AN ASSESSMENT OF TEACHERS' CONCEPTIONS OF CRITICAL THINKING AND PRACTICES FOR CRITICAL THINKING DEVELOPMENT AT SEVENTH GRADE LEVEL

A THESIS SUBMITTED TO
THE GRADUATE SCHOOL OF SOCIAL SCIENCES
OF
MIDDLE EAST TECHNICAL UNIVERSITY

BY

FİGEN KANİK

IN PARTIAL FULFILLMENT OF THE REQUIREMENTS
FOR
THE DEGREE OF DOCTOR OF PHILOSOPHY
IN
THE DEPARTMENT OF EDUCATIONAL SCIENCES

SEPTEMBER 2010

Approval of the Graduate School of Social Sciences

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ABSTRACT

AN ASSESSMENT OF TEACHERS' CONCEPTIONS OF CRITICAL THINKING AND PRACTICES FOR CRITICAL THINKING DEVELOPMENT AT SEVENTH GRADE LEVEL

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September, 2010, 290 pages

This study aimed to explore teachers' conceptions of critical thinking and practices for critical thinking development in Turkish, social studies, science and technology and mathematics courses at seventh grade level. The study was conducted with a phenomenological approach in which 70 teachers from 14 elementary schools in Ankara participated. Data were collected through in-depth interviews with teachers.

The findings of the study revealed that there were cognitive skills, dispositions and criteria that teachers perceived to relate to critical thinking. The results also shed light on teachers' perceptions on the acquisition of critical thinking, the roles that they assumed in the process of enhancing students' critical thinking, teaching approaches they held with regard to the enhancement of students' critical thinking, and the conditions that they deemed necessary to develop critical thinking in class. Moreover, teachers' planning for the integration of critical thinking into their instruction revealed the limitations of the programs in teaching for critical thinking and the alterations that they made to eliminate these limitations and set the stage for students to think critically. In addition, teachers' practices for the incorporation of critical thinking into instruction at seventh grade level illuminated instructional strategies that teachers used, in-class

activities that they conducted, and assignments that they gave to students for the purpose of fostering their critical thinking. Furthermore, perceptions on teachers' assessment of students' critical thinking provided insight into the instruments that teachers used in the assessment of students' critical thinking, the kind of critical thinking skills and dispositions that they aimed to assess, their perceptions on criteria by which they judged students' critical thinking, and reasons behind any reservations about the assessment of students' critical thinking. Besides, teachers' perceptions on obstacles to and opportunities for the development of students' critical thinking helped to identify the factors that inhibited or fostered their ability to focus on critical thinking skills in their classes. Finally, it should be noted that with regard to all the aforementioned issues, discipline-specific categories, as well as the categories across all four disciplines, emerged.

Key words: Conceptions of critical thinking, dispositions of critical thinking, criteria for critical thinking, critical thinking development.

ÖZ

ÖĞRETMENLERİN ELEŞTİREL DÜŞÜNME ANLAYIŞLARININ VE 7. SINIF DÜZEYİNDE ELEŞTİREL DÜŞÜNMEYİ GELİŞTİRMEYE İLİŞKİN UYGULAMALARININ DEĞERLENDİRİLMESİ

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Eylül, 2010, 290 sayfa

Bu çalışma, öğretmenlerin eleştirel düşünme ile ilgili anlayışlarını ve 7. sınıf düzeyinde Türkçe, sosyal bilgiler, fen ve teknoloji ve matematik derslerinde eleştirel düşünmeyi geliştirmeye ilişkin uygulamalarını değerlendirmeyi amaçlamaktadır. Araştırma 14 okuldan 70 öğretmenin katılımıyla bir olgubilim çalışması şeklinde gerçekleşmiştir. Veriler, öğretmenlerle derinlemesine görüşmeler aracılığıyla toplanmıştır.

Çalışmanın sonuçları öncelikle öğretmenlerin eleştirel düşünmeyle ilgili gördükleri bilişsel becerileri, eğilimleri ve ölçütleri ortaya koymuştur. Sonuçlar, aynı zamanda, öğretmenlerin, eleştirel düşünmenin kazanımına, öğrencilerinin eleştirel düşünme becerilerini geliştirme sürecinde üstlendikleri rollere, eleştirel düşünmenin gelişimine yönelik benimsedikleri öğretim yaklaşımlarına ve eleştirel düşünmenin sınıfta gelişimine yönelik gerekli gördükleri koşullara ışık tutmuştur. Bunlara ek olarak, sonuçlar öğretmenlerin, derslerinde eleştirel düşünmeye yer vermek amacıyla yapmış oldukları planlama etkinlikleri; 7. sınıf düzeyinde öğrencilerin eleştirel düşünme becerilerini geliştirmelerine yönelik uygulamaları, bu amaç için derslerinde yer verdikleri öğretim stratejileri, sınıf içi etkinlikleri ve ödevleri; öğrencilerin eleştirel düşünme becerilerini değerlendirmeye ilişkin görüşleri, bu amaç için kullandıkları teknikleri, değerlendirmelerinde amaçladıkları becerileri ve eğilimleri, başvurdukları ölçütleri; öğrencilerin

eleştirel düşünme becerilerini geliştirme sürecinde karşılaştıkları engelleri ve fırsatları, söz konusu beceriler üzerinde durmalarını zorlaştıran ve kolaylaştıran etmenleri ortaya koymuştur. Son olarak, yukarıdaki görüşlere ve uygulamalara ilişkin olarak, bazı disiplinlere özgü kategoriler de ortaya çıkmıştır.

Anahtar kavramlar: Eleştirel düşünme anlayışı, eleştirel düşünme eğilimleri, eleştirel düşünmenin ölçütleri, eleştirel düşünmenin gelişimi.

To my mother & in memory of my father

ACKNOWLEDGEMENTS

I would like to express my deepest gratitude to my supervisor, Prof. Dr. Ali Yıldırım, for his guidance, encouragement and unfailing positive attitude in this long journey of personal and academic growth.

I would like to extend my profound thanks to the members of the jury, Prof. Dr. Özcan Demirel, Prof. Dr. Ercan Kiraz, Assoc. Prof. Dr. Ayşegül Daloğlu, and Assist. Prof. Dr. Hanife Akar, for their invaluable reviews and comments for the improvement of the thesis.

I gratefully acknowledge the contributions of the teachers who kindly accepted to participate in the study and sincerely shared their views and opinions about the particular aspect of their teaching.

I extend my heartfelt thanks to my friends and colleagues Pınar and Özgür Filizli, Muazzez Heper, Süreyya Bakı and Mümin Şen for their endless help, support and encouragement during this exhausting journey.

The last but not the least, I wish to thank my sisters for their love, support, tolerance and encouragement throughout my life.

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CHAPTER I

INTRODUCTION

1.1. Background to the Study

The importance of critical thinking as an educational goal has been widely acknowledged by educators. Piaget (1958, cited in Fischer, 1995) emphasizes the importance of the development of students' critical thinking in his identification of the goal of education: "To create men who are capable of doing new things rather than repeating what the previous generations have already done, and to form minds which can think critically, and verify rather than passively accepting everything offered" (p. 22). Moreover, Cotton (1991) points out that in today's information age, the ability to engage in careful, reflective thought is a fundamental characteristics of an educated person, as a requirement for responsible citizenship in a democratic society, and more recently, as an employability skill for an increasingly wide range of jobs. Similarly, Robinson (1987, cited in Cotton, 1991) reveals that if students are to function in a highly technical society, they must be equipped with life-long learning and critical thinking skills necessary to acquire and process information in an ever-changing world. Beyth-Marom et al. (1987), who characterize critical thinking skills as a means to make choices, suggest that critical thinking skills are necessary tools in a society characterized by rapid change, many alternatives of actions and numerous individual and collective choices and decisions. Furthermore, Freire (1985, cited in Raymand, 2000) argues for critical pedagogy characterized by critical consciousness – the ability to analyze, pose questions, and affect the socio-political, economic and cultural realities that shape people's lives. Thus, to Freire, instilling a critical view in students can serve the purpose of transforming institutions, ideologies, traditions, and relationships.

It is for the reasons mentioned above that today, there is an intensified interest in the improvement of students' critical thinking. Scholars have responded to increased demands for students who can think critically by defining the concept of critical thinking, theorizing about constituents of critical thinking, researching factors that contribute to the enhancement of critical thinking, developing instructional models to sharpen students' critical thinking, and devising and revising instruments for the assessment of critical thinking.

Despite mounting research on the concept of critical thinking, it is still a complex construct, not easily limited to a single definition, and many areas of uncertainty and disagreement remain as cognitive scientists, philosophers, psychologists, and educational researchers continue to pursue their visions of critical thinking based in diverse research traditions (Ennis, 1992; Facione, 1984; Halpern, 1993; Johnson, 1996; Lipman, 1988; McPeck, 1981; Paul, 1995; Resnick, 1987; Tishman, 1993). On the other hand, in spite of some contentious differences, general characterizations of critical thinking in numerous definitions of critical thinking and constituents of critical thinking overlap considerably. First of all, according to the most widely acknowledged and cited definitions in the critical thinking literature, critical thinking is the higher order skill of reasonable, reflective, self-corrective, responsible and skillful thinking that relies upon criteria (Dewey, 1933; Ennis, 1987; Facione, 1990; McPeck, 1981; Paul, 1995). It is also evident in the numerous definitions of critical thinking that critical thinking includes certain attitudes, dispositions, and traits of mind, which are all essential to the effective use of cognitive skills of critical thinking and abilities in real settings. In other words, critical thinking requires a person to have the disposition, some kind of readiness and willingness to use critical thinking skills in their life. Besides, as for its constituents, critical thinking typically includes the cognitive skills of analyzing, synthesizing, and evaluating assumptions, issues and alternative points of views according to acceptable criteria, making sound inferences and drawing reasonable conclusions based on reliable information, making interdisciplinary connections and transferring insights to new contexts and monitoring one's own thought processes to name but a few. What is more, in 1990, 46 experts reached a consensus on the definition of the ideal critical thinker.

As can be seen below, this consensus statement has revealed the common affective dispositions which the critical thinker is characterized by:

> The ideal critical thinker is habitually inquisitive, well-informed, trustful of reason, open-minded, flexible, fair-minded in evaluation, honest in facing personal biases, prudent in making judgments, willing to reconsider, clear about issues, orderly in complex matters, diligent in seeking relevant information, reasonable in the selection of criteria, focused in inquiry, and persistent in seeking results, which are as precise as the subject and the circumstances of inquiry permit (APA, 1990, p. 1-19).

The critical thinking literature reveals that based on the definitions of critical thinking, various taxonomies have been developed in the educational use of the concept of critical thinking (Bailin et al., 1999; Ennis, 1987; Facione, 1990; Jones et al., 1995; Paul, 1995). These frameworks involving both cognitive and affective dimensions of critical thinking have assisted the efforts to explore effective ways to teach and assess critical thinking at all levels of education.

Research on critical thinking development has shown that students' critical thinking does improve through instruction. (Kennedy et al., 1991, cited in Dam and Volman, 2004). To begin with, it has been revealed that integration of critical thinking into instruction in a discipline has been proved to have a significant impact on students' ability and disposition to think critically (Akınoğlu, 2001; Halpern, 1998; Paul, 1995; Reed et al., 2001; Sezer, 2008; Şahinel, 2001; Yücel, 2008). Also, it is pointed out that designing instruction that is meaningful and builds on prior knowledge is the first step in enhancing students' critical thinking (Resnick, 1997). Among the various strategies which are proved to help teachers foster students' critical thinking are explicitly stating expectations for critical thinking and designing tasks that require it (Halpern, 1998), asking higher-order questions (Cotton, 1991), giving students sufficient time to think, which in turn requires a focus on depth of knowledge rather than superficial coverage of many topics (Bransford et al., 2000; Cotton, 1991), positive classroom environment characterized by high expectations, teacher warmth, encouragement, and pleasant physical surroundings (Cotton, 1991; Harris, 2004), modeling good thinking and creating a culture of critical thinking (Tisman et al, 1993), providing opportunities for students to collaborate with others to seek multiple answers to complex

problems (Halpern, 1998), constructivist approach (Öner, 1999), inquiry-based learning (Mecit, 2006), promoting active learning (Dam and Volman, 2004; Smith and Carl, 1991), using real-life problems for motivational reasons (Dam and Volman, 2004), providing opportunities for students to make presentations (Tsui, 1998; Underwood and Wald, 1995, cited in Seidman, 2004), critical reading activities (Carr, 1990), critical writing activities (Tsui, 1998; McCallister, 2004), allowing for group learning through such activities as discussions, debates, case-studies, simulations, jigsaw activities, projects, games, role-playing and peer-evaluation in which students build on each other's knowledge and view multiple perspectives (Anderson, 2002; Carr, 1990; Cooper, 1995, cited in Seidman, 2004; McEven, 1994; Paul, 1995; Tsui, 1998; Uysal, 1998), questioning method (Villaverde, 2004; Potts, 1994; Cruickshank, Bainer, and Metcalf, 1995), semantic-mapping (Lim et al., 2003), making interdisciplinary connections (Tsui, 1998), and encouraging self-assessment and reflection (Pithers and Soden, 2000). Furthermore, critical analysis of papers by teachers and taking essay exams rather than multiple-choice exams (Tsui, 1999) and providing specific grading criteria for students to assess the quality of their thinking (Paul, 1995) were reported to be positively related to students' self-reported growth in critical thinking.

Despite the value attached to educating students to think critically and extensive research revealing how to teach for critical thinking, however, educators continually find themselves teaching students who can read texts but cannot infer ideas, can perform calculations but cannot reason or identify patterns, can recite scientific formula but cannot grasp the essential concepts (Applebee, 1991). Numerous research studies, reports and panels have cited poor student performance on tasks requiring higher order thinking. Schoenfeld (1982, cited in Paul, 1995) reports on an experiment in which elementary students were asked questions like, "There are 26 sheep and 10 goats on a ship. How old is the captain?" He reveals that 76 of the 97 students "solved" the problem by adding, subtracting, multiplying or dividing. Paul (1995) reveals that students in history courses merely learn to mouth names, dates, events, and outcomes whose significance they do not really understand and whose content they forget shortly after the test. Voss, Perkins and Segal (1991) indicate that large numbers of

students complete their years of secondary education without having developed sufficient proficiency in reasoning to cope with citizenship and work responsibilities in an increasingly complex world. With reference to the findings of research on students' ability to think scientifically, Paul and Binker (1995) point out that students continue to use their pre-existing frameworks of knowledge rather than transferring the knowledge they learn in school to new settings. In one of the research studies that they cited, for example, few college physics students could correctly answer the question, "What happens to a piece of paper thrown out of a moving car's window?" The students were reported to revert to a naïve physics inconsistent with what they learned in school, using Aristotelian rather than Newtonian physics. Nickerson (1988) points out that it is possible to complete 12-13 years of public education in the U.S. without developing much competence as a thinker. He notes "Many students are unable to give evidence of a more than superficial understanding of concepts and relationships that are essential to the subjects they have studied, or of an ability to apply the content knowledge they have acquired to real world problems" (p. 5). To Battista (1999), such research findings imply that students have failed to develop conceptual understanding of subjects and that they are inflexible and static thinkers who are often ill-suited for problem-solving or adaptive learning.

National test results obtained from the central examinations (OKS and SBS) have revealed that the situation is not different in the Turkish context as students have not been doing well on thinking and reasoning in all four major subjects namely Turkish, social studies, sciences, and mathematics in these tests (MONE, 2007; MONE, 2009). It is noteworthy that students' level of literacy in science and mathematics is on the decrease according to the results of the university entrance exam (Yarımağan, 2009). The poor exam results from recent international tests have also showed that in international comparisons, Turkish students are falling behind particularly in those areas that require critical thinking skills. For instance, PISA (OECD, 2006), Program for International Student Assessment, is one of the recent international projects that Turkey participated in for the purpose of providing an assessment of 15-year old Turkish students' literacy in reading, science, and mathematics in an international context. In

reading component of the test, students were expected to demonstrate their proficiency in such processes as retrieving information, forming a broad and general understanding, developing an interpretation, reflecting on and evaluating the content of a text and reflecting on and evaluating the form of a text through continuous texts such as narration, exposition, description, and argumentation and non-continuous texts such as charts, graphs, tables, diagrams, maps, and advertisements. Science literacy, which was the major focus of PISA 2006, was, on the other hand, assessed on three sub-scales called identifying scientific issues (e.g., recognizing key issues that can be investigated scientifically), explaining phenomena scientifically (e.g., applying knowledge of science in a given situation), using scientific evidence (e.g., interpreting scientific evidence and drawing and communicating conclusions) in addition to a combined science literacy score. Furthermore, mathematics literacy assessment in PISA (OECD, 2006) aimed at assessing students' capacity to identify and understand the role that mathematics plays in the world, to make well-founded judgments and to use and engage with mathematics in ways that meet their needs as reflective citizens. The results from this international test aiming to assess some sub-skills that are directly related to critical thinking revealed that Turkish students scored lower than the OECD average on literacy in reading, science and mathematics. Turkey showed the second worst performance after Mexico among the 30 OECD jurisdictions (OECD, 2006). Along with these scale scores, PISA 2006 also used 6 proficiency levels (levels 1 through 6, with level 6 being the highest level of proficiency in analyzing, reasoning, and communicating effectively as one poses, solves and interpret problems) to describe student performance on literacy in reading, science, and mathematics. It was revealed that Turkish students were classified into Level 2 whereas across the OECD, students were classified into Level 3 on average.

With regard to the reason why enhancing students' critical thinking remains as an unachievable goal of education, Paul (1995) suggests that the fundamental problems in schooling today are fragmentation and lower order learning. He says, "Both within and between subject areas there is a dearth of connection and depth. Atomized lists dominate curricula, atomized teaching dominated instruction, and

atomized recall dominates learning. What is missing is coherence, connection, and depth of understanding" (p. 273). Further, he asks, "What sorts of changes do we need so that in math classes students learn to think mathematically, in history classes they learn to think historically, in science classes they learn to think scientifically, and so that in general, not only in school but in their daily lives as well, students begin to think critically in a disciplined, self-directed fashion?" (p. 273). He spells out the kinds of changes needed in curricula and instruction: First, he asserts that the root of the problem is our confidence in didactic teaching. He believes that behind this practice there is a network of uncritically held assumptions, namely, (1) that students learn how to think when they know what to think, (2) that knowledge can be transmitted to the students without their having to think it through for themselves, (3) the process of education is the process of storing content in the head, (4) quiet classes are evidence that students are learning, (5) that students gain significant knowledge without seeking and valuing it, (6) that material should be presented from the perspective of the one who knows, (7) that superficial learning can be deepened later, (8) that coverage is more important than depth, (9) that students who provide accurate answers, and give definitions, and apply formulae demonstrate substantial understanding, and (10) that students learn working individually. He states that we need to make a paradigm shift from a didactic to a critical model of education to make higher order thinking a classroom reality.

