQuest enhanced my research skills, and I learned about the process of doing research.	1	2	3	4	5
14. I learned Internet search skills through theWebQuest lessons.	1	2	3	4	5

English learning perceptions

11. I enjoyed learning English through the WebQuest.	1	2	3	4	5
16. I was more motivated to learn English through WebQuest than through the regular method.	1	2	3	4	5
19. WebQuest lessons improved my English reading ability.	1	2	3	4	5
22. I practiced my English speaking in a small group during the WebQuest lesson.	1	2	3	4	5
23. WebQuest helped me learn English in a meaningful way.	1	2	3	4	5
25. WebQuest gave me more chances to practice English.	1	2	3	4	5
26. I learned new English words/expressions from the WebQuest lessons.	1	2	3	4	5

Part II

27. What do you like most about the WebQuest? Why?

28. What are the things you do not like about the WebQuest? Why?

29. How did studying in a planned and guided way affect your learning?

APPENDIX D
Interview Questions

Pre-interview Questions

1. How do you define critical thinking?
2. What are the characteristics of a critical thinker?
3. Do you think critical thinking is a teachable concept?
4. If critical thinking is a teachable concept, how can it be taught?

Post-interview Questions

1. How do you define critical thinking?
2. What are the characteristics of a critical thinker?
3. Do you think critical thinking is a teachable concept?
4. If critical thinking is a teachable concept, how can it be taught?
5. Do you find WebQuest as a useful learning tool? Why? Why not?
6. Do you think using WebQuest has improved your critical thinking levels?
7. Do you think using WebQuest has improved your L2 writing performance?
8. Would you use WebQuest in your future teaching career? Why? Why not?

APPENDIX E
A Rubric for Evaluating WebQuest that Promote Critical Thinking

	Low (0)	Medium (1)	High (2)
The main task / question	• There is no main task/question for the WebQuest. • The task/question requires only lower order thinking or simply information retrieval.	• The main task/question requires only some of the higher order thinking skills (analysis, synthesis, and evaluation). • The main task/question may target higher order thinking skills but this may not be clear.	• The main task/question encourages students to develop all of the three higher order thinking skills.
Roles / perspectives	• There are no roles/perspectives. • The use of roles is artificial and may lack inherent conflict of interest.	• Roles are clearand realistic, but they maybe limited in the ability to evoke conflict.	• Roles provide multiple perspectives from which to view the topic and they possibly evoke conflict.
Process that requires analysis thinking	• The process requires students to only retrieve information from web resources. Students do not need to analyze/categorize/ compare/contrast information.	• The process requires students to analyze/categorize/ compare/contrast information, but does not requires tudents to make any inference.	• The process goes beyond simple analysis. It requires speculation or inference about the similarities and differences of the information.

Process that requires synthesis thinking	• The process does not require students to create any new ideas/opinions. • Students do not need to form their opinions – only to report what other people say about the issue.	• The process requires students to create new ideas/opinions, but this maybe unclear so students can choose not to do so.	• The process requires students to synthesize information from different resources and rewrite or reorganize the information to form their own opinions. • The process requires students to form their own opinions by incorporating divergent views into their account.
Process that requires evaluation thinking	• Students do not need to evaluate information from different resources/ perspectives. • The process requires students to only retrieve information.	• The process requires students to evaluate information from different resources/perspectives, but this may be unclear so students can choose not to do so. • The process requires students to only select relevant information to form their opinion, not to evaluate information on different perspectives.	• The process clearly requires students to examine, evaluate, and judge information from different sources/perspectives. • Students critique or debate and make judgment on each side of a controversial issue.
Resources	• There are fewer than 2 resources per process necessary to complete the main question.	• There is more than 1 resource per process for students to gather information from, but some of them maybe too broad or do not contain information directly related to the issues. • There are many dead links, resulting in a limitation of resources.	• There are enough resources for students to gather information. • Most resources provided contain useful/specific information pertaining to the isues. • Most of the links are working.