He lists the set of assumptions held by one who understands and values education as higher order learning: (1) that students learn what to think only as they learn how to think, (2) that one gains knowledge only through thinking, (3) that process of education involves each student's gathering, analyzing, synthesizing, applying and assessing information for him or herself, (4) that classes with much student talk is a better sign of learning, (5) that students gain significant knowledge only when they value it, (6) that information should be presented so as to be understandable from the point of the learner, thus, continually related to the learner's experiences and point of view, (7) that superficial learning is an impediment to deeper understanding, (8) that depth is more important than coverage, (9) that students can often provide accurate

answers, give definitions, and apply formula while not understanding those answers, definitions or formulas, and (10) that students learn best by working in pairs and groups, exchanging ideas. He suggests that to make the shift from a didactic teaching to higher order learning, first, the curriculum needs to be reconceptualized by a critical model of higher order teaching and learning, which requires the formation of philosophy, goals, standards, objectives, assessment, and instructional examples highlighting the essential role of thinking in the acquisition of knowledge. Keeping in mind the highlights of such a curriculum, teachers are to be engaged in cultivating essential cognitive skills, abilities and dispositions of critical thinking in their students by numerous strategies.

In Turkey, there has been a shift from didactic mode of teaching to higher order learning in an attempt to achieve the goal of "educating all Turkish citizens as individuals who can think independently and scientifically and who are constructive, creative and efficient" (National Education Act, 1973). To this effect, the curricula of the elementary education have been redesigned in light of a constructivist approach, which has already been proved to further students' higher order thinking skills (MOE, 2005). Learning activities in constructivist classrooms are characterized by active engagement, inquiry, reflective thinking, problem solving, and increased interaction (MOE, 2005). The programs at all levels of elementary education aim to develop nine basic skills namely critical thinking skills, creative thinking skills, communication skills, research skills, problem-solving skills, information technology skills, entrepreneurship skills and skill of using language accurately and effectively (MOE, 2005). In constructivist classrooms, students are expected to take responsibility for their own learning, which is deemed to be necessary to educate students to become autonomous thinkers and learners. The teacher, on the other hand, is mainly a guide, a facilitator, a co-explorer and an initiator of activities, who encourages learners to question, to challenge and formulate their own ideas, opinions and conclusions rather than a dispenser of knowledge. "Seeking and valuing students' point of view" is conceived as a major principle to facilitate constructivist learning in these programs (MOE, 2005). Thus, the teacher is required to allow opportunities for students to express their points of view and elaborate on them. What is more,

providing experience in and appreciation for multiple perspectives is also considered as important in these programs. Accordingly, teachers are expected to encourage students to explore and assess alternative ways of solving a specific problem (MOE, 2005). Assessment of student learning, however, is interwoven with teaching. Thus, in addition to some written exams, teachers are to make use of alternative assessment techniques such as observations, interviews, student journals, performance assignments, self-evaluations, peer-evaluation, group evaluation, and portfolio (MOE, 2005). It is evident in the aforementioned highlights of the curricular reform that across all subjects, cultivation of skills, abilities and dispositions of critical thinking in students is one of the chief targets of the curricula implemented since 2005.

Critical thinking literature reveals that enhancing students' critical thinking is not only dependent on carefully designed programs providing systematic opportunities for students to think critically but also teachers who can implement properly these programs intended to further students' critical thinking (Browne, 2000; Demirel, 1999; Ennis, 1985; Gruberman, 2005; Kazancı, 1979; Onosko, 1990; Raths et al.,1966, cited in Pithers and Soden, 2000). Thus, if teachers are to adopt and implement instruction geared to critical thinking, it is regarded as essential that they have already developed a conception of critical thinking and committed to teaching for critical thinking. The research, for instance, has shown that teachers scoring high on measures of "classroom thoughtfulness" demonstrate a preference for manipulating data, concept development, relevance, and fostering intellectual dispositions in their students (Onosko, 1990). Parallel to this result, Newmann (1991) also found that teachers who have conceptualized critical thinking, who can articulate their conceptions of critical thinking, and who are eager for and skillful at the development of their students' critical thinking consistently incorporate critical thinking into their teaching. All these constituted the rationale behind studying teachers' conceptions of critical thinking and perceptions on critical thinking development which underlie their classroom practices with regard to developing their students' critical thinking in the Turkish context, where very little research has been conducted on the particular issue so far.

1.2. Purpose of the Study

The purpose of this study is to explore teachers' conceptions of critical thinking and practices for critical thinking development in social studies, Turkish, mathematics and science and technology courses at the seventh grade. Thus, this research study aims to answer the following research questions:

1. What are teachers' conceptions of critical thinking in terms of skills, dispositions and criteria related to critical thinking?
2. What are teachers' perceptions of critical thinking development process in terms of acquisition of critical thinking, different approaches, teacher roles and necessary conditions for the development of critical thinking?
3. How do teachers plan for the integration of critical thinking into their course?
4. What instructional strategies, in-class activities and assignments do they use to foster critical thinking?
5. How do they assess students' critical thinking skills?
6. What factors foster teachers' ability to focus on critical thinking in their classes?
7. What factors inhibit teachers' ability to focus on critical thinking in their classes?

1.3. Significance of the Study

In the last 20 years, educational research has reacted against the approach where teachers were assumed to take the role of a technician whose main function is to implement instructional strategies and curricula developed and imposed by others (Clark and Peterson, 1986; Kagan, 1992; Pajares, 1992 cited in Borg, 1999). It has been asserted that teachers' beliefs - their conceptions, knowledge, theories, assumptions, and attitudes - held about any aspect of their work serve as the background to much of their decision-making and action and hence constitute what has been termed the culture of teaching. This further explains the significance of studying teachers' beliefs in relation to various aspects of their teaching. The present research also aims to illuminate teachers' conceptions of critical thinking which underlie their practices for critical thinking development,

revealing how teachers come to understand the concept of critical thinking highlighted in the recent elementary curricula and how these conceptions are reflected in their teaching practices.

There is worldwide consensus on the necessity of promoting students' critical thinking for individuals to cope with a rapidly changing world. The literature shows that especially in the developed countries, numerous studies have been conducted to reveal teachers' conceptions of critical thinking, the extent to which teachers are actively engaged in improving their students' critical thinking and the factors that foster and inhibit teachers' efforts to teach for critical thinking. However, in Turkey, although there is some quantitative research on the particular issue focusing on the impact of certain instructional techniques on the improvement of students' critical thinking, there are very few qualitative research studies on teachers' conceptions of critical thinking, their practices for the enhancement of students' critical thinking, and the challenges they face in their efforts to promote their students' critical thinking, which has constituted the motive for the researcher to conduct a qualitative research study on the particular issue. Thus, it will contribute to the limited literature on teachers' conceptions of critical thinking and practices for critical thinking development in the Turkish context. Moreover, the findings of the study will help to get a detailed picture of the perceived barriers to the improvement of students' critical thinking, which will provide constructive feedback to those who are involved in the curriculum development, staff development, policy-making and teacher education. Furthermore, the results obtained from the study will help to uncover the opportunities for the improvement of students' critical thinking, which will help to identify strategies to get students to think critically. Also, the findings will be useful in unraveling any misconceptions on critical thinking and critical thinking development, which will provide invaluable information for those involved in developing in-service teacher training programs that work on modifying teacher beliefs. Finally, the research will also have implications with regard to the effectiveness of the Turkish, social studies, science and technology and mathematics curricula in terms of their potential to enhance students' critical

thinking, which is conceived as one of the pillars of the curricular reform being implemented.

At this point, it should be noted that having employed maximum variation sampling strategy in the selection of schools and teachers in the present study, the researcher is able to access to a wide variety of perspectives on teachers' conceptions of critical thinking and practices for critical thinking development at seventh grade and explore significant common patterns which cut across teachers from all four disciplines and schools located in districts from differing socio-economic level and which derive their significance from having emerged out of heterogeneity. What is more, discipline-specific themes with regard to the issue will also contribute to the identification of what fosters and inhibits the teachers' efforts to teach for critical thinking in specific disciplines.

1.4. Definition of Terms

Teachers' conceptions: The ideas, notions, beliefs, and understanding that teachers have with regard to a particular aspect of their teaching (Kagan, 1992).

Critical thinking: The intellectually disciplined process of actively and skillfully conceptualizing, applying, analyzing, synthesizing and / or evaluating information gathered from, or generated by, observation, experience, reflection, reasoning, or communication, as a guide to belief and action (Paul and Scriven, 1987).

Critical thinking disposition: A particular mental set that calls for distinct, habitual ways of behaving; the spirit, or affective dimension of critical thinking making it much less mechanistic than it is customarily portrayed to be (Beyer, 1990).

Standards of critical thinking: Principles by which critical thinking can be judged. Thinking that qualifies as critical thinking is clear, accurate, relevant to the question at issue, fair, precise, specific, plausible, consistent, logical, deep, broad, complete, and significant (Paul, 1995).

CHAPTER II

REVIEW OF LITERATURE

The present study aims to explore teachers' conceptions of critical thinking and practices for critical thinking development in social studies, Turkish, mathematics and science and technology courses at the seventh grade. In this chapter, the literature concerning the concept of critical thinking and critical thinking development as an educational goal will be reviewed under eight main headings: Definitions of critical thinking, constituents of critical thinking, frameworks of critical thinking, the importance of critical thinking in education, approaches to the teaching of critical thinking, integration of critical thinking into instruction, factors inhibiting students' critical thinking, assessment of critical thinking and research on critical thinking and its development. Finally, a summary of the literature review and its implications for the study will also be presented.

2.1. Definitions of Critical Thinking

The intellectual roots of critical thinking can be traced back to Socrates over 2,500 years ago. The Center for Critical Thinking (2003) states that Socrates, around 2,500 years ago, with the help of a probing questioning technique, showed that people could not rationally justify their confident claims to knowledge. Socrates argued that prevailing confused meanings, inadequate evidence, and self-contradictory beliefs could not be relied on for sound knowledge and insight. The technique based upon questioning that requires clarity and logical consistency was called Socratic questioning and thinking. Socratic thinking requires approaching issues with critical scrutiny and does not allow human beings to commit themselves to beliefs they do not know to be absolutely true because knowledge they acquire is subject to change under conditions in life. The age of Socrates was followed by Plato (his student), Aristotle, and the Greek skeptics. The thinking

during this time highlighted the fact that anyone who intends to understand the deeper realities needs to think systematically and trace implications broadly and deeply since thinking that is comprehensive, well-reasoned, and responsive to objections can take us beyond the surface. Throughout history, those principles have been refined by other thinkers such as Aquinas, Machiavelli, Cole, Erasmus, Moore, Bacon, Descartes, Hobbes, Locke, Boyle, Newton to name but a few.

Dewey introduced more recent influences in the critical thinking arena. Dewey (1909) called critical thinking "reflective thinking" and defined 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). By defining it as an active process, he is contrasting it with the kind of thinking in which a person just receives ideas and information from someone else – what might be called as passive process. For Dewey, and for everyone who has worked in this tradition subsequently, critical thinking is essentially an active process – one in which people think things through for themselves, raise questions themselves, find relevant information themselves etc. In defining critical thinking as persistent and careful, Dewey is contrasting it with the kind of unreflective thinking – in which people 'jump' to a conclusion. In his view, critical thinking is a subset of the reflective process which involves thorough assessment, scrutiny and the drawing of the conclusions in relation to the issue at hand. Finally, in this conception of critical thinking, what matters are the reasons people have for believing something and the implications of their beliefs. Thus, he emphasized importance of reasoning in critical thinking.

Many conceptions of critical thinking find their definitional roots in Dewey's writings. Yet, a review of literature on critical thinking reveals that there are many definitions of critical thinking and there is no general consensus on one definition (Table, 2.1. and Table 2.2.). On the other hand, most of these definitions have commonalities and when they are closely studied, they seem to be revolving around certain ideas:

To begin with, as Paul (1995) points out, from a philosophical point of view, critical thinking is primarily approached as the norm of good thinking, the rational aspect of human thought, and as the intellectual virtues needed to

approach the world in a reasonable, fair-minded way. Psychologists, however, conceptualize critical thinking as higher-order thinking skills and focus attention on the appropriate learning and instruction processes. Next, there seems to be a consensus that critical thinking is directed towards some end or purpose such as answering a question, making a decision, solving a problem, resolving an issue, calculating likelihoods, formulating inferences, devising a plan or carrying out a project. Besides being purposeful, critical thinking also refers to a reasonable, reflective, self-monitored, responsible and skillful thinking that is focused in constructing personal meanings. Furthermore, as it is pointed out in several definitions, thinking about what to believe or do must meet appropriate standards if it is to be regarded as critical thinking. For example, someone who comes to believe on the basis of poor or irrelevant reasons, on the authority of someone whose credibility is questionable, or without attempting to assess the evidence relevant to the truth of the belief, would not be regarded as thinking critically. Also, there is general agreement that thinking critically not only requires the ability to assess reasons properly but also the willingness, desire, and disposition to base one's actions and beliefs on reasons.

Table 2.1. *An Overview of Definitions of Critical Thinking by Major Theorists*

Source	Definition
Dewey (1909)	"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"
Glaser (1941)	"an attitude of being disposed to consider in a thoughtful way the problems and subjects that come from within the range of one's experiences, the knowledge of the methods of logical inquiry and reasoning, and some skill in applying these methods"
McPeck (1981)	"skilful, responsible thinking that facilitates good judgment because it (a) relies upon criteria, (b) is self-correcting, and (c) is sensitive to context"
Ennis (1985)	"a reflective and reasonable thinking that is focused on deciding what to believe or do"
Norris (1985)	"assessing the views of others and one's own views according to acceptable standards of appraisal"
Meyers (1986)	"the ability to raise relevant questions and critique solutions without necessarily posing alternatives"

Table 2.1. (continued)

Source	Definition
Brookfield (1987)	"a process that involves identifying and challenging assumptions, becoming aware of the importance of context in creating meaning, imagining and exploring reflective skepticisms … a reflective dimensions, more than the cognitive activity of analyzing arguments –it is emotive as well as rational"
Glock (1987)	"diverse cognitive processes and associated attitudes"
Kurfiss (1988)	"an investigation whose purpose is to explore a situation, phenomenon, question, or problem to arrive at a hypothesis or conclusion about its intellectual developmental process that integrates all available information and that can therefore be convincingly justified"
Siegel (1988)	"involving the ability to assess reasons properly, and the willingness, desire and dispositions to base one's actions and beliefs on reasons"
Browne and Keeley (1990)	"our active, purposeful, and organized efforts to make sense of our worlds by carefully examining our thinking and the thinking of others in order to clarify and improve our understanding"
Facione (1990)	"process of purposeful and self-regulatory judgment, which gives reasoned consideration to evidence, contexts, conceptualization, methods and criteria"
Fitzpatrick (1993)	"a process for determining the value of an idea"
Cüceloğlu (1994)	"an active and organized cognitive process aiming at understanding oneself and the events which take place in one's environment by being aware of his or her own thinking process, considering others' thinking processes and applying what one has learned"
Kataoka-Yahiro (1994)	"a process of thinking without a single solution"
Jones (1995)	"a cognitive process involving the primary components of analysis, interpretation, evaluation, inference, justification and self-correction"
Alfaro-Lefevre, 1996)	"reasonable, reflective thinking that focuses on what to believe or do … purposeful, goal-directed thinking that aims to make judgments based on evidence"
Halpern (1996)	"a cognitive process that involves the use of judgment and the use of reflection to increase the probability of a desired outcome … thinking that is purposeful, reasoned and goal directed … using skills that are thoughtful and effective for the particular context and type of thinking task"

Table 2.1. (continued)

Source	Definition
Scriven and Paul (1996)	"the intellectually disciplined process of actively and skillfully conceptualizing, applying, analyzing, synthesizing, and / or evaluating information gathered from, or generated by, observation, experience, reflection, reasoning or communication, as a guide to belief and action"
Bickenbach and Davis (1997)	'purposeful, reasoned and goal-directed thinking – thinking involved in solving problems, formulating inferences, calculating likelihoods, and making decisions when the thinker is using skills that are thoughtful and effective for the particular context and type of thinking tasks"
Walkner and Finney (1999)	'use of the cognitive skills or strategies that increase the probability of a desirable outcome"
Demirel (1999)	'the ability and tendency to acquire, evaluate and use knowledge"
Stancato (2000)	'making judgments about the truthfulness and worth of statements and ideas"
Reed and Kromley (2001)	'the ability and propensity to analyze complex issues and situations, to recognize and to evaluate assumptions and alternative points of view according to acceptable criteria, to make sound inferences and to draw reasonable conclusions based on reliable information, and to make interdisciplinary connections and to transfer insights to new contexts"
Astleitner (2001)	'a mental activity of evaluating arguments or propositions and making judgments that can guide the development of beliefs and taking action"
Menkes (2005)	'cognitive skills that determine how well someone gathers, processes, and applies information in order to identify the best way to reach a particular goal or navigate a complex situation"
Chaffee (2006)	'a purposeful, organized cognitive process that we use to understand the world and make informed decisions"

Paul (1995) has made one of the most comprehensive definitions which encompasses most of the aspects that are viewed as central to critical thinking as follows:

Table 2.2. *Richard Paul's Characterization of Critical Thinking*

A unique Kind of Purposeful Thinking	⟹	in any subject area or topic, whether academic or practical, requiring **intellectual fitness training for the mind** akin to physical fitness for the body

Table 2.2. (continued)

In which the Thinker Systematically and Habitually	⟹	**actively develops traits** such as intellectual integrity, intellectual humility, fair-mindedness, intellectual empathy, and intellectual courage
Imposes Criteria and Intellectual Standards upon the Thinking	⟹	**identifies the criteria or solid reasoning**, such as precision, relevance, depth, accuracy, sufficiency, and establishes a clear standard by which the effectiveness of the thinking will be finally assessed
Taking Charge of the Construction of Thinking	⟹	**awareness of the elements of thought** such as assumptions and point of view, that are present in all well-reasoned thinking; a conscious, active and disciplined effort to address each element is displayed
Guiding the Construction of the Thinking According to the Standards	⟹	**continually assessing** the course of construction during the process, adjusting, adapting, improving, using the candles of criteria and standards to light the way
Assessing the Effectiveness of the Thinking According to the Purpose, the Criteria, and the Standards	⟹	deliberately **assessing the thinking to determine its strengths and limitations**, according to the defining purpose, criteria and standards, **studying the implications** for further thinking and improvement

Source: Paul (1995, p. 21)

Finally, it should be noted that critical thinking is sometimes used interchangeably with problem-solving, decision-making and creative thinking. Yet, these terms are not conceived as synonymous, but complementary elements of general cognitive processes by some authors. (Beyer, 1988; Marzano et al. 1991; Patrick, 1986). Beyer (1988) points out the difference between critical

thinking and problem solving as such: In problem solving and decision-making, there is a sequence of operations in which one precedes the next. However, there is not such a sequential operation in critical thinking, which is a collection of specific operations that may be used alone or in any combination or in any order. As for creative thinking, Marzano et al. (1991) assert that a good creative thinking process generally includes a good critical thinking process and vice versa. On the other hand, Lewis and Smith (1993) who reviewed the origins of critical thinking and problem solving in philosophy and psychology point out that while philosophers stress the need for critical thinking, psychologists emphasize problem solving and that while the sciences and mathematics adopt a scientific problem solving approach, the humanities use critical thinking as a way of reflective and logical thinking. Yet, when these writers are assigning forms of thinking to disciplines in this manner, they are also cautious as they are well aware of the fact that there is an increasing tendency to use both types of thinking skills together toward the completion of a task in many disciplines today. Therefore, Lewis and Smith suggest the use of the concept "higher order thinking" as an umbrella term to shelter problem solving, critical thinking, creative thinking, and decision making. They argue that an encompassing concept like higher order thinking, once clearly defined, has the potential to help educators close the gap between problem solving of the sciences and critical thinking of the humanities. They suggest the following definition: “Higher order thinking occurs when a person takes new information and information stored in memory and interrelates and/or rearranges and extends this information to achieve a purpose or find possible answers in perplexing situations” (Lewis and Smith, 1993, p. 136).

2.2. Constituents of Critical Thinking

As it is evident in most of the cited definitions of critical thinking, critical thinking consists of two components: 1) a set of information and belief generating and processing skills, and 2) the disposition to use those skills to guide behavior. It is thus contrasted with: 1) the mere acquisition and retention of information alone, because it involves a particular way in which information is sought and treated; 2) the mere possession of a set of skills, because it involves the continual

use of them; and 3) the mere use of those skills (as an exercise) without acceptance of their results (Scriven and Paul, 1996).

Critical thinking skills, or what some refer to as higher order process skills, help learners connect knowledge as they use information from many different sources and experiences to gain broader perspectives and deeper understanding. As Pascarelli and Terenzini (1991) point out, thinkers who use these cognitive skills do some or all of the following: identifying central issues and assumptions in an argument, recognizing important relationships, making correct inferences from data, deducing conclusions from information or data provided, interpreting whether conclusions are warranted on the basis of the data given. In order to characterize critical thinking skills, several authors go back to Bloom's work, in which critical thinking skill is equated with analysis, synthesis and evaluation. Moreover, Halpern (1998) comes to the following taxonomy of critical thinking skills: verbal-reasoning skills, argument-analysis skills, thinking skills such as hypothesis testing, thinking in terms of likelihood and uncertainty, decision-making and problems-solving skills.

However, most authors agree that critical thinking is more than the successful use of the right cognitive skill in an appropriate context. To illustrate, a person might possess critical thinking skills, but tends not to use them, which indicates that the individual possesses little critical thinking disposition. Thus, critical thinking also includes certain attitudes, dispositions, and traits of mind, which are all essential to the effective use of aforementioned critical thinking skills and abilities in real settings. However, as Pithers and Soden (2000) demonstrates, lists and conceptions of specific dispositions differ more than the lists of critical thinking skills: Ennis (1991) considers these attitudes and dispositions as "a spirit of inquiry", and his view of critical thinking involves broad dispositions: exercising open-mindedness, considering the total situation, staying relevant to the main point, looking for alternatives, making judgment based on evidence, using credible sources to name but a few. Also for Paul (1995) the dispositions are an essential part of critical thinking: without being open-minded and considerate of other people and perspectives, critical thinking does

not exceed egocentric and socio-centric thinking, which is conceived as critical thinking in the weak-sense according to Paul.

2.3. Frameworks of Critical Thinking

There are several frameworks of critical thinking which involves a comprehensive list of both critical thinking skills, abilities and proficiencies and dispositions.

Ennis (1987) offered one of the pioneering taxonomies in the educational use of the concept of critical thinking (Table 2.3.). In his taxonomy, he distinguishes between critical thinking skills and the dispositions that are central to the effective use of critical thinking skills. These skills and dispositions are as follows:

Table 2.3. *Critical Thinking Dispositions and Abilities*

Critical thinking skills

1. Focusing on a question
2. Analyzing arguments
3. Asking and answering questions of clarification and/or challenge
4. Judging the credibility of a source
5. Observing and judging observation reports
6. Deducing and judging deductions
7. Inducing and judging inductions
8. Making value judgments
9. Defining terms, and judging definitions
10. Identifying assumptions
11. Deciding on an action
12. Interacting with others

Dispositions

1. Seeking clarity
2. Seeking reasons
3. Seeking to be well-informed
4. Using credible sources
5. Considering total situation
6. Remaining relevant to main point
7. Keeping in mind original concern
8. Looking for alternatives
9. Being open-minded
10. Making judgment based on evidence
11. Seeking precision

Table 2.3. (continued)

12. Being orderly
13. Use one's critical thinking abilities
14. Being sensitive to others

Source: Ennis (1987, p. 54-57)

With his taxonomy, Ennis was also engaged in exploring the ways to assess critical thinking. As McDaniel and Lawrence (1990) indicate, Ennis, together with his colleagues Millman and Tomko, developed the Cornell Critical Thinking Test. On this test, respondents read arguments and were then asked to determine if (1) conclusions follow necessarily from the statements, (2) conclusions contradict the statements, or (3) neither. Yet, the responses to the test were limited to an evaluation of thought processes in test items. As McDaniel and Lawrence (1990) state Ennis later worked with Weir to develop the Ennis-Weir Critical Thinking Test in an attempt to give respondents more freedom in evaluating arguments and assessing statements. In this test, respondents constructed an essay to respond to arguments presented in "a letter to the editor" about a parking situation in a fictitious city. Responses were graded according to the guidelines provided, primarily measuring processes based on rules of logical reasoning: getting the point, seeing the reasons and assumptions, stating one's point, offering good reasons, seeing other possibilities and responding appropriately to logical arguments.

In 1988, American Philosophical Association commissioned a national Delphi study to develop a consensus on the definition of critical thinking (Facione, 1990). The aims were to identify the skills and dispositions which characterize the concept of critical thinking, explore effective ways to teach and assess critical thinking, design college level academic programs in critical thinking and assist with efforts to introduce critical thinking into the K-12 curriculum. Facione was the principal investigator for the study, which involved 46 experts with recognized expertise in critical thinking, instruction, theory and or assessment. Half of the panel members were from the field of philosophy, and the other half from the field of education, social sciences and physical sciences. Using the Delphi technique, the panel provided their conceptualizations of critical

thinking, which were compiled by Facione and presented to the panel members for their feedback. The process was repeated over a two-year period until consensus was reached on the major components of critical thinking. Finally, the experts found good critical thinking to include both a skill dimension and a dispositional dimension. Consensus list of critical thinking cognitive skills and sub-skills included interpretation (categorization, decoding significance and clarifying meaning), analysis (examining ideas, identifying arguments, analyzing arguments), evaluation (assessing claims, assessing arguments), inference (querying evidence, conjecturing alternatives, drawing conclusions), explanation (stating results, justifying procedures, presenting arguments) and self-regulation (self-examination, self-correction). Regarding the list of affective dispositions, however, the experts distinguishes between the affective dispositions which are categorized as the approaches to life and living in general, and those that are characterized as approaches to specific issues, questions or problems as follows:

Table 2.4. *Affective Dispositions of Critical Thinking*

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

Table 2.4. (continued)

– Persistence though difficulties are encountered – Precision to the degree permitted by the subject and the circumstance

Source: Facione (1990, p. 13)

It is worth noting that according to the Delphi report, these two types of affective dimensions are considered as the permanent traits of critical thinkers at times when they are using one of the cognitive skills as well as at times when they are not employing a cognitive critical thinking skill. Moreover, it is also suggested that in order to count a person as a critical thinker, it is not necessary that he/she should be proficient at every skill.

Jones et al. (1995) also conducted a study to conceptualize critical thinking with the aim of providing a framework for its assessment among college students. The list of cognitive skills and subskills included

- interpretation (categorization of data, detecting indirect persuasion and classifying meaning),
- analysis (examining ideas and purpose, and detecting and analyzing arguments),
- evaluation (assessing the importance of an argument, its reasonability and practicality as well as evaluating the sources of information, assumptions, statistical information used as evidence to support an argument, evaluating conclusions of an argument in face of new data, evaluating analogies, detecting bias, narrow-mindedness and contradictions),
- inference (collecting and questioning evidence, developing alternative hypotheses and drawing conclusions),
- presenting arguments (presenting supporting reasons and evidence for their conclusions which address the concerns of audience, negotiating fairly and persuasively, presenting an argument with its crucial points, considering alternative positions and opposing points of view, and illustrating arguments with significant examples and showing how these examples apply in real situations),
- reflection (applying the skills of analysis and evaluation to one's own arguments to confirm and/or correct reasoning and results, critically examining and evaluating vested interests, beliefs and assumptions and making revisions in arguments and findings when self-examination reveals inadequacies) (p. 21)

Finally, Jones et al. (1995) assert that a critical thinker needs to have the following dispositions: Thinking independently, exercising fair-mindedness, developing insight into egocentricity and socio-centricity, developing intellectual humility and suspending judgment, developing intellectual courage, developing intellectual good faith or integrity, developing intellectual perseverance, developing confidence in reason, exploring thoughts underlying feelings and feelings underlying thoughts, being curious, being organized, orderly and focused in inquiry or in thinking, being flexible and creative in seeking solutions, monitoring own understanding of a situation and progress toward goals, and finding ways to collaborate with others to reach consensus on a problem or issues.

According to Paul (1995), comprehensive critical thinking has the following characteristics: First, it is the kind of thinking which is responsive to and guided by intellectual standards, namely, relevance, accuracy, precision, clarity, depth, and breadth. Second, it is the thinking that supports the development of intellectual traits in the thinker. These traits include intellectual humility, intellectual integrity, intellectual perseverance, intellectual empathy, and intellectual self-discipline, among others. Third, it is the sort of thinking in which the thinker is able to identify the elements of thought that are present in all thinking about any problem. For instance, the thinker asks himself or herself questions about the subject of the thinking task at hand: What is the *purpose* of my thinking? What *question* do I exactly answer? Within what *point of view* am I thinking? What *information* am I using? How am I *interpreting* that information? What *concepts* or ideas are central to my thinking? What *conclusions* am I reaching at? What are the things that I am taking for granted, and what *assumptions* am I making? If I accept the conclusions, what are the *implications*? What would be the *consequences* of putting my thought into action? Fourth, this type of thinking is characterized as "routinely self-assessing, self-examining and self-improving. Therefore, the critical thinker needs to assess the various dimensions of her / his thinking using appropriate intellectual standards (accurate, relevant, specific, clear, precise, plausible, consistent, logical, deep, broad, complete, significant, adequate and fair). Fifth, in this thinking, there is an integrity to the whole system. That is, a critical thinker not only examine her

thought as a whole, but also to take it apart, consider its various parts, as well. Sixth, it is the type of thinking that produces a predictable, well-reasoned answer because of the comprehensive and demanding process that the thinker goes through. Finally, in this type of thinking, the thinker not only argues from alternate and opposing points of view, but also seeks and identifies weaknesses and limitations in one's own position.

Paul's frame of critical thinking consists of three major categories: affective strategies, cognitive strategies (macro abilities), and cognitive strategies (micro abilities) (Table 2.5.) Consisting of 35 dimensions of critical thought, the list of strategies also serves as an important goal of classroom instruction especially at the K-12 levels:

Table 2.5. *35 Dimensions of Critical Thought*

Affective Strategies

1. Thinking independently
2. Exercising fair-mindedness
3. Developing insight into egocentricity and sociocentricity
4. Developing intellectual humility and suspending judgment
5. Developing intellectual courage
6. Developing intellectual good faith or integrity
7. Developing intellectual perseverance
8. Developing confidence in reason
9. Exploring thoughts underlying feelings and feelings underlying thoughts

Cognitive Strategies – Macro Abilities

10. Refining generalizations and avoiding oversimplifications
11. Comparing analogous situations: transferring insights to new contexts
12. Developing one's perspective: creating or exploring beliefs, arguments, or theories
13. Clarifying issues, conclusions or beliefs
14. Clarifying and analyzing the meanings of words and phrases
15. Developing criteria for evaluation: clarifying values and standards
16. Evaluating the credibility of sources of information
17. Questioning deeply: raising and pursuing root or significant questions
18. Analyzing or evaluating arguments, interpretations, beliefs, or theories
19. Generating or assessing solutions
20. Analyzing or evaluating actions or policies
21. Reading critically: clarifying or critiquing texts
22. Listening critically: the art of silent dialogue
23. Making interdisciplinary connections
24. Practicing Socratic questioning
25. Reasoning dialogically: comparing perspectives, interpretations, or

Table 2.5. (continued)

theories

26. Reasoning dialectically. Evaluating perspectives, interpretations or theories

Cognitive Strategies – Micro Abilities

27. Comparing and contrasting ideals with actual practice
28. Thinking precisely about thinking: using critical vocabulary
29. Noting significant similarities and differences
30. Examining or evaluating assumptions
31. Distinguishing relevant from irrelevant facts
32. Making plausible inferences, predictions, or interpretations
33. Giving reasons and evaluating evidence and alleged facts
34. Recognizing contradictions

Exploring implications and consequences

Source: Paul (1995, p. 56)

It is noteworthy that both the cognitive and affective are included in this framework as they are considered to be complementary to each other with the belief that unmotivated persons or those who are not predisposed to think critically can neither learn thinking critically nor think critically. At this point, Paul (1995) suggests that critical thinking can be developed in an atmosphere which encourages the intellectual virtues: intellectual autonomy, intellectual civility, intellectual confidence or faith in reason, intellectual courage, intellectual curiosity, intellectual discipline, intellectual empathy, intellectual humility, intellectual integrity, intellectual perseverance, intellectual responsibility, and intellectual sense of justice. He views these intellectual virtues as the traits of mind and character necessary for right action and thinking and the traits of mind and character essential for fair-minded rationality.

Bailin et al. (1999), on the other hand, criticize all conceptions of critical thinking as skill, mental processes or procedures. They believe such conceptions of critical thinking ignore the importance of contextual factors or background information since skills can be exercised whenever they are needed regardless of context and background information. They set out a new conception of critical thinking – that critical thinking is a "normative enterprise in which people apply appropriate criteria and standards to what they or others say, do or write. Thus, they believe that those who become critical thinkers acquire such intellectual

resources as background knowledge, operational knowledge of appropriate standards, knowledge of key concepts, possession of effective heuristics and of certain vital habits of mind.

First of all, they argue that critical thinking always takes places within the context of already existing concepts, beliefs, values and courses of action. This context, as they point out, plays a very important role in determining what will be considered as sensible or reasonable application of standards and principles of good thinking. Therefore they assert that the depth of knowledge, understanding and experience people have in a particular area of study or practice is an important determinant of the extent to which they are capable of thinking critically in that area.

Second, similar to the previous authors, they indicate that fulfilling relevant standards of critical assessment in carrying out thinking tasks is at the heart of critical thinking. Thus, they emphasize that knowledge of the standards at the operational level is necessary for anyone to think critically. These standards include the adequacy of claims about meaning, credibility of statements made by authorities, reliability of reports made by observers, validity of deductive arguments, strength of inductive arguments, adequacy of moral, legal and aesthetic reasons. In addition, they also offered a set of principles which may be needed in solving different kinds of problems that require deliberation. These include considering many alternative courses of action, discovering and taking into account as much relevant information about the nature and results of each alternative and trying to acquire an awareness of the point of view and assumptions underlying one's thinking and the possible biases, according to the context of the decision, its significance, and one's prior reasoning about similar decisions.

Third, they suggest that a critical thinker needs to have a wide range of critical concepts on account that they enable the critical thinker to analyze and evaluate arguments more effectively. Forth, critical thinkers are advised to have a rich repertoire of heuristic devices (strategies, procedures, etc) in order to deal effectively with a wide range of thinking tasks. For instance, to decide which side of an issue to support, it is sometimes useful to make a list of the reasons for or

against each side. To clarify what someone means by a term, it is useful to ask for examples of things to which s/he would apply the term, or to suggest what s/he thinks might be good examples and ask for confirmation of them.

Finally, they claim that one must also have certain commitments, attitudes or habits of mind that dispose him or her to use these resources to fulfill relevant standards and principles of good thinking. These attitudes and habits of mind include the following: respect for reasons and truth, respect for high quality products and performances, an inquiring attitude, open-mindedness, fair-mindedness, independent-mindedness, respect for others in group inquiry and deliberation, respect for legitimate intellectual authority, and an intellectual work-ethic.

2.4. Importance of Critical Thinking in Education

After critical thinking skills and accompanying dispositions and attitudes are defined and a variety of frames of critical thinking reviewed, it is important to look at the importance of critical thinking in education.

Lipman (1994) mentions two contrasting paradigms of educational practice: the standard paradigm of normal practice and the reflective paradigm of critical practice. According to the former paradigm, education consists in the transmission of the knowledge which is characterized as unambiguous, unequivocal and unmysterious and distributed among disciplines that are non-overlapping and in the educational process, the teachers plays an authoritative role in that only if teachers know can students learn what they know. Students, in this process, acquire knowledge by absorbing information. In contrast, the reflective paradigm assumes that education is the outcome of participation in a teacher-guided community of inquiry. The focus of the educational process is not the acquisition of information but on the understanding of relationships within subject-matters under investigation. In the educational process, both students and teachers query each other. The reflective paradigm expects students to be thinking if they participate in the community of inquiry unlike the standard paradigm which requires students to think if they learn what they have been taught.

The reflective paradigm of critical practice includes certain principles. First, education as inquiry is the first of these principles. Just as scientists apply the scientific method of to the exploration of problematic situations, students are required to the same if they are to learn to think for themselves. Thus, asking students to study the end results of what the scientists have discovered, and neglecting the process and fixate upon the product is to be avoided. Second, the principle of community of inquiry is about converting the classroom into a community of inquiry where students listen to one another with respect, build on each other's ideas, challenge one another to supply reasons for unsupported opinions help each other in drawing inferences from what has been said. Third, sensitivity to what is problematic is also regarded as essential. Thus, the curriculum is aimed to bring out aspects of the subject matter that are unsettled and problematic in order to hold the attention of the students and stimulate them to form a community of inquiry. Fourth, education is viewed as a context in which young people learn to be reasonable so that they can bring up to be reasonable citizens, reasonable companions, and reasonable parents. Fifth, it is noted that thinking is a process of finding or making connections. Thus, seeking and examining relationships that apply to events is also regarded as vital to make sound judgments. Sixth, thinking in the disciplines is viewed as another principle. According to this principle, students need to think historically, scientifically, or mathematically; to think in the way of distinctive of the particular subject involved. Seventh, the primary objective of the reflective model is the autonomy of the learner. Autonomous learners are considered to be those who can think for themselves, making their own judgments of the evidence, forming their own understanding of the world and developing their own conceptions of the kind of persons they would like to be, and they are certainly not like those who merely parrot what others say or think. Finally, in the reflective paradigm, in each discipline, the community inquiry is to be used in order to provoke discussion and reflection about the subject matter of the discipline.