APPENDIX F
Outline for Reading Sources

Title	
Author	
What is the general topic?	
What is the main argument/problem?	
What reasons are given to support the argument/problem?	
How are the arguments supported? (statistics or other facts, anecdotes, etc.)	
What conclusion is reached?	

APPENDIX G
Reflection Questions

1. Did my opinions about the death penalty change after reading the article? If yes, how?

2. What has the article convinced me of specifically?

3. Do I still have doubts? If so, about what? If not, why?

4. If you were the writer of the article, what points could you omit? & what different points could you add to it? Why? Why not?

5. Think of questions you would ask the author if you could. (considering your doubts about the points in the article or problems with the argument, or a request for clarification or expansion on a point)

6. Would you recommend this article to other readers? Why or why not?

APPENDIX H
Sample Clasroom Discussion Extracts

Extract 1: The PTs having approached the death penalty from the perspective of the religious functionaries were discussing the issue.

> A: I could understand the Islamic references very easily but I found the arguments and references in other religions too complicated.

> B: Totally, agree. As I was not familiar with the contents of the other holy books, I was puzzled a lot.

> A: Actually, at first I thought the other religious views were not relevant to the context of Turkey, but once I realized the question "Should the death penalty be legalized or not?" was not specific to Turkish context, I tried to comprehend all the arguments.

> C: Yes, but still it would not make a big difference even if the question was bound to Turkish context only. Because Turkey is not a purely Islamic country, we should definitely consider the other religious views in such an important issue.

> B: Surely.

> A: In this sense, yes, you are right. It seems that I had missed the universal value of the issue.

Extract 2: The PTs having discussed the issue with their peers who had read the same perspectives returned to their original groups where four different perspectives were available.

> A: So, you are telling that there are some victims' families who are against the death penalty, ha?

> B: Yes. Isn't it interesting?

> A: Definitely. I mean I used to believe that all victims' families supported it before.

> B: Me, too. But especially after I read the article "How the death penalty fails victims' families" and saw their reasons, I could understand why they claim the death penalty prolongs pain for them.

Extract 3: The PTs having discussed the issue with their peers who had read the same perspectives returned to their original groups where four different perspectives were available.

A: As I read the perspective of the human rights activists, the first thing that I can say is that the death penalty is truly a violation of the Article 3 of the Universal Declaration of Human Right.

B: What does the Article 3 say?

A: It says that "Life is a human right".

C: So, it makes the death penalty our most fundamental human rights violation. Right?

A: Exactly. But there are also other cases in which races determine being accepted as a human, thus having this right.

B: Races? What do you mean?

A: I read a report published by the Death Penalty Information Center, it claims that the races of defendants and victims affect the possibility of being sentenced to the death penalty?

C: How?

A: In the report, there are some statistical information and charts which include the data of the last 35 years in the USA. They show that the number of black defendants is higher than the white ones, and if the victim is a white person, the defendant is more likely to be sentenced to the death penalty.

Extract 4: The PTs having discussed four different perspectives in their groups were trying to decide on their final decisions.

A: So, have you decided whether the death penalty should be legalized or not?

B: I am a bit puzzled. It is certainly a human rights violation.

C: Considering the wrongfully convicted people, I can say it is difficult to come to a conclusion on the issue even within the boundaries of law.

B: Exactly. I think life without parole is the best option.

A: I totally agree.

C: I don't agree with you. For certain crimes, the death penalty should be employed.

A: Such as?

C: Rape.

A: Do you think it will have a deterrent effect?

B: Definitely.

APPENDIX I
Outline for Argumentative Essay

A. Introduction

What to include: A definition? History?

B. Body

1st SUPPORTING IDEA

How are the arguments supported?
(statistics or other facts, anecdotes, etc.)

2nd SUPPORTING IDEA

How are the arguments supported?
(statistics or other facts, anecdotes, etc.)

C. Transition Paragraph

1st OPPOSING IDEA

How are the arguments supported?
(statistics or other facts, anecdotes, etc.)

2nd OPPOSING IDEA

How are the arguments supported?
(statistics or other facts, anecdotes, etc.)

D. Conclusion

What is your personal opinion about the topic?

What reasons are given to support the opinion?