The principles of the reflective paradigm cited above receive a lot of attention in today's education where there is a shift from the acquisition of facts to the process of thinking. The contemporary goal is to have students think for

themselves (Lipman, 1994). For many educators, critical thinking is not a way to education but a prerequisite (McPeck, 1981, Siegel, 1980). One advantage cited is the creation of a community of inquiry, where each member monitors his/her thinking, as well as critiques other members' methods and procedures. Thus, individuals not only self-correct thinking processes, but contribute overall to group thinking skills (Lipman, 1995). In such a community where questioning becomes a way of reflection, students are encouraged to question the validity of sources of information, including teachers (Siegel, 1980). Moreover, teachers need to convey to students these skills, since research indicates that many students do not demonstrate strong critical thinking skills (Norris, 1985). As Lipman (1994) points out, two important virtues of critical thinking skills are greatly enhanced reading comprehension and the ability to communicate the in-depth perception gained from increased understanding. Positive effects are also observed in the area of problem-solving as Sezer (2008) reveals. One study differentiated the problem-solving approaches of individuals based on experience. The differences in problem-solving were not limited to the expert knowledge or having an automated approach to certain problems but the choice of heuristics - strategies and procedures - used. More experienced individuals were found to give greater thought to the approach that they would use, and the relevance of each piece of information, given in the problem.

Having mentioned the place of critical thinking in education, it is important to review issues concerning the teaching of critical thinking skills with reference to the findings and recommendations of researchers and specialists in critical thinking-skill learning and teaching. These issues include approaches to the teaching of critical thinking skills, integration of critical thinking into instruction, factors inhibiting students' critical thinking, and assessment of critical thinking.

2.5. Approaches to Teaching of Critical Thinking Skills

There are two approaches to the teaching of thinking skills in the literature (Lipman, 1994): The skill view of thinking suggests that thinking consists of a set of specific skills, such as comparing, ordering, classifying, and predicting, which

are considered to have wide applicability and generalizability across all subjects (Lipman, 1994). Accordingly, the skill-oriented approach suggests that the critical thinking skills should be taught directly or explicitly through separate courses or instructional units in courses, where the critical thinking skills are practiced specifically and principles of good thinking are made explicit enough to train students in these skills. However, this approach receives much criticism due to the fact that direct teaching of thinking skills through seperate courses raises skill technicians, who apply these skills mechanically.

The other one is the content-oriented view. The proponents of the content-oriented view suggests that thinking cannot be separated from content as it is a way of learning content. Zohar and Dori (2003) stress that successful learning can be attained by incorporating the thinking skills into all school level subjects, which allows students to use the skills in a meaningful context and helps them learn the subject matter deeply and apply it out of school settings (Beyer,1988; Eggen & Kauchak, 2001; Johnson, 2000). Therefore, the integration of the critical thinking skills into the regular curriculum is stressed in this view. In fact, there are two different lines of thought among the proponents of content-oriented view. Some authors argue for the implicit teaching of the critical thinking skill within the context of academic disciplines. They assert that devoting too much attention on the explicit teaching of thinking skills and to the process of how to think is counter-productive since it is likely to direct the attention away from subject matter content. This approach requires deep and thoughtful subject matter instruction where the students are to think reflectively. During this process, the principles of good thinking are not explicitly introduced. Students learn to use these thinking skills as they are deeply infused in the subject. Integrating or infusing *direct* thinking-skill instruction with instruction in the subject matter where these skills are needed to achieve is another content-oriented view that seems to receive much more attention recently.

The related research review identifies three advantages of such a direct instruction of thinking skills in a subject matter course (Beyer, 2008). To begin with, in such courses, subject-matter learning and thinking go hand in hand, each reinforcing and contributing to the development of the other in an integrated

manner. Besides, when learning the subject matter is seen as the top priority, learning how to properly apply a skill which is required to learn the given subject matter takes on a special urgency for students. Consequently, they appear much more willing to attend to instruction in that skill when that instruction is provided at this point. Finally, as the research demonstrates, in the courses which provide systematic instruction in the thinking skills needed to understand the subject matter, students are found to score higher on assessment of their thinking and end-of-course assessments of subject matter learning than the students in the same subject-matter courses in which such direct skill instruction is not provided.

2.5.1. Integration of Critical Thinking into Instruction

Halpern (1998) argues that the goal of instruction designed to help students become better thinkers is transferability to real-world. With this goal in mind, she suggests that the ideal learning assessment would occur naturally in the course of one's life, in multiple settings, and would provide comparable measures before, during and long after the instruction. Lehman and Nisbett (1990, cited in Halpern, 1998), for example, examined the spontaneous transfer of selected thinking skills in real world environment. They phoned students at home several months after the completion of their course work and asked questions under the guise of a household survey. Results supported the idea that the students had learned and spontaneously used the thinking skills that had been taught in their classes when the questions were asked in their homes with novel topic, several months after the semester ended. In Halpern's view, this sort of assessment provides evidence that critical thinking can be learned with appropriate instruction and that it does transfer to new domains of knowledge.

Halpern proposes a four-part model for enhancing critical thinking consisting of a dispositional or attitudinal component, instruction in and practice with critical thinking skills, structure training activities designed to facilitate transfer across contexts, and meta-cognitive component used to direct and assess thinking.

To begin with, she argues that it is of no value to teach students the skills of critical thinking if they are not inclined to use them. Accordingly, she points

out the need to provide instructional programs that help learners decide when to make the necessary mental investment in critical thinking and when a problem or argument is not worth the effort. Also, it is suggested that students need to be introduced certain cognitive strategies through instruction. For this purpose, a short taxonomy of critical thinking skills is proposed by the author, which includes verbal reasoning skills, argument analysis skills, skills in testing hypothesis testing, examining likelihood and uncertainty, decision-making and problem-solving skills.

Next, as she clearly states, when a teacher is teaching for critical thinking, the goal is to have students not only understand and successfully use the particular skill or strategy being taught but also be able to recognize where that particular skill might be suitable in new situations. She further provides examples of tasks and questions that require students to attend to structural aspects of an argument: Asking students to draw a diagram organizing the information, asking students to explain why they selected a particular multiple-choice alternative, categorizing the findings in a meaningful way, presenting two reasons that support the conclusion and two reasons that do not support the conclusion.

Finally, she stresses the importance of meta-cognitive monitoring referring to the self-awareness and planning function that guide the use of thinking skills. She suggests that when engaging in critical thinking, students need to monitor their thinking process, checking whether progress is being made toward an appropriate goal, ensuring accuracy, and making decisions about the use of time and mental effort.

Beyer (2008) describes and cites research-derived features of effective direct instruction in thinking skills. He also describes researcher- and specialist-recommended teaching techniques and lesson strategies for introducing any thinking skill, guiding continuing skill practice and teaching students to transfer thinking skills to other contexts. The following are the essentials of a framework for an effective critical thinking instruction:

- Research reveals the difficulties individuals have in applying a newly "learned" skill to a context other than that in which it was initially applied, therefore underscoring the need for instruction to include explicit efforts to

transfer a newly learned thinking skill to a variety of contexts beyond the original one. In light of this research finding, Beyer infers that helping children become skillful thinkers requires continuing instruction in thinking-skill procedures over an extended period of time in a variety of contexts or subjects. He proposes that a three-stage skill-teaching framework consisting of introduction, guided practice, and transfer.

- According to many researchers, an initial skill-learning experience, or lesson, is especially effective when it presents and makes explicit the key procedural steps and any skill related knowledge (such as heuristics or criteria) to be applied in carrying out the skill being introduced. To this effect, Beyer suggests that teachers use some techniques for making a skill procedure explicit, namely, modeling, meta-cognitive reflection, and thinking aloud, which are all proved to be useful in introducing a new skill.
- Once a thinking skill has been explicitly introduced, continued practice over an extended period of time has been demonstrated to be essential for developing eventual autonomous proficiency in applying that skill. For this purpose, Beyer suggests that teachers use techniques such as scaffolding, cueing and rehearsal. Besides, a number of other skill-teaching techniques that have been reported to be useful in the research: use of language of thinking, coaching which involves asking questions or providing hints, explanations, information, reminders, etc.), and providing feedback.
- Since thinking skills are rarely transferred on their own beyond the context in which they are initially applied, students are reported to benefit from instructional assistance in making such as transfer (Beyer, 2008). The related research indicates that in transferring the application of a newly learned skill to new contexts it is especially important for students to identify the general similarities between the new and the original skill-using contexts so they can better identify other contexts in which the skill may be applicable (Hudgins 1977; Nickerson 1989; Perkins and Salomon 1988, cited in Beyer, 2008). Helping students generalize the circumstances when it is appropriate to apply a skill and making explicit principles for applying it

also facilitate transfer of a skill to new contexts (Perkins and Salomon 1988, cited in Beyer, 2008).

Unlike Halpern (1998) and Beyer (2008), Bailin et al. (1999) conceptualize teaching critical thinking not as a matter of directing the attention to teaching isolated abilities and dispositions but rather furthering the initiation of students into complex critical practices. They argue that initiation of children into these practices begins long before they go to school. By the time they are in primary school they are already making and criticizing judgments and arguments of various kinds, although their arguments and criticisms may not be very good. The educator's duty, as they point, is to continue the students' initiation in a more self-conscious way so that good critical practice is encouraged and poor practice is abandoned. This, in their view, is not a matter of simply teaching students standards and concepts of which they previously did not know, but also getting them to appreciate the value of changing some of their previously held beliefs. They propose three components of teaching critical thinking: engaging students in dealing with tasks that call for reasoned judgment or assessment, helping them develop intellectual resources (as cited in the section titled frameworks of critical thinking) for dealing with these tasks, and providing an environment where critical thinking is valued.

Paul (1995) proposes a model for the development of students' critical thinking . His model centers around three aspects of thinking: elements or components of good reasoning, intellectual standards used to assess the quality of the thinking, and intellectual traits or virtues, essential dispositions of an effective critical thinker. According to Paul, there are eight elements or building blocks basic to any reasoning process or task, whether thinking about an academic discipline, a business decision, a book or article, a political speech, a personal relationship, a consumer purchase, and so on. These include purpose of thinking, the question at issue or the problem to be solved, fundamental concepts, information, point of view, inferences, assumptions, and implications.

In the critical thinking literature, various instructional strategies are suggested with the aim of developing students' critical thinking. Paul suggests four main strategies for the purpose of enhancing students' critical thinking,

namely, Socratic questioning, role-playing, analyzing experiences, and distinguishing fact, opinion, and reasoned judgment.

By Socratic Questioning, students are encouraged to think aloud and synthesize their thoughts and beliefs into a more coherent and better-developed perspective. By encouraging students to slow their thinking down and elaborate on it, Socratic discussion gives students an opportunity to improve and evaluate their own thoughts. In fact, questioning is the fundamental method used in teaching for critical thinking as it serves the purpose of deepening knowledge, critiquing different perspectives, and transforming ideas and actions rather than to acquire the right answers (Villaverde, 2004). Cruickshank, Bainer and Metcalf (1995), who also point out the use of questioning in developing thinking skills, state that divergent questions or content related questions not requiring "correctness" encourage students to consider issues from different perspectives and in creative, complex and different ways. This way of asking questions stimulates students to think and respond creatively and eliminates the fear of giving "wrong" answers (Potts, 1994).

Role-playing or drama helps students to understand others who think differently, by playing the reasoning of others (Paul, 1995) and to explore habits of mind and dispositions of others that they will play the role of (Andersen, 2002). This way, students reconstruct opposing views and can gain insights into others' perspectives. Paul (1995) suggests that role-play can be followed by Socratic questioning, discussion, or writing dialogs. Moreover, it is stated that including cognitive processes such as meta-cognition (thinking about his/her own thinking while thinking about the role) or decision-making, drama as skits or scripts has a potential to improve thinking skills (Andersen, 2002, 2004; Ranger, 1995).

Paul (1995) also asserts that students should learn to analyze experience that they lived or the others lived. This helps them to improve their ability to empathize, gain insights and develop intellectual virtues such as intellectual empathy, intellectual courage, intellectual integrity, and confidence in reason. While analyzing the experiences, they better understand the situations, people's behaviors, and their reasons and realize their own reasoning because even the same experiences can be interpreted differently due to differences in personal

interests, goals, and desires. Paul (1995) also argues that analyzing their own and others' experiences in light of the following questions would feed the development of their intellectual virtues: "(1) What are the raw facts, the most neutral description, of the situation? (2) What interests, attitudes, desires, or concerns am I bringing to the situation? (3) How am I conceptualizing or interpreting the situation in light of my point of view? (p. 49). To Paul, arguments on different analysis of experiences will also foster insights into objectivity and biasness.

What is more, Paul (1995) argues against a taxonomy that divides all beliefs into either facts or opinions and leaves out reasoned judgment. He says, "Most important issues are not simply matters of fact, nor are they essentially matters of faith, taste, or preference. They are matters that call for reasoned reflection. They are matters that can be understood from different points of view through different frames of reference" (p. 295). Thus, he suggests that students definitely need to learn procedures for gathering facts, and they need to have opportunities to express their preferences, but their most important need is to develop their capacities for reasoned judgment. On the other hand, he emphasizes that before doing this, students should learn the distinction between fact, opinion, and reasoned judgment in the first place.

In addition to these, Potts (1994) suggests three strategies for teaching critical thinking skills, one of which is building categories by which students categorize information by finding out the rules. Then, students are asked to evaluate if their categorization rules can be generalized by transferring the rules into different instances. Finding problems and solutions is conceived as another crucial thinking skill which is also required in real life. This strategy provides an opportunity for students to improve their ability to identify the problem in a case and generate solutions to it and to use this skill in tackling real life problems as well. Lastly, enhancing environment, which means the arrangement of seating and visual aids in a classroom, is perceived to be very important in enhancing critical thinking. Seating of students should be arranged so effectively that students can interact with their peers and teacher.

Carr (1990) mentions three activities for the purpose of enhancing critical thinking across all academic disciplines. These are critical reading, writing to learn, and classification games. Critical reading means to evaluate, draw inferences, and arrive at conclusions based on the evidence. Newspapers, magazines, television, radio, literature, and articles can be used for this. While reading, a comparison of differing ideas might be helpful for students in developing a questioning attitude. Besides, it is claimed that thinking can be taught by means of *writing*. Parallel to this view, McCallister (2004) proposes the inclusion of writing education into all school curricula in order to give an opportunity to promote critical thinking because it entails a thinking process such as retrieving information, composing ideas, participating in a world of things, ideas, events, and people, and exploring personal connections to that world. Another proposed activity by Carr (1990) is classification games that play a significant role in the development of logical thinking and abstract concepts. The integration of classification activities into content areas is seen as essential according to cognitivist learning approach and schema development on which learning is formed because these activities help the reconstruction of schemas by categorizing knowledge effectively. For this purpose, logic puzzles, verbal analogies, problem solving, and games can be used.

As a tool of Potts's (1994) 'building categories' and Carr's (1990) 'classification games', instructors can benefit from semantic mapping, which is also called as concept mapping, graphic organizer, or semantic webbing. Lim et al. (2003) propose to use semantic mapping as a strategy for facilitating and assessing critical thinking skills of student-teachers. They indicate that semantic mapping helps to explore how we understand key concepts in a topic, to make a meaningful pattern of our understanding and knowledge by linking ideas, to plan a process by categorizing, linking and organizing the ideas. Besides, it encourages active thinking by analyzing, categorizing, synthesizing and reflecting on the key elements of what we know or have done. Semantic mapping is not just a useful tool for developing critical thinking but also for evaluating the students' critical thinking performance. It can be used to assess their ability to relate distinct topics, appreciate key concepts, and build relationships between different concepts, in

addition to stimulating discussion or, basically, checking whether students understand the reasons for a lesson (Lim et al., 2003).

Besides these models of instruction, learning strategies, methods and activities which proved to enhance critical thinking, the review of literature also includes the obstacles standing in the way of teaching for critical thinking, which will be presented in the following section.

2.6. Factors Inhibiting Students' Critical Thinking

The research on teaching thinking has concentrated on methods which are likely to inhibit rather than enhance "good thinking." Pithers and Soden (2000) reviewed the research which focused on these methods, and reached some important conclusions:

To begin with, Rath et al. (1966, cited in Pithers and Soden, 2000) described the connection between thinking and behavior and provided some evidence that some students engage in thoughtless or unwise behaviors as their behavioral patterns. These researchers asserted that such behaviors need to be changed, substituting more thoughtful and wise behaviors. Rath's good thinking operations included comparing, interpreting, observing, summarizing and classifying, hypothesizing, taking decisions, creating, criticizing, evaluating designing investigations, identifying assumptions and coding, gathering and organizing data or information and applying principles to situations. Rath's idea that there should be no new subject called critical thinking rather that it should be conceived as a means of teaching-learning in any subject area, is reported to resonate too with the modern research (Perking, 1993, cited in Pithers and Soden, 2000). Rath et al. also saw teacher-student interaction as the place where thinking could be best promoted, and with that respect, they identified, from their research, eight behavioral patterns which were deficits in good thinking: These were learners who act without thinking (impulsive), need help at each step (over-dependent), use strategies incompatible with goals (do not perceive relationships), have difficulty with comprehension (miss meaning), are convinced of the rightness of their beliefs (dogmatism), operate within narrow rule sets

(rigidity/inflexibility), are fearful (not confident) and condemn good thinking as a waste of time (anti-intellectual).

Rath et al. went on to discuss the types of teacher behaviors which they argued inhibit good thinking. These include such teacher behaviors as simply agreeing or disagreeing, merely demonstrating and explaining, cutting of student responses, using reproof rather than praise, shaking the learners' confidence in the value of new ideas or using basically only retrieval or recall types of questions and rewarding the quiet non-thinker. These researchers also argues that school based educational programs that supported more effective instructional courses rarely provided the means by which students could learn "good thinking" practices.

Review of recent research cited in Pithers and Soden (2000) reveals that nothing much changed in relation to the above respects: It was found out that there are six teacher fallacies obstructing the teaching and learning of critical thinking. The first of these fallacies is the teachers who believe they have nothing to learn from the students, despite the fact that in the area of critical thinking the teacher is also a learner who needs to be receptive to new ideas. The second fallacy is the teacher belief that critical thinking is solely the teachers' job. Third, fallacy is that there is a correct program for the delivery of critical thinking. Sternberg (1987) made the useful point that there is no one correct thinking program: It depends on the program goals and the content, as well as the context or culture in which the learner's thinking is to be situated. The fourth fallacy is that what really is important is the right answer, when plainly it is the thinking behind the answer which is important. The fifth fallacy is that discussion is a means to an end. Critical thinking may prove to be an end in itself. The final fallacy is the notion of mastery-learning which implies some ceiling on good thinking. Usually thinking and performance can be further improved.

What is more, Onosko (1991, cited in Akınoğlu, 2005) reveals that there are six constraints on the development of students' critical thinking, namely, the false belief that instruction is transfer of knowledge, superficial coverage of too much content, teachers' low expectations of students, crowded classrooms, students' lacking time management skills, and teachers' isolation.

2.7. Assessment of Critical Thinking

The research into critical thinking has focused not only on the cultivation of reasoning in all subjects but also on the assessment of critical thinking. As Paul (1995) points out, the concepts and distinctions embedded in critical thinking research are, therefore, well-suited for the design of a process to assess higher order thinking. In an attempt to develop a process to assess critical thinking, Paul (1995) started with determining what should be the main objectives of a process to assess critical thinking. He put forward 21 criteria for that purpose as displayed in Table 2.6.

Table 2.6. *Objectives of a Process to Assess Critical Thinking*

1) It should assess students' skills and abilities in analyzing, synthesizing, applying and evaluating information.
2) It should concentrate on thinking skills that can be employed with maximum flexibility, in a wide variety of subjects, situations, contexts, and educational levels.
3) It should account for both the important differences among subjects and the skills, processes, and affective dispositions that are crucial to all subjects.
4) It should focus on fundamental, enduring forms of intellectual ability that are both fitted to the accelerating pace of change and deeply embedded in the history of the advancement of the disciplines.
5) It should readily lead to the improvement of instruction.
6) It should make clear the interconnectedness of our knowledge and abilities, and why expertise in one area cannot be divorced either from findings in other areas or from a sensitivity to the need for interdisciplinary integration.
7) It should assess those versatile and fundamental skills that are essential to being a responsible, decision-making member of the workplace.
8) It should be based on clear concepts and have well-thought-out, rationally articulated goal, criteria, and standards.
9) It should account for the integration of communication skills, problem-solving, and critical thinking, and it should assess all of them without compromising essential features of any of them.
10) It should respect cultural diversity by focusing on the common-core skills, abilities, and traits useful in all cultures.
11) It should test for thinking that is empowering and that, when incorporated into instruction, promotes the active engagement of students in constructing their own knowledge and understanding.
12) It should concentrate on assessing the fundamental cognitive structures of communication.

Table 2.6. (continued)

13) It should assess the skills, abilities, and attitudes that are central to making sound decisions and acting on them in the context of learning to understand our rights and responsibilities as citizens, as well-informed and thinking consumers.
14) It should avoid any reductionism that allows a multi-faceted, theoretically complex, and authentically usable body of abilities and dispositions to be assessed by means of oversimplified parts that do not adequately reflect the whole.
15) It should enable educators to see what kinds of skills are basic for the future.
16) It should be of a kind that will assess valuable skills applied to genuine problems as seen by a large body of the populace both inside and outside of the educational community.
17) It should include items that assess both the skills of thoughtfully choosing the most reasonable answer to a problem from among a pre-selected set and the skills of formulating the problem itself and of making the initial selection of relevant alternatives.
18) It should contain items, that as much as possible, are examples of the real-life problems and issues that people will have to think out and act upon.
19) It should be affordable.
20) It should enable school districts and educators to assess the gains they are making in teaching higher order thinking.
21) It should provide for a measure of achievement against national standards.

Source: Paul (1995, pp. 107-109)

To achieve these objectives, there are many recommendations regarding how to assess students' critical thinking and test strategies that may be used:

To begin with, there have been widely known and used standardized tests such as California Critical Thinking SkillsTest (CCTST), California Critical Thinking Disposition Inventory (CCTDI), Watson-Glaser Critical Thinking Appraisal (W-GCTA), and Ennis-Weir Critical Thinking Essay Test (E-WCTET). While these tests are beneficial as they are easy to use and grade, reliance just on them for the assessment of students' critical thinking skills has not been suggested.

There is a variety of approaches in the assessment of critical thinking, which include discussions, open-ended and essay questions, multiple-choice tests, portfolios and unobtrusive measures. As for discussions, Baron (1987) starts with distinguishing between discussions and recitations, pointing out that recitation occurs when teachers ask students questions for which the teacher already has the

right answer whereas discussions is used to develop knowledge, understanding and judgment about the matter under discussion. He adds that discussion require not only the advancing of multiple points of view, but also that the participant are disposed to examining these points of view. In assessing students' thinking skills in such a discussion, the criteria include the ability to challenge one another for reasons and examples, offer counter-examples and counterarguments, present relationships between the subject under discussion and other relevant school subjects and outside experiences, ask for clarification and ask relevant and sequential questions. Furthermore, he suggests that students should be asked to fill out a checklist that evaluates both the discussions and their participation in them with particular reference to whether students felt that they backed up their opinions, strove for understanding listened carefully, spoke up freely, and were courteous.

Paul (1995) points out that the full range of the use of critical thinking cannot be assessed without requiring writing on the part of the student. It is highly suggested that students are given some essay exams where they "confront real issues, balance competing interest, weigh objections and alternatives, and make a reasonable decision about a matter of some consequence" (Paul, 1995, p. 144). At this point, Baron emphasizes that teachers can make use of essay exams to improve their understanding of students' reasoning processes and diagnose their misconceptions. In addition to such essay items, however, a series of short justification items, which require students to provide a short answer in one or more sentence(s) of their own writing, or choose an answer from a preselected multiple rating list and justify their answer in a sentence are also recommended in the literature.

Along with discussions and writing, multiple-choice tests are also recommended in the assessment of students' critical thinking. This type of item is used to assess relatively straightforward skills of reasoning, particularly with respect to recognizing elements of thought, distinguishing one element of thought from another, and recognizing clear examples of faulty reasoning (Paul, 1995).

Costa (1991), who claims that assessment of higher order thinking should be done in a variety of situations demanding the use of various thinking strategies,

proposes to collect evidence related to student performance through process-oriented assessment over time, not one at a time. Portfolios are considered to be a beneficial for that purpose (Janesick, 2004). Portfolios offer many advantages as follows: "(1) the task performed is done over time and in a variety of ways, (2) the task shows evidence of learning, growth, and development and samples a wide spectrum of tasks, (3) the task performed shows many levels of understanding, (4) the task is tailored to the individual learner to show what the learner can do" (Janesick, 2004, p. 390). It is suggested that by means of portfolio, student progress in learning and critical thinking skills can be monitored by both themselves as well as their teachers.

Also, a variety of unobtrusive measures are recommended in evaluating the effects of thinking skills programs. As Baron (1987) indicates, such measures make use of already existing data. Two examples of unobtrusive measures used in other evaluation settings are, for example, the frequency with which the carpet needed to be replaced in front of the most popular exhibits in a museum and the rate of books checked out of a library following certain events. Webb, Campell, Schwartz and Sechrest (1960; cited in Baron, 1987) described some creative ways of using physical traces, archival data, and observations, many of which can be adapted to the classroom.

Besides all these, observation, performance in extended or long-term projects, journals, writing samples, speaking exercises, in-class presentations, videotapes of student interactions, laboratory reports, panels, and simulations are recommended for assessing students' critical thinking (Costa, 1991; McEwen, 1994).

As for the criteria by which teachers judge students' critical thinking, Paul (1995, p. 131) provides a large range of intellectual standards that applies to thinking in every subject as follows: "Higher order thinking is thinking that meets universal intellectual standards. Thus, when assessing a student's ability to compare and evaluate perspectives (a macro ability) and to do so with fair-mindedness (a trait of mind), we would judge whether she had made such evaluations in a *relevant* and *consistent* way, with attention to *accuracy*, *fairness*, and *completeness* in describing each perspective, and with a sensitivity to the

degree of *precision* appropriate to the topic. We would assess critical thinking about and in terms of the elements of thought in very much the same way: to judge a person's skill at recognizing the frame of reference underlying a position, we would want to judge whether she could see *relevant* alternatives, whether the frame of reference she identified fits the available *evidence*, whether her answer was *deep* or merely mechanical, *clear* or vague, *fair* or biased. A full list of the intellectual standards is provided in Table 2.7.

Table 2.7. *Intellectual Standards That Apply to Thinking in Every Subject*

Thinking that is		Thinking that is
Clear	vs	Unclear
Precise	vs	Imprecise
Specific	vs	Vague
Accurate	vs	Inaccurate
Relevant	vs	Irrelevant
Plausible	vs	Implausible
Consistent	vs	Inconsistent
Logical	vs	Illogical
Deep	vs	Superficial
Broad	vs	Narrow
Complete	vs	Incomplete
Significant	vs	Trivial
Adequate	vs	Inadequate
Fair	vs	Biased or One-sided

Source: Paul, 1995, p. 131

2.8. Research on Critical Thinking and Critical Thinking Development

A review of research into critical thinking and its development shows that a number of studies have been conducted on this issue throughout the world:

Onosko (1988) conducted one of the pioneering studies on the thoughts and practices of practitioners with regard to the enhancement of students' thinking. The study analyzed the thoughts and practices of 5 teachers 'outstanding' and 5 teachers 'less than outstanding' at enhancing students' thinking through thoughtful classroom practice. 10 social studies teachers drawn from 5 high schools were each observed on 9 occasions and interviewed for at least 6 hours during an academic year. The findings revealed that outstanding practitioners of thinking, compared to those less-than outstanding, are more likely

to place thinking as their highest priority goal and find instruction for thinking more satisfying and interesting. In addition, their conceptions of thinking are relatively lengthier and more detailed and elaborate. Besides, outstanding practitioners are more likely to identify content coverage pressure as externally imposed rather than self-imposed. Both groups, on the other hand, highlight large class size and total student load as the most inhibiting barriers to instruction for thinking and generally hold similar views regarding students as thinkers. With respect to practice, outstanding practitioners across all lessons displayed substantially superior performance on seven of the ten dimensions of thoughtful classroom discourse, including careful consideration of reasons and explanations, Socratic dialogue, posing of challenging tasks, modeling thoughtfulness and students' giving reasons. In addition, outstanding facilitators more frequently used whole group teacher-centered and small group student-centered discussion formats, while less-than outstanding practitioners more frequently employed lecture and recitation.

Cotton (1991) reviewed the thinking skills research conducted between 1980 and 1990. The review included 56 research studies or evaluations. The vast majority of the research published in the particular period of time dealt with student populations in the United States and most of the research took either student or teacher population as target, only few studying both populations at the same time. Elementary school students were a highly studied group for critical thinking purposes. The effects of many individual practices and whole programs were investigated. Many reports looked at the effects of instructions in various clusters of higher order thinking skills, including analysis, synthesis, evaluation, making predictions, making inferences, self-questioning, formulating hypotheses, drawing conclusions, solving problems, making decisions, identifying assumptions, determining bias, and recognizing logical inconsistencies. The important findings emerging from the review of the thinking skills research included the following: To begin with, thinking skills instruction enhanced academic achievement: Nearly all the thinking skills programs and practices investigated were found to make a positive difference in the achievement level of participating students. Next, such instructional approaches such as probing,

reinforcement, asking higher-order questions, and lengthening wait-time enhanced thinking skills. Also, training teachers to teach thinking skills led to student achievement gains. Besides, neither skill-based orientation toward teaching thinking nor content-based orientation to teaching thinking was found to be superior to the other. It was revealed that both could lead to improved student performance and that elements of both were often used together, with beneficial results. Finally, the research showed that positive classroom climates characterized by high expectations, teacher warmth, encouragement, pleasant physical surroundings were found to enhance critical thinking.

Howe (2004) conducted research to compare and contrast Canadian and Japanese secondary school teachers' conceptions of critical thinking. The research involved four phases spread over 2 years. In the first phase, teachers from a variety of backgrounds ranging from English-language specialists to university professors were contacted both in Japan and Canada, and they were asked to provide words or phrases describing "critical thinking." In the second phase, a list of 50 definers describing teachers' conceptions of critical thinking was generated in the light of a review of literature and the definitions of the teachers contacted in the first phase, and the list was translated to both Japanese and English. In addition, a questionnaire including basic demographic information as well as open-ended questions concerning teachers' conceptions of critical thinking was designed. In the third phase, a range of teachers of different subject backgrounds, ages, and experience was selected from six secondary schools (from different neighborhoods within a district) in Canada. They were asked to rank the top 10 critical thinking definers and complete the questionnaire. In the forth phase, the same procedure was repeated to collect data in Japan. The results indicated that Canadian teachers tended to relate critical thinking to the cognitive domain, whereas Japanese teachers emphasized the affective domain: Canadian teachers viewed critical thinking through cognitive strategizing and relevance while Japanese teachers favored conscientious judgments and intellectual engagements. Qualitative analyses of teacher responses indicated that critical thinking was a tacit and implicit teaching practice supported by most teachers surveyed, irrespective of gender, age, teaching experience, subject area and above all, the

cultures from which they came. Finally, the author suggested that further cross-cultural research be conducted on comparative education methodologies, teaching strategies, critical thinking and the role of the teacher in order to give teachers opportunities to learn from one another and to benefit from the accumulated wisdom of generations of skilled practitioners.

Dike (2006) carried out research to explore conceptions of critical thinking held by military educators in higher education settings in USA. A total of 113 teachers from three schools, all of which aimed to prepare officers for future leadership positions in the military services, participated in the study. The participants were asked to define critical thinking in their own words. A content analysis was conducted after the data were collected. The analysis of teacher definitions resulted in 10 categories describing elements of critical thinking as follows: 1) evaluate and cross-examine, 2) draw inferences and determine and implement solutions, 3) identify on issue and assimilate data, 4) rationally arrive and use logic, 5) break into component parts and put back together, 6) truth-seeking, 7) consider consequences and sources of information and acquire contextual appreciation among ambiguity and uncertainty, 8) communicate conceptually express convincingly, justify and defend, 9) think outside the box, be creative and innovative, 10) further synthesize and adjust a solution to improve it. The emergent themes in educators' definitions were developmental process activities, dispositions and attitudes, reasons for critical thinking and contextual elaboration. The authors indicated that the concepts the participating teachers held about critical thinking incorporate much of what the Philosophical Association Expert Consensus Definition included. However, as they stated, although there were common elements of commonality in the basic concepts inherent in the critical thinking definitions of the participants, the uniformity was not evident when the respondents specified the elements that constituted critical thinking. Thus, the authors concluded that there might be difficulties in building agreement among these educators when it came to developing competencies or assessment of critical thinking skills. They advised policy-makers to provide opportunities for teachers to expand their knowledge of critical thinking, which would be helpful in assuring a common understanding of critical thinking among military educators.

Walthew (2004) emphasized that without a clear, meaningful definition of critical thinking, nurse educators are unlikely to be able to make any reliable statements regarding students' abilities to function as critical thinkers in the critical area or enter into meaningful academic debate on the topic. Thus, she investigated nurse educators' conceptions of critical thinking used in making judgment related to nursing. Twelve nurse educators from a large nursing school in an urban environment in New Zealand participated in this qualitative study. A semi-structured questionnaire was used to explore the nurse educators' conceptions of critical thinking. The study found that the participants viewed rational, logical thinking as a central focus of critical thinking. In addition to these traditional perspectives, the nurse educators also included in their conceptions the views more commonly held by feminist writers. These aspects focused on such affective dimensions as intuition, subjective knowing, attention to context, emotions and caring.

Alazzi (2008) aimed to uncover the conceptions of teachers teaching social sciences in secondary schools in Jordan, illuminating the obstacles they encountered in the way of developing students' critical thinking skills. To this effect, twelve Jordanian secondary school teachers from a variety of backgrounds were interviewed. The findings revealed that although teachers were familiar with the term "critical thinking", they did not have a comprehensive concept of what it actually meant. In addition, they were found to receive little help in clarifying this concept from the state publications or in-service training. Similarly, a review of all state instructional manuals related to teaching social studies in secondary schools provided very little discussion of critical thinking. Some other obstacles they mentioned were as follows: First, students were not interested in critical thinking. Next, Jordanian school culture did not support the teaching of critical thinking. Moreover, class size was too large. Also, the schools lacked facilities needed to teach for critical thinking. Besides, the teachers also complained about having to cover too much content in a limited time, which left little time for the practice of critical thinking skills. Finally, the teachers also pointed out the negative influence of the state exams: Since the students are admitted to colleges or universities on the basis of their scores that they got from the state exams, they

viewed passing of these exams with a high score as extremely important. As a result of this situation, Jordanian social studies teachers were found to be unwilling to divert from the state guidelines to teach anything else. The teachers complaint that there was not enough time to cover the content to be tested in the exam, and indicated that expository instruction was the only way for them to get through the excessive amount of information needed to prepare their students for these standardized state exams.

Yıldırım (1994) investigated teachers' theoretical orientations toward teaching thinking skills through a survey questionnaire that included 20 statements based on the two main theoretical positions reflected in the literature: skill-based orientation and content-based orientation to teaching thinking. The sample included 285 public school teachers in New York. The findings suggested that the majority of the teachers who participated in the study did not fall into these categories. Rather, they were found to hold a mixed orientation approach which involved both content- and skill-based approaches to teaching thinking. This result implied that most of the teachers tended to be eclectic in their approach to teaching thinking: Adopting a content-view, they appeared to acknowledge that in-depth understanding of topics enhanced their thinking. Meanwhile, teachers also subscribed to the skill-oriented view placing importance on training students in specific thinking skills and making the students aware of the cognitive processes they experienced when thinking about an issue.

Kelly (2003) investigated the critical thinking dispositions of teacher education candidates at the practicum point. The study utilized three methods of inquiry: descriptive, inferential, and qualitative. The study first asked if the teacher education students demonstrated the disposition to think critically. The descriptive findings indicated that a majority of the teacher education students were positive toward the disposition to think critically. Second, the influence of five variables – gender, age, graduate/undergraduate status, academic discipline and planned level of certification – in relation to the disposition to think critically was analyzed. A statistically significant relationship between the disposition to think critically and such variables as gender, age, graduate/undergraduate status, and planned level of certification was found. Lastly, how students perceive and

describe their disposition to think critically during their practicum experience was addressed. Age, in concert with undergraduate/graduate status, were the two variables which were found to be linked with the disposition to think critically.

Harris (2004) carried out a naturalistic case study to answer the following research questions: 1) What are the beliefs and knowledge of high school English teachers regarding critical thinking and writing research papers?, 2) How do teachers' beliefs and knowledge about critical thinking and academic writing influence how they teach students to write research papers? The findings suggested that teachers approached research paper instruction with one of the two goals in mind: research as an act of inquiry or research as an act of gathering and reporting information. Teachers who used an inquiry model were likely to believe that students needed writing knowledge specific to the task of writing a research paper. These teachers had high expectations that students would produce well-written papers, and adopted their instructional practices to improve students' critical reading and thinking skills. On the other hand, teachers who approached teaching the research paper as an act of gathering and reporting information were more likely to focus their instruction on the form and correctness of the final product. These teachers held negative attitudes about teaching students to write research papers, had low expectations that students would produce well-written papers, and adopted instructional practices in order to improve students' skills in formatting the paper following accepted citation guidelines.

McEwen (1994) conducted a study in order to get insight into teachers' perceptions of the effectiveness of the kind of teaching strategies/activities for the enhancement of critical thinking. In this study, a list of teaching methods and teacher behaviors was evaluated by 67 high school teachers. They were asked to rank teaching methods and behaviors from the most effective to the least effective one in terms of their potential to develop students' critical thinking. The results revealed that case study / problem solving, simulation, project, discussion and debates were perceived as the most effective methods by the teachers. From their points of view, the most influential behaviors were encouraging discussion, allowing sufficient time for thinking, promoting interactive learning, and stimulating and appreciating independent thinking.

Seidman (2004) conducted a multiple-case study to examine what instructors' beliefs about critical thinking were and how they related it to teaching practices. An American private college was used as the context for investigation. Three exemplary instructors teaching business, education, and computer courses were selected for in-depth investigation. Moreover, one instructor teaching a course in critical thinking also participated in the study. Data were collected through interviews, classroom observations and course document reviews. Particular attention was paid to course design, instructional strategies and assessment measures that intended to stimulate student thinking. Findings revealed that each participant's espoused teaching practices were consistent with their actual teaching practices. Beliefs about critical thinking and related topics also appeared to be compatible with their instructional methods. Across disciplines, findings suggested that there were both similarities and differences in beliefs and practices. Specifically, instructors conceptualized critical thinking in different ways and focused on various critical thinking skills required for their respective disciplines. Interestingly, the instructor teaching critical thinking explicitly held the narrowest perspective on critical thinking and represented the largest departure in teaching methods. Some of the common beliefs held by all four participants teaching for critical thinking were as follows: First, critical thinking develops over time with practice and experience. Second, in-class discussion is essential to developing critical thinking. Third, fostering thinking skills is as important as content coverage. Finally, personal discipline is highly conducive to developing critical thinking.

Sezer (2008) conducted an experimental research study to inquire the effect of integrating critical thinking skills into an elementary school teacher education course in mathematics. The control group of the students took the course previously when the critical thinking activities were not used. The experimental group comprised students taking the course after the critical thinking skills were integrated. These activities were reported to address problem-solving strategies, requiring students to monitor their own thinking process while solving problems, search for alternative approaches to problems, question established arithmetical algorithms, ask for reasons and justifications. Moreover, these

activities also provided reading material with conflicting information from which judgments should be made. A mathematics attitude scale and a questionnaire were administered to the student teachers in both groups as pretests and posttests. Results indicated that emphasis on critical thinking, even in one course, can have positive effects on students' attitudes. Some of the attitudinal changes as a result of taking the particular course integrating critical thinking skills included the following: Students believed that they were better problems-solvers, and also their frustration level decreased. Also, they learned not to give up if they could not immediately solve a problem. Furthermore, they realized that time spent on trying to solve a problem was not wasted if a correct answer was not found. Moreover, the students in the experimental group were said to have revised their role in teaching mathematics as a result of attending the course integrating critical thinking.

Reed and Kromrey (2001) designed a history course integrating Paul's frame of critical thinking into the course, and they conducted an experimental study to investigate the effect of Paul's model on the development of students' critical thinking skills and dispositions as well as their achievement in the course in a community college in Florida. Four sections of students in the particular setting participated in the study. Two sections were randomly assigned as the experimental group and the other two sections served as the control group. The instructor integrated Paul's model into experimental sections of the U.S. history course by a) teaching the model explicitly, b) training students to use the elements of reasoning to analyze primary source documents and historical problems, c) giving out-of-class assignments that required students to use the model, d) providing a packet of handouts that graphically displayed and further explained the model, e) conducting classroom discussions by focusing on the elements and standards set forth in the model. With the exception of training in Paul's model, all participants in the study used the same textbooks, received the same activity assignments, were taught in the same manner, took the same exams, and received information on general strategies for historical thinking. Students in both the experimental and control groups took the Document Based Essay Question (measuring historical thinking), the Ennis-Weir Critical Thinking Essay Test, the

California Critical Thinking Dispositions Inventory and the Multiple-Choice Test of History Content as pretests and posttests.

The findings showed that students in the experimental group scored statistically significantly higher than the control group on the Ennis-Weir Critical Thinking Test and the Document Based Essay Question. The researchers inferred that explicitly teaching Paul's model had an educationally significant impact on students' abilities to think within a discipline and think critically. On the other hand, results from statistical analyses of scores on the California Critical Thinking Disposition Inventory showed no significant differences between both groups. According to the authors, this result might indicate that one semester was not long enough to bring about changes in students' dispositions. Furthermore, both the experimental and control groups performed equally well on the Multiple-Choice Test of History Content. Thus, no statistically significant differences were found by method of instruction as far as students' achievement in the particular test was considered. The researchers explained that this might be due to the fact that students in both groups were given multiple opportunities to think deeply about the content of history in the particular achievement test. The researchers also had an important conclusion: "One concern about explicitly emphasizing critical thinking in college classrooms, as they point out, is whether the time involved in intensively teaching critical thinking skills might reduce the amount of content learning in the discipline. In the study, it was discovered that experimental and control groups performed equally well on the history content test, indicating that students' end of course knowledge as history content does not necessarily suffer when instructional time is spent training for critical thinking" (p. 26).

Tsui (1998) investigated the impact of college on the development of students' critical thinking skills. In the study, a wide range of factors that facilitated the development of students' critical thinking skills was examined including those which lay inside as well as outside of the classroom. The researcher found that the development of critical thinking was positively associated with substantive writing, critical discussion, class presentations, student-led inquiry, and negatively associated with lectures and multiple-choice exams. Other effective practices included making interdisciplinary connections,

constructivist approach to learning, and liberal arts education. Furthermore, integration of critical thinking into curriculum tended to be more effective when teachers had enough confidence in their students to challenge them. The important factors outside the classroom that enhanced critical thinking were engagement in critical dialogues with peers, student-teacher interaction, a campus culture energized by social and political awareness, extracurricular activities that challenge students to combine classroom material with experiential learning outside the classroom.

Shell (2000) conducted a quantitative survey study to identify the perceived barriers to the teaching of critical thinking skills by nursing faculty in Tennessee. The study found that students' attitudes and expectations, time constraints and the need to teach for content coverage were perceived to be the obstacles standing in the way of teaching for critical thinking. There was a significant relationship between nurse educators' level of education and their perceptions of barriers to teaching for critical thinking. Also significant relationship between the number of professional development activities that nurses attended for the purpose of developing skills in teaching for critical thinking and their perceptions of the barriers to the teaching of critical thinking: The respondents who reported the fewest activities reported the highest barriers whereas the respondents who reported the most professional development activities had the fewest perceived barriers.

Kawood (1990, cited in Alazzi 2008) found Jordanian textbooks used in secondary school level full of monotonous and simplified concepts and values that tended to reinforce the social goal of harmony and security. Students unconsciously accepted the "correct answers" and lost the opportunities for thinking critically. Textbook statements also employed descriptive styles and often came to conclusions that jeopardized the initiation of critical thinking.

The review of research on critical thinking and its development in Turkey also helps us gain insight into different aspects of the issue ranging from teachers' beliefs and practices on critical thinking development, to the effect of certain teaching methods on the development of students' critical thinking in different levels of schooling.

Serdar (1999) conducted a survey research study on the attitudes and views of the high school teachers in relation to the students' acquisition of scientific thinking. 130 teachers from Ankara – Polatlı region participated in the study. The teachers revealed that the curriculum-related factors such as pacing of the program prevented the teachers from focusing on the thinking skill. Moreover, she found that the teachers held a content-oriented view to the teaching of the critical thinking skill. Also, it was found out that the discipline of study made a difference in teachers' perceptions on the improvement of the thinking skill: They thought that the improvement of thinking skill was more important in a science or math class rather than a social studies course.

Hayran (2000) aimed to investigate teachers' beliefs and practices in relation to development of thinking skills. To this effect, he designed a survey study in which he administered a questionnaire to 240 teachers in 7 primary schools. The findings revealed that majority of the teachers used problem-solving skills in their daily life and taught them in their classes. Moreover, the teachers were also found to be inquiring whether there was consistency between the students' thoughts, verbal expressions and actions. Also, majority of the teachers stated that they practiced critical thinking in their own lives. It was found out that there was significant relationship between the teachers' gender and their opinions about critical thinking in favor of women.

İrfaner (2002) conducted a qualitative study to investigate one teacher's implementation of the components of critical thinking through written assignments, and analyze the students' implementations of those components in their essays in an English Course in writing offered to the freshman students at Bilkent University. He found that the participating teacher did not emphasize the same components of critical thinking in a systematic manner. In each of the writing assignment, she focused on different critical thinking skills. It was also revealed that although her definition of critical thinking included such critical dimensions as "tolerance" and "intellectual flexibility", such dispositions were not attended by the instructor throughout the course since the teacher thought these were the traits of a critical thinker rather than components or skills that can be taught or utilized. Another important finding was that there was a high level of

agreement between the director's and the instructor's components of critical thinking. However, the researcher raised the need to examine the difference between experienced and inexperienced teachers in the department in terms of their conceptualizations of critical thinking because the teacher, being an experienced one, displayed an understanding of critical thinking which matched so closely with that of the department. Finally, it should be noted that students did not seem to have a clear understanding of the use of all the components. Their perception was limited to only some of the components listed by the teacher in that particular course.

Şahbat (2002) intended to investigate the effect of religious culture and ethics teachers' attitude on the development of students' critical thinking skills. To this effect, a questionnaire was administered in three public secondary schools and a private secondary school in İstanbul. The findings revealed that students found it difficult to raise any objections to their teachers' thoughts and that they tended to believe everything their teachers said. Thus, the researcher concluded that the teachers' attitude was an obstacle standing in the way of the development of students' critical thinking.

Akan (2003), in a quantitative study, investigated the perceptions of teachers on the improvement of the thinking skill and on the constraints on improving student thinking skills in high schools in Turkey. She found out that teachers were aware of the importance of thinking skills and they thought that they should emphasize these skills in class rather than expect them to be developed naturally. The findings revealed that the student–related constraints were ranked the highest among the teachers. These constraints included students' preference for activities and assignments that required simple factual answers, their fear of making a mistake and impatience with difficulty of thinking. The curriculum constraints on improving student thinking skills were perceived as the second most agreed constraint. The most important barrier was teachers' having to cover too much content in a limited time. External factors were, however, believed to be the third most agreed constraints. These obstacles included lack of a shared mission to teach for critical thinking in the school, the pressure of university entrance exam, fear of administrative and parental disapproval, lack of

time allocation for activities outside the school. Teacher-related constraints were considered to be the least agreed constraint on improving student thinking skills. For instance, teachers felt a pressure to cover the content and thus they preferred lecturing as the mode of the instruction. Moreover, they also tended to feel uncomfortable with questions that had no obvious answer since they believed only certain students could perform higher order thinking. It was noted that there was no significant relationship between teachers' perception and their background variables such of gender, year of experience and field of study.

Şahinel (2001) carried out a pretest-posttest control group experimental study in order to investigate the effect of a Turkish Course designed to develop the integrated language skills through critical thinking on fifth grade students' attitudes towards the course and their level of achievement in the course. The researcher used a variety of instruments such as achievement tests, attitude scales, observations, interviews, questionnaires and journals in data collection. The research yielded favorable results for the experimental group: The students in the experimental group achieved higher in achievement tests. Moreover, the students in the experimental group found the learning tasks interesting, attractive and fruitful. Additionally, the instructor also stressed that these tasks had a positive effect on the student behavior and encouraged them to use Turkish effectively in the classroom.

Akınoğlu (2001) conducted a pretest-posttest control group experimental study to investigate the effect of science teaching focusing on critical thinking skills on learning outcomes among fourth grade primary school students. He found out that there was a significant difference between the control group in favor of the latter one, in which science instruction was based on critical thinking skills. He revealed that the factors that hindered the teachers' efforst to develop critical thinking in their students need to be investigated further.

Mecit (2006) conducted an experimental study to investigate the effect of 7E learning cycle model as an inquiry-based learning on the improvement of fifth grade students' critical thinking skills. Two classes were randomly assigned as experimental group and control group in a private primary school in Sakarya. The control group were instructed with traditional method whereas inquiry-based

learning method was employed in the experimental group. The Cornell Conditional Reasoning Test was administered as pretest and posttest to students in both groups. The results indicated that the experimental group achieved significantly better than the control group in the critical thinking test. In other words, inquiry-based learning had an effect on the improvement of students' critical thinking skills. It was also revealed that there was no significant effect of gender and family income on the improvement of students' critical thinking skills.

Uysal (1998) conducted an experimental study to investigate the effect of the discussion method on the improvement of university students' critical thinking skills. Two classes that were taught by the same teacher were assigned as experimental group and control group at the department of history at a state university. The control group were instructed with the lecturing method, whereas the experimental group were taught using discussion method. A critical thinking test was administered as pretest and posttest to the students in both groups. The findings revealed that the discussion method had an effect on the development of historical thinking in the university students.

Demirel and Yurdakul (2004) carried out an experimental research study to investigate how the constructivist approach effects students' thinking skills, their attitude to the course, and their reactions to the learning process. To this effect, they assigned the students to experimental group that received a citizenship course designed in light of a constructivist approach, and the control group which received the same course designed with a traditional approach to teaching. The instruments in evaluating the program include the essay test, attitude scale, observation form, student diary, video extracts taken from the observations of the sessions, and interview forms. The results demonstrated that the constructivist approach to teaching the particular course yielded better results: First, those who attended the course designed with a constructivist approach showed more improvement in their thinking skills than the ones who received the same course with traditional methods of teaching. Moreover, their attitude toward the course and the teaching method were more positive than that of the matched, control group.

Similarly, Öner (1999) carried out a pretest-posttest control group experimental study in a primary school in Adana to investigate the effect of the constructivist learning method on fifth grade students' critical thinking skills and their academic success in a social studies course. The researcher used both a critical thinking attitude scale and an achievement test as pretest and posttest. The results indicated that in terms of the achievement level of the students, there was a significant difference between the students in the experimental group and the ones in the control group in favor of the students in the experimental group. On the other hand, in terms of the critical attitude scores, no significant relationship between the two groups was observed.

Kaya (1997) conducted research in which he investigated the effect of certain variables on university students' level of critical thinking as assessed by the Watson Glaser Scale. For the study, 244 fourth-grade students studying at Faculty of Science, Health, Social Sciences and Engineering at İstanbul University were selected using the stratified sampling technique. To begin with, the level of critical thinking skills of the students was found to be dominantly at the medium level. The study also revealed that there was a significant relationship between students' socio-economic status and their capacity to think critically in favor of those from higher socio-economic background. Moreover, students who regarded themselves as risk-takers and inquisitive scored higher in the particular test. Also, students from the faculties of health and engineering also scored higher than those from the faculties of social sciences. On the other hand, it was also found out that gender and educational background of parents had no effect on critical thinking level of university students.

The instructional materials, usually regarded as the core of any program, have also been analyzed to see the extent to which it promotes the critical thinking: Munzur (1999) conducted one such research study to examine some reading texts taken from the course books used in Turkish courses at the first and second grade of high schools in Turkey. It was found out that the textbooks included many biases and contemporary, humanistic and universal values were investigated in depth. The researcher concluded that the course books hardly promoted the critical thinking skill.

Yücel (2008) conducted a research study which aimed to evaluate the development process of a course according to critical thinking based instruction in the Faculty of Commerce and Tourism Education at Gazi University by using Stufflebeam's Context, Input, Process, and Product evaluation model. Data were collected through both qualitative and quantitative methods such as questionnaires, individual and focus group interviews, student journals, achievement test, and California Critical Thinking Disposition Inventory (CCTDI). The context evaluation results showed that there were problems in the attainment of course objectives and in the application of the effective instructional strategies for learning and improving thinking skills. Therefore, at the input evaluation stage, the course was redesigned according to critical thinking based instruction. Pretest-posttest experimental study was carried out while implementing the redesigned course. The process evaluation revealed that while critical thinking based instruction was effective on learning, thinking and meta-cognitive skills, students experienced certain difficulties. The product evaluation showed that students in both groups showed a significant progress within a semester. However, there was no difference between treatment and control groups. On the other hand, in the focus groups interviews, the students from the treatment groups expressed the contributions of the course to their teaching and thinking skills, understanding and participation. In conclusion, though quantitative data revealed that critical thinking based instruction did not create difference compared to the traditional instruction, qualitative data delineated positive effects of this approach.

Türkmen-Dağlı (2008) investigated how teachers integrated the development of students' critical thinking skills into their teaching during the three major phases of their teaching, namely, their planning practices, interactive practices, and reflective practices and to evaluate the influence of their instruction as felt by students in fourth grade Turkish course. The study was conducted as a comparative case study in which three teachers from three different primary schools participated. Data were collected through classroom observations, interviews with teachers and their students, logs written by students and documents. The findings of the study showed that, in the planning stage, factors

such as autonomy, methodological stance and relevance played a role on the level of teachers' incorporation of critical thinking into the process. In the lessons, their classroom climate and management, perception of their realm of influence, their approach to challenge and tendency to create a common frame of reference were found to have an effect on the ways their students were involved in critical thinking processes. Furthermore, meta-cognitive skills and critical reading skills, together with others, were addressed by teachers in different ways. In their reflection, the way they referred to the strengths and weaknesses of their lessons and the way they evaluated their students' learning as well as their discrimination of thinking concepts and the ways they dealt with assumptions underlying students' reasoning involved elements revealing their approach to critical thinking. Among students, some interactive patterns, curiosity and interest constituted the factors that motivated students to think critically.

2.9. Summary of Literature Review

The idea of critical thinking and interest in the development of critical thinking is traced back to Socrates. Dewey introduced more recent influences in the critical thinking arena. He defined it as an active, persistent, and careful consideration of a belief or knowledge in light of the grounds which support it and the further conclusions to which it tends. Critical thinking literature reveals that there are many definitions of critical thinking, but there is no consensus on one definition. On the other hand, all these definitions have commonalities and when they are closely examined, they seem to be revolving around certain ideas: First there is a consensus that critical thinking is purposeful, reasonable, reflective, self-monitored, responsible, and skillful thinking relying on criteria. Besides, there is general agreement that thinking critically requires both the ability to assess reasons properly and the willingness, desire, and disposition to base one’s actions and beliefs on reasons, which Ennis (1991) calls a spirit of inquiry. Critical thinking is usually equated with problem-solving and creative thinking. In the literature, there is consensus that they are complementary elements of general cognitive processes.

The critical thinking literature includes several frameworks, each of which consists of a comprehensive list of both critical thinking skills, abilities, proficiencies and dispositions (Bailin et al.,1999; Ennis,1987; Facione, 1990; Jones et al.,1995; Paul, 1995). These frameworks have served as an important goal of classroom instruction.

There are two approaches to the teaching of thinking skills in the literature. The skill view of thinking is based on the assumption that critical thinking should be taught directly or explicitly through a separate course, where the critical thinking skills are specifically practiced and principles of good thinking are made explicit enough to train students in these skills. Content-oriented view, however, is based on the premise that thinking cannot be separated from content as it is a way of learning content. Therefore, the integration of critical thinking skills into the regular program is stressed in this view.

Various instructional models have been developed to enhance students' critical thinking. Halpern (1988) proposes a four-part model for enhancing critical thinking, which consists of a dispositional or attitudinal component, instruction in and practice with critical thinking skills, structure training activities designed to facilitate transfer across contexts and meta-cognitive component used to direct and assess thinking. Beyer (2008) suggests a three-stage skill-teaching framework for an effective critical instruction, which consists of introduction, guided practice and transfer. Bailin et al. (1999) propose three components of teaching critical thinking: Engaging students in dealing with tasks that call for reasoned judgment, or assessment, helping them develop intellectual resources for dealing with these tasks, and providing an environments where critical thinking is valued. Finally, Paul (1995) suggests a model for the development of students' critical thinking, which centers around three aspects of thinking including elements or components of good reasoning, intellectual standards used to assess the quality of thinking and intellectual traits and virtues.

The critical thinking literature includes various strategies for the purpose of enhancing students' critical thinking in class (Andersen, 2002; Cruickshank, Bainer and Metcalf, 1995; Lim et al., 2003; McCallister, 2004; Paul, 1995; Potts, 1994; Ranger, 1995; Villaverde, 2004). These strategies include Socratic

Questioning, role-playing or drama, analyzing experiences, distinguishing fact, opinion and reasoned judgment, building categories, enhancing environment, critical reading, writing to learn, classification games, and semantic mapping.

As for the assessment of critical thinking, Paul (1995) proposes 21 criteria by which he determines the main objectives of a process to assess critical thinking. The critical thinking literature includes a wide variety of approaches in the assessment of critical thinking, which includes standardized tests such as California Critical Thinking SkillsTest (CCTST), California Critical Thinking Disposition Inventory (CCTDI), Watson-Glaser Critical Thinking Appraisal (W-GCTA), and Ennis-Weir Critical Thinking Essay Test (E-WCTET), discussions, open-ended and essay questions, multiple-choice tests, portfolios, unobtrusive measures, observation, performance in extended or long-term projects, journals, writing samples, speaking exercises, in class presentations, video-tapes of student interactions, laboratory reports, panels and simulations (Baron, 1987; Costa, 1991; Janesick, 2004; McEwen, 1994; Paul, 1995; Webb, Campell, Schwartz and Sechrest,1960; cited in Baron, 1987). As for criteria by which to judge students' critical thinking, Paul proposes a list of intellectual standards that apply to thinking in all subjects: Clarity, preciseness, specificity, accuracy, relevance, plausibility, consistency, logicalness, depth, breadth, completeness, significance, adequateness, and fairness.

A review of research into critical thinking and its development shows that a number of studies have been conducted on this issue throughout the world. The international research appeared to illuminate teachers' conceptualizations of critical thinking (Alazzi, 2008; Dike, 2006; Howe, 2004; Walthew, 2004), teachers' theoretical orientations toward teaching thinking (Yıldırım, 1994), critical thinking dispositions of teacher education candidates (Kelly, 2003), teachers' cognitions (beliefs, knowledge, theories, and assumptions) on critical thinking and how these cognitions relate to their teaching practices (Harris, 2004; Onosko, 1988; Seidman, 2004), the effect of direct instruction in critical thinking skills in subject matter courses on the development of students' critical thinking skills and dispositions (Reed and Kromrey, 2001; Sezer, 2008), factors enhancing students' critical thinking (Cotton, 1991; Tsui, 1998), perceived barriers to the

teaching of critical thinking (Alazzi, 2008; Shell, 2000) and the effectiveness of textbooks in terms of their potential to develop students' critical thinking (Kawood, 1990).

The research conducted in Turkey, however, seemed to shed light on the attitudes, views and practices with regard to the development of higher order thinking (Hayran, 2000; İrfaner, 2002; Serdar, 1999; Şahbat, 2002), teachers' integration of critical thinking into their instruction (Dağlı, 2008), the effects of critical thinking based instruction on students' attitude towards the course and their achievement in the course (Akınoğlu, 2001; Şahinel, 2001; Yücel, 2008), the effects of inquiry based instruction, discussions, and constructivist learning method on the improvement of students' critical thinking skills (Demirel and Yurdakul, 2004; Mecit, 2006; Öner, 1999; Uysal, 1998), evaluation of textbooks in terms of their potential to teach for critical thinking (Munzur, 1999), the effects of variables on university students' level of critical thinking (Kaya, 1997), and constraints on improving thinking skills (Akan, 2003).

Consequently, the research conducted in Turkey has some implications: First, there is a general agreement among teachers that it is highly important to help learners acquire the high order thinking skill. Second, certain instructional strategies are proved to further students' critical thinking skills and dispositions. Third, teachers feel constrained in their efforts to teach for critical thinking in their classes for several reasons. Fourth, a review of research into critical thinking development conducted in Turkey reveals that mostly quantitative research methods have been used in these studies and that there is a lack of qualitative research on teachers' conceptions of critical thinking, which would also help to make an assessment of teachers' perceptions of both opportunities for and obstacles to the development of students' critical thinking. All these signify that there is a need to conduct qualitative research to get an in-depth account of teachers' conceptions of critical thinking which underlie their classroom practice. Such research is likely to help us understand teachers' understanding of critical thinking and their perceptions of what hinders or facilitates the development of students' critical thinking in the Turkish context.

CHAPTER III

METHOD

This chapter describes the overall research design, data sources, characteristics of schools selected for the study, characteristics of teachers selected for the study, data collection instrument, data collection procedures and data analysis procedures. It also elaborates on the methods that were employed to ensure and enhance trustworthiness in this research. The chapter concludes with the discussion of the limitations of the study.

3.1. Overall Research Design

The purpose of this study is to explore teachers' conceptions of critical thinking and practices for critical thinking development in social studies, Turkish, mathematics and science and technology courses at the seventh grade. Thus, this research study aims to answer the following research questions:

1. What are teachers' conceptions of critical thinking in terms of skills, dispositions and criteria related to critical thinking?
2. What are teachers' perceptions on critical thinking development process in terms of acquisition of critical thinking, different approaches, teacher roles and necessary conditions for the development of critical thinking?
3. How do teachers plan for the integration of critical thinking into their course?
4. What instructional strategies, in-class activities and assignments do they use to foster critical thinking?
5. How do they assess students' critical thinking skills?
6. What factors foster teachers' ability to focus on critical thinking in their classes?

7. What factors inhibit teachers' ability to focus on critical thinking in their classes?

To find answers to these research questions, in-depth interviewing was used. Thus, the methodology of the study stems from qualitative inquiry. The word 'qualitative' implies an emphasis on the qualities of entities and on processes and meanings that are not experimentally examined or measured in terms of quantity, amount, intensity or frequency (Denzin and Lincoln,2000). Thereby, qualitative research refers to the meanings, concepts, definitions, characteristics, metaphors, symbols, and descriptions of things. The qualitative data collected are rich in description of people, places and conversations, and not easily handled by statistical procedures (Bogdan and Biklen, 1998).

As for the research design, this study can be classified as a phenomenological study. The purpose of phenomenology is to describe the perceptions and experiences of individuals on an issue. Phenomenology rests on the assumption that there is some commonality to the perceptions that individuals have in how they interpret similar experiences, and they seek to identify, understand, and describe these commonalities. This commonality of perception is referred to as the essence of the experience (Fraenkel and Wallen, 2003; Marshall and Rossman, 1999). It is the essential structure of a phenomenon that researchers want to identify and describe. They do so by studying multiple perceptions of the phenomenon as experienced by different people through in-depth, phenomenological interviewing, and trying to determine what is common to these perceptions and experiences. Thus, in this study, a phenomenological study design was used to explore all possible meanings and divergent perspectives on critical thinking and development of students' critical thinking, and culminate in a description of the essence of teachers' conceptions of and practices for critical thinking development at seventh grade level. The data collected through interviews were, then, subjected to a content analysis. A visual representation of the research design is displayed in Figure 3.1.

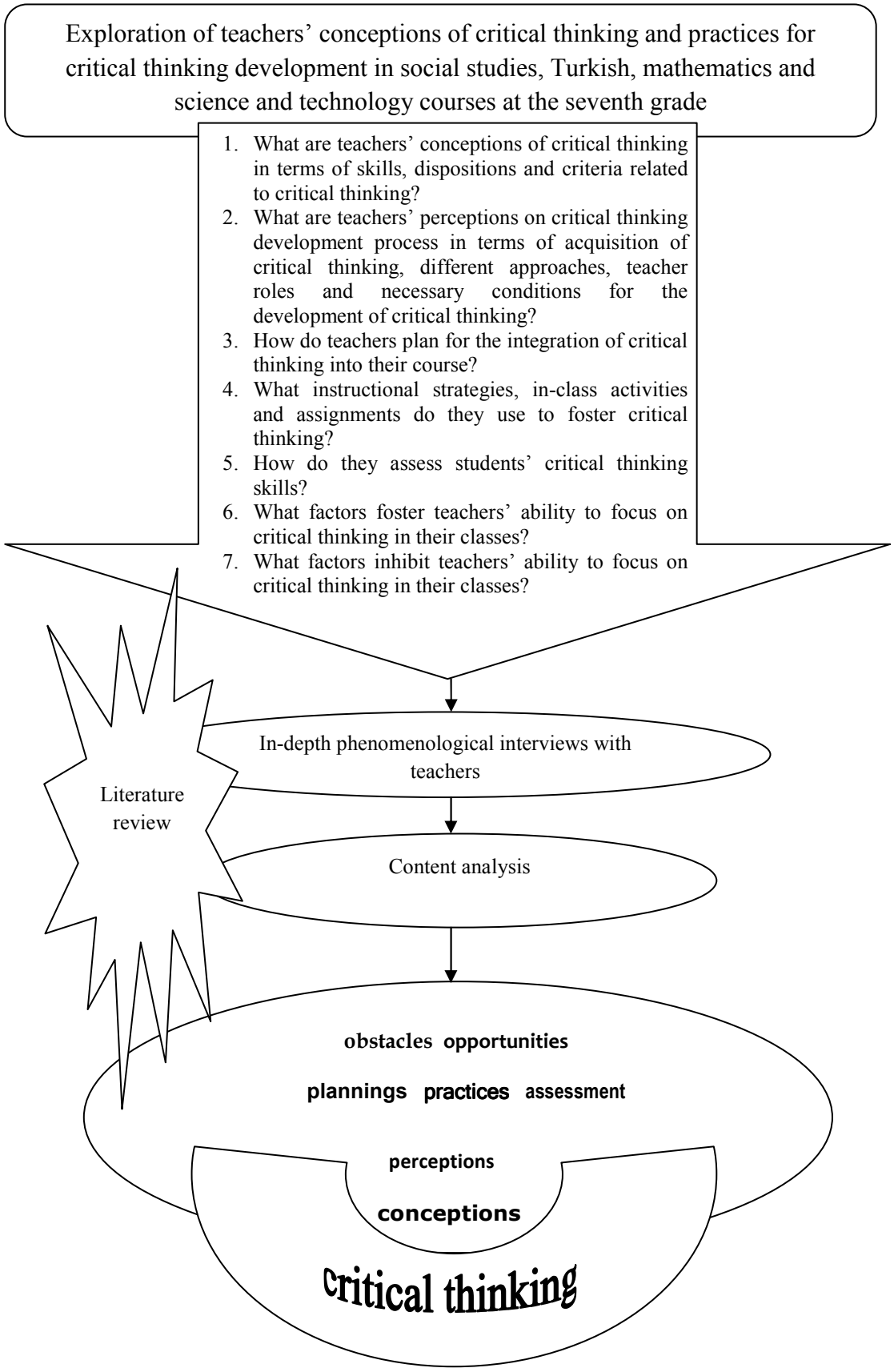

Figure 3.1. *Visual Representation of the Research Design*

The timeline for the present research study is presented in Table 3.1.

Table 3.1. *Timeline for the Study*

	Feb./ May, 2007	June / July, 2007	Nov., 2007	Dec. / July, 2008	Sept. / Dec., 2008	Jan. / Sept., 2009	Nov. / July, 2010
Review of Literature							
Development of the Interview Guide							
Piloting of the Interview Guide							
Data Collection							
Transcription of the Data							
Data Analysis							
Reporting the Results							

3.2. Data Sources

As Marshall and Rossman (1999) point out, in order to ensure data quality and credibility, qualitative researchers need to develop a rationale for the selection of sites or selection of a certain group of people as subjects in the study. Thus, researchers are advised to make sure that a rich mix of many of the processes, people, programs, interactions, contexts and / or structures of interest are present in the study.

Considering the account of Marshall and Rossman, purposive sampling was employed in the particular study. In purposive sampling, the subjects are selected according to some criteria. Purposive sampling strategies are designed to enhance understandings of selected individuals or groups' experience(s) or for developing theories and concepts. Researchers seek to accomplish this goal by selecting "information-rich" cases, that is, individuals, groups, organizations, or behaviors that provide the greatest insight into the research questions (Miles and Huberman, 1994).

Patton (1990) proposed sixteen cases of purposive sampling, one of which is maximum variation. Maximum variation sampling involves "picking a wide range of variation on dimensions of interest, documenting unique or diverse variations that have emerged in adapting to different conditions, and identifying important common patterns that cut across variations" (p. 55). When selecting a sample of great diversity, the data collection and analysis yield two kinds of findings: These are "high-quality, detailed descriptions of each case which are useful for documenting uniqueness, and important shared patterns which cut across cases and which derive their significance from having emerged out of heterogeneity" (Patton, 1990). The goal of such a sampling strategy is to probe different perspectives on the phenomena being studied and explore significant common patterns which cut across all cases. It should be noted that researchers using this sampling strategy are not concerned about generalizing results from a sample to a larger population.

In keeping with the goal of probing into the teachers' conceptualizations of critical thinking which underlied their teaching practices and the perceived factors that inhibited and / or enhanced their efforts to develop students' critical thinking in 14 elementary schools in Ankara, maximum variation sampling was mainly employed in the selection of the schools and the participants. Thus, criteria for selecting the schools and participants were determined first (Table 3.2).

In selecting the schools, socio-economic status (SES) served as the criterion. First of all, the researcher obtained from Turkish Statistics Institution the complete list of all districts of Ankara which were labeled as high (1), middle (2), and low (3) in terms of the socio-economic status (SES) of their residents (TÜİK, 2000). In addition, from the website of the Ministry of National Education, the list of all schools located in Ankara, with their addresses, was also accessed. Then, on the basis of these two lists, six elementary schools located in districts (Çankaya, Emek, Anıttepe, Konutkent, Beysukent, Mustafa Kemal) with high SES, six elementary schools located in districts (Batıkent, Keçiören, Demetevler) with middle SES, and six elementary schools located in districts (Mamak, Sincan, Etimesgut, Altındağ) with low SES were randomly selected. Although a total of eighteen schools were specified at the outset, the researcher

was able to conduct interviews in fourteen of these schools. In the four schools specified beforehand the researcher could not conduct interviews due to the unwillingness of the principal in one of the schools, lack of the seventh grade in another school, the change made to the location and name of another school and time limitations.

Five teachers from each school were selected based on the following process (Table 3.3). In some schools, there were only five teachers teaching at the seventh grade level during the respective academic year that the research was conducted. In other schools, where there were more than five, teachers were chosen among those who were most likely to provide rich data for the study. The school administration helped the researcher to select those teachers. Four different disciplines namely, Turkish, social studies, science and technology and mathematics were represented in choosing the teachers. Both male and female teachers were represented. Teachers from differing educational background (BA/BSc, or MA/MSc) were included in the study. The five teachers selected also varied in terms of their year of experience in the field of teaching and their year of experience in that particular context.

At this point, it should be noted that despite all the efforts to provide variation among the teachers in their certain characteristics with a potential to affect their teaching, this was sometimes hard to achieve in certain schools due to the demographic characteristics of teachers in these schools. For instance, in some of the schools (School 2 and 6 in Table 3.3.), there were no male teachers teaching seventh graders. What is more, in the other schools, male and female teachers were not proportionately represented. Also, as far as the educational background of the teachers is considered, the number of teachers with MA/MSc in the specified schools was limited. A total of six teachers from six schools with MA / MSc were reached. Similarly, in the schools located in all districts with high SES and some districts with middle SES, the teacher profile was rather homogenous in terms of the year of experience in the teaching field. Thus, in these schools, teachers with differing years of experience in teaching could not be reached. However, when all the participants interviewed in the study are considered, it can

be said that gender, year of experience and educational background were all represented to some extent.

Table 3.2. *Criteria Used in Selecting the Schools and the Participants*

Criterion for selecting schools	**Criteria for selecting teachers**
Socio-economic status of district where the school is located	Criterion 1: Branch Criterion 2: Gender Criterion 3: Educational background Criterion 4: Years of experience in teaching Criterion 5: Years of experience in the particular school Criterion 6: Grade(s) which teachers teach

Table 3.3. *Information on Data Sources*

School	Criterion for selecting schools	Numbers of Teachers Selected	Teacher	Criteria for Selecting Teachers					
	C*			C1*	C2*	C3*	C4	C5	C6
S1	H	4	1T	T	F	BA	15	2	6,7,8
			1SS	SS	F	BA	11	2	6,7,8
			1ST	ST	F	BSc	14	2	6,7,8
			1M	M	M	BSc	24	7	6,7,8
S2	H	4	2T1	T	F	BA	10	1	6,7
			2SS	SS	F	BA	16	6	6,7,8
			2T2	T	F	BSc	19	10	7,8
			2ST	ST	F	BSc	12	4	6,7,8
S3	H	5	3ST1	ST	F	BSc	9	2	6,7,8
			3ST2	ST	M	BSc	27	2	6,7,8
			3T	T	F	BA	26	4	7
			3M	M	M	BSc	22	12	7,8
			3SS	SS	F	BA	28	13	6,7,8
S4	H	5	4ST	SS	M	BSc	29	6	6,7,8
			4M1	M1	F	BSc	11	2	6,7,8
			4SS	SS	M	MA	10	2	6,7,8
			4T	T	F	BA	24	14	7,8
			4M2	M2	F	BSc	28	14	6,7,8
S5	H	5	5SS	SS	F	BA	25	15	6,7,8
			5ST1	ST	F	BSc	26	14	6,7,8
			5M	M	M	BSc	27	14	7,8
			5T	T	F	BA	14	2	7
			5ST2	ST2	M	BSc	28	11	6,7,8

Table 3.3. (continued)

School	Criterion for selecting schools	Numbers of Teachers Selected	Teacher Criteria for Selecting Teachers						
	C*		Teacher	C1*	C2*	C3*	C4	C5	C6
S6	H	4	6SS	SS	F	BA	27	9	6,7,8
			6M	M	F	BSc	32	9	6,7,8
			6ST	ST	F	BSc	10	1	6,7,8
			6T	T	F	BA	23	7	6,7,8
S7	M	5	7M	M	F	BSc	12	4	6,7
			7T1	T	F	BA	13	7	6,7
			7ST	ST	F	BSc	18	4	6,7
			7T2	T	M	BA	27	10	6,7,8
			7SS	SS	F	BA	13	2,5 months	6,7,8
S8	M	5	8SS	SS	F	BA	15	6	6,7,8
			8ST	ST	M	BSc	17	1	6,7,8
			8T	T	F	BA	20	13	6,7,8
			8M1	M	M	BSc	28	2	6,7,8
			8M2	M	M	BSc	26	5	6,7,8
S9	M	5	9SS	SS	F	BA	14	1	6,7
			9T1	T	F	BA	16	6	6,7
			9ST	ST	F	MSc	9	3	6,7,8
			9M	M	F	BSc	9	2	7
			9T2	T	M	BA	24	5	6,7
S10	M	5	10T	T	F	BA	6	5	6,7,8
			10SS1	SS	M	MA	10	3	6,7
			10ST	ST	M	BSc	15	10	6,7
			10SS2	SS	M	BA	30	24	6,7
			10M	M	M	BSc	26	1	6,7

Table 3.3. (continued)

School	Criterion for selecting schools C*	Numbers of Teachers Selected	Teacher Criteria for Selecting Teachers						
			Teacher	C1*	C2*	C3*	C4	C5	C6
S11	L	6	11M1	M	M	BSc	14	2	6,7,8
			11SS	SS	F	BA	21	13	7,8
			11ST	ST	F	BSc	35	32	6,7,8
			11T1	T	M	BA	5	3	7,8
			11M2	N	F	BSc	9	4	6,7
			11T2	T	F	MA	17	5	7,8
S12	L	7	12ST 1	ST	M	BSc	27	4	6,7
			12M1	M	F	BSc	5	1	7,8
			12T1	T	F	BA	9	6	6,7
			12ST 2	ST	F	BA	19	1	6,7
			12T2	T	F	BA	16	3 months	6,7
			12M2	M	F	BSc	21	6	6,7,8
			12SS	SS	F	BA	13	1,5 months	6,7
S13	L	5	13T1	T	F	BA	26	21	6,7,8
			13SS	SS	M	MA	10	2	6,7,8
			13M	M	F	BSc	13	3	6,7
			13T2	T	F	BA	5	4	6,7,8
			13ST	ST	F	BSc	12	10	6,7,8
S14	L	5	14ST 1	ST	M	BSc	12	7 months	6,7,8
			14M	M	M	BSc	26	22	6,7
			14T	T	F	MA	2	2	7,8
			14SS	SS	M	BA	27	18	6,7,8
			14ST 2	ST	M	BSc	29	18	6,7,8

C* H= High SES, M= Middle SES, L= Low SES
C1* T= Turkish, M= Maths, SS= Social Studies, ST= Science and Technology
C2* F= Female, M= Male
C3* BA / BSc= Bachelor of Arts / Science , MA / MSc= Master in Arts / Science

3.2.1. Characteristics of Schools Selected for the Study

The research was conducted in a total of fourteen elementary schools in Ankara. Of the fourteen schools, six of them were located in districts where people with high SES resided. These districts included Emek, Mustafa Kemal, Konutkent, Anıttepe, Çankaya and Beysukent. The common feature of these schools was the fact that the schools had a variety of facilities such as science laboratories, computer laboratories, libraries, sports facilities, projectors, photocopying facilities for teachers, self-access centers for students to study individually, and conference halls. In one of these schools, there were classrooms thematically designed for particular disciplines such as math, science, Turkish and social studies. The teachers in this school felt privileged to teach in such thematically designed classrooms, and it was observed that the teachers were willing to decorate and equip these classrooms according to the requirements of the particular course, and the needs and interests of their students. Another common feature of all these six schools was that both the administration and teachers in these schools were particularly satisfied with the financial support provided by the parents whenever needed, for the purpose of improving the conditions of the school.

Four schools, however, were located in districts where people with middle SES lived. These districts included Demetevler, Batıkent, and Keçiören. As far as the facilities and physical conditions of the schools are considered, it was observed that the teachers in these schools were not as happy as the ones in schools located in districts with high SES. The common problems that the teachers in three of these schools raised with respect to the facilities and physical conditions of the schools were lack of a larger school garden and green areas within the school, the location of the school (one of them being located in between tall apartments, another being very close to the main road), small classrooms, no room for groups of students with special interests, insufficiency of the resources such as library, conference halls, computers, projectors, and science laboratories where there is sufficient equipment to conduct experiments. In one of the schools, however, the teachers did not have any complaints about the physical conditions and facilities.

The remaining four schools were located in districts where people with low socio-economic backgrounds lived. These districts were Sincan, Etimesgut and Mamak. In two of these schools, the teachers were quite content with the physical conditions and facilities of the school. As was pointed out by the administration and teachers, that was partially due to the fact that both these schools were among the pilot curriculum laboratory schools, and thus they had accessed many educational facilities long before many other schools did. Another point that the teachers were so happy about was the good rapport between the teachers and the administration. In the other two schools, however, neither the conditions nor facilities were found to be sufficient enough by the teachers in these schools. The problems that the teachers raised in these schools were as follows: lack of a science laboratory to do the experiments, lack of resources such as a library and insufficient number of computers available to students (which students from low socio-economic backgrounds urgently needed to do their research assignments, which are an integral component of the recent curriculum), lack of rapport among the teachers (especially between the more experienced and relatively less experienced ones), lack of rapport between teachers and parents, and lack of collaboration between the administrator and teachers.

3.2.2. Characteristics of Teachers Selected for the Study

The subjects of the study include 17 mathematics teachers, 18 science and technology teachers, 15 social studies teachers, and 20 Turkish teachers from 14 elementary schools selected in Ankara.

As it is displayed in Table 3.4., of the 17 mathematics teachers sampled, 6 teachers were teaching at 5 elementary schools located in districts with high socio-economic status, 5 teachers were teaching at 4 elementary schools located in districts with middle socio-economic status, and 6 teachers were from 4 elementary schools situated in districts with low socio-economic status. As far as the gender of the mathematics teachers is considered, a total of 8 male and 9 female mathematics teachers participated in the study. The distribution of the male and the female mathematics teachers according to the socio-economic level of the districts that the schools are located in is as follows: 3 male and 3 female

teachers from schools located in districts with high socio-economic status, 3 male and 2 male teachers from schools located in districts with middle socio-economic status and 2 male and 4 female teachers from schools situated in districts with low socio-economic status participated in the study. As for the educational background of the mathematics teachers, all 17 mathematics teachers had a first degree in mathematics (BSc). As far as the experience in teaching is considered, except for one teacher who had 11 years of experience in the profession, all 5 participants from schools located in areas with high socio-economic status had more than 20 years of experience in teaching. Moreover, 3 of the teachers from schools located in districts with middle socio-economic status had more than 20 years of experience, whereas one had 9 years of experience and one had 12 years of experience. Finally, 2 teachers from schools located in districts with low socio-economic status had less than 10 years of experience, 2 teachers between 10 and 15 years of experience and 2 teachers more than 20 years of experience in teaching.

Table 3.4. *Profiles of Mathematics Teachers*

School	Socio-econo-mic Status	Numbers of Mathematics Teachers	Gender	Educational Background	Years of Experience in Teaching	Years of experience in the school	Grades
S1	H	1	M	BSc	24	7	6,7,8
S3	H	1	M	BSc	22	12	7,8
S4	H	2	F	BSc	11	2	6,7,8
			F	BSc	28	14	6,7,8
S5	H	1	M	BSc	27	14	7,8
S6	H	1	F	BSc	32	9	6,7,8
Total:5		Total:6					
S7	M	1	F	BSc	12	4	6,7
S8	M	2	M	BSc	28	2	6,7,8
			M	BSc	26	5	6,7,8
S9	M	1	F	BSc	9	2	7
S10	M	1	M	BSc	26	1	6,7
Total:4		Total:5					

Table 3.4. (continued)

School	Socio-econo-mic Status	Numbers of Mathematics Teachers	Gender	Educational Background	Years of Experience in Teaching	Years of experience in the school	Grades
S11	L	2	M	BSc	14	2	6,7,8
			F	BSc	9	4	6,7
S12	L	2	F	BSc	5	1	7,8
			F	BSc	21	6	6,7,8
S13	L	1	F	BSc	13	3	6,7
S14	L	1	M	BSc	26	22	6,7
Total:3		Total:6					

Among the 15 science and technology teachers in the study, 8 teachers were selected from the 6 elementary schools located in districts with high socio-economic status, 4 teachers from the 4 elementary schools situated in areas with middle socio-economic status, and 6 teachers from the 4 primary schools in areas with low socio-economic status (Table 3.5.). As for the gender of the participating science and technology teachers, a total of 5 female and 3 male teachers from schools in districts with high socio-economic status, 2 female and 2 male teachers from schools in districts with middle socio-economic status and 3 female and 3 male teachers from schools located in areas with low socio-economic status were included in the study. When the educational background of the science and technology teachers is considered, except for one teacher with Master's degree in teaching science and technology selected from an elementary school located in a district with high socio-economic status, all teachers had BSc in a science subject (biology, chemistry, physics) or teaching science and technology. As for the experience in teaching, of the teachers from schools in districts with high socio-economic status, one teacher had less than 10 years of experience in teaching, 3 teachers between 10 and 15 years of experience and 4 teachers with more than 20 years of experience. Furthermore, except for one teacher with 9 years of experience, all the other teachers selected from schools with middle socio-economic status had between 15 and 20 years of experience in teaching. Finally, of the teachers from schools in districts with low socio-economic status, 2 teachers with 12 years of experience and one teacher with 19 years of experience

participated in the study, whereas all the other 3 teachers who were included in the study had more than 20 years of experience.

Table 3.5. *Profiles of Science and Technology Teachers*

School	Socio-economic Status	Numbers of Science and Technology Teachers	Gender	Educational Background	Years of Experience in Teaching	Years of experience in the school	Grades
S1	H	1	F	BSc	14	2	6,7,8
S2	H	1	F	BSc	12	4	6,7,8
S3	H	2	F	BSc	9	2	6,7,8
			M	BSc	27	2	6,7,8
S4	H	1	M	BSc	29	6	6,7,8
S5	H	2	F	BSc	26	14	6,7,8
			M	BSc	28	11	6,7,8
S6	H	1	F	BSc	10	1	6,7,8
Total:6		Total:8					
S7	M	1	F	BSc	18	4	6,7
S8	M	1	M	BSc	17	1	6,7,8
S9	M	1	F	MSc	9	3	6,7,8
S10	M	1	M	BSc	15	10	6,7
Total:4		Total:4					
S11	L	1	F	BSc	35	32	6,7,8
S12	L	2	M	BSc	27	4	6,7
			F	BA	19	1	6,7
S13	L	1	F	BSc	12	10	6,7,8
S14	L	2	M	BSc	12	7 months	6,7,8
			M	BSc	29	18	6,7,8
Total:4		Total:6					

Of the 15 social studies teachers who participated in the study, 6 were teaching at the schools in districts with high socio-economic status, 5 were working at the schools located in districts with middle socio-economic status, and 4 were teaching at the schools situated in areas with low socio-economic status (Table 3.6). As for the gender of the social studies teachers sampled, 5 female and one male teacher from the schools in districts with high socio-economic status, 3 female and 2 male teachers from the schools in districts with middle socio-economic status, and 2 female and 2 male teachers from the schools in districts

with low socio-economic status participated in the study. When the educational background is considered, one teacher from a school in a district with high socio-economic status, one teacher from a school located in an area with middle socio-economic status, and one teacher from a school situated in a district with low socio-economic status – a total of 3 social studies teachers – had a Master's degree in history whereas the remaining 12 teachers had a first degree in social studies (BA). As for the experience in teaching, of the teachers working at schools located in districts with high socio-economic status, one teacher had 10 years of experience, one teacher 11 years of experience, one teacher 16 years of experience and the remaining 3 teachers more than 20 years of experience in this profession. Furthermore, among the teachers interviewed in schools with middle socio-economic status, 4 teachers had between 10 and 15 years of experience whereas only one teacher had more than 20 years of experience. Finally, in the selected schools located in districts with low socio-economic status, 2 teachers who had between 10 and 15 years of experience and 2 teachers with more than 20 years of experience participated in the study.

Table 3.6. *Profiles of Social Studies Teachers*

School	Socio-economic Status	Numbers of Social Studies Teachers	Gender	Educational Background	Years of Experience in Teaching	Years of experience in the school	Grades
S1	H	1	F	BA	11	2	6,7,8
S2	H	1	F	BA	16	6	6,7,8
S3	H	1	F	BA	28	13	6,7,8
S4	H	1	M	MA	10	2	6,7,8
S5	H	1	F	BA	25	15	6,7,8
S6	H	1	F	BA	27	9	6,7,8
Total:6		Total:6					
S7	M	1	F	BA	13	2,5 months	6,7,8
S8	M	1	F	BA	15	6	6,7,8
S9	M	1	F	BA	14	1	6,7
S10	M	2	M	MA	10	3	6,7
			M	BA	30	24	6,7
Total:4		Total:5					

Table 3.6. (continued)

School	Socio-economic Status	Numbers of Social Studies Teachers	Gender	Educational Background	Years of Experience in Teaching	Years of experience in the school	Grades
S11	L	1	F	BA	21	13	7,8
S12	L	1	F	BA	13	1,5 months	6,7
S13	L	1	M	MA	10	2	6,7,8
S14	L	1	M	BA	27	18	6,7,8
Total:4		Total:4					

Of the 20 Turkish teachers included in the study, 7 teachers were working at schools in districts with high socio-economic status, 6 teachers were teaching at schools located in districts with middle socio-economic status, and 7 teachers were selected from schools in districts with low socio-economic status (Table 3.7). As far as the gender of the Turkish teachers sampled is considered, 7 female teachers from schools in areas with high socio-economic status, 4 female and 2 male teachers from schools in districts with middle socio-economic status and 6 female and one male teacher teachers from schools located in areas with low socio-economic status participated in the study. As for the educational background, except for 2 teachers with a Master's degree in teaching Turkish from 2 schools located in districts with low socio-economic status, all the remaining 18 Turkish teachers had a first degree in Turkish language teaching. As for the years of experience in teaching, of the teachers from schools with high socio-economic status, 3 had between 10 and 15 years of experience, one teacher 19 years of experience, and 3 teachers more than 20 years of experience. Moreover, among the teachers interviewed in the schools situated in districts with middle socio-economic status, one teacher had 9 years of experience, one teacher 13 years of experience, one teacher 16 years of experience and 3 teachers more than 20 years of experience.

Table 3.7. *Profiles of Turkish Teachers*

School	Socio-economic Status	Numbers of Turkish Teachers	Gender	Educational Background	Years of Experience in Teaching	Years of experience in the school	Grades
S1	H	1	F	BA	15	2	6,7,8
S2	H	2	F	BA	10	1	6,7
			F	BA	19	10	7,8
S3	H	1	F	BA	26	4	7
S4	H	1	F	BA	24	14	7,8
S5	H	1	F	BA	14	2	7
S6	H	1	F	BA	23	7	6,7,8
Total.6		Total:7					
S7	M	2	F	BA	13	7	6,7
			M	BA	27	10	6,7,8
S8	M	1	F	BA	20	13	6,7,8
S9	M	2	F	BA	16	6	6,7
			M	BA	24	5	6,7
S10	M	1	F	BA	6	5	6,7,8
Total:4		Total:6					
S11	L	2	M	BA	5	3	7,8
			F	MA	17	5	7,8
S12	L	2	F	BA	9	6	6,7
			F	BA	16	3 months	6,7
S13	L	2	F	BA	26	21	6,7,8
			F	BA	5	4	6,7,8
S14	L	1	F	MA	2	2	7,8
Total:4		Total:7					

Finally, it should also be noted that 4 to 7 teachers with varying levels of experience in each of the 14 elementary schools participated in the study, as it is displayed in Table 3.3. Moreover, due to the specific concern with the seventh grade curriculum with regard to its potential to foster students' critical thinking, all 70 participants in the study were among the ones who were teaching the seventh grade at the time the research was conducted. Moreover, they were also teaching at least one of the other grades (sixth and eighth grades) in the second cycle of the elementary education as it is displayed in Table 3.4., Table 3.5., Table 3.6. and Table. 3.7. It should finally be remarked that although the researcher intended to represent teachers who had attended some professional development

activities on critical thinking development as well as the ones who had not, this could not be achieved because there was not any teachers who had taken such training on critical thinking development.

The teachers whose profiles are briefly described above represented different features in terms of their branch, gender, educational background, experience in teaching, and experience in the school they were teaching at. This representation allowed the researcher to see the issues related to the research questions from different points of views leading to a broad and realistic understanding of teachers' conceptualizations of critical thinking and the translation of these conceptualizations into their classroom practices with particular reference to the factors that inhibit or facilitate their efforts to teach for critical thinking in 14 schools located in districts with varying socio-economic status (high, middle and low).

In an attempt to provide a thick description of the participants and the contexts that they were teaching at (Bogdan and Biklen, 1998), the participants were also asked to state the aspects of the teaching profession that they liked the most, and the difficulties that they encountered in doing their jobs. In responding to these two questions, they were particularly requested to consider the context that they were currently teaching at. The data with regard to these issues are presented in Appendix D.

3.3. Data Collection Instrument

Qualitative researchers mainly use three techniques to collect and analyze their data: observing people as they go about their daily activities and recording what they do, conducting in-depth interviews with people about their ideas, their opinions and their experiences and analyzing documents or other forms of communication. In this study, the aim of which was to gain insight into the teachers' conceptualizations of critical thinking as it applies to their teaching practices and the perceived factors that facilitate and / or inhibit their efforts to develop students' critical thinking skills and dispositions, the data collection instrument was face-to-face interview, acknowledged by Fetterman as one of the most powerful tool of qualitative inquiry. As Patton (1990) has remarked:

> We interview people to find out from them those things we cannot directly observe. The issue is not whether observational data is more desirable, valid or meaningful than self-report data. The fact of the matter is that we cannot observe everything. We cannot observe behaviors that took place at some previous point in time. We cannot observe situations that preclude the presence of an observer. We cannot observe how people have organized the world and the meanings they attach to what goes on in their world. We have to ask people questions about those things (p. 32).

Keeping in mind the purpose of the particular research, which mainly intends to illuminate teachers' conceptions of critical thinking and practices for critical thinking development in Turkish, social studies, science and technology and mathematics courses at seventh grade level, the researcher chose to make use of in-depth interviewing as a means to shed light on this issue.

In-depth interviewing is a data collection method which requires intense listening, a respect for and curiosity about what people say and a systematic effort to really hear and understand what people reflect (Rubin and Rubin, 1995). Dexter (1970, cited in Erlandson et al., 1993) describes interviews as a conversation with a purpose. Interviews allow the researcher and the respondent to move back and forth in time; to reconstruct the past, interpret the present, and predict the future (Lincoln and Guba, 1985). Besides, as Marshall and Rossman (1995) point out, an interview is a useful way to acquire large amounts of data quickly. It gathers a wide variety of information across a large number of subjects and immediate follow-up and clarification are possible.

As Kwale (2007) points out, the quality of the original interview is decisive for the quality of the later analysis, verification and reporting of the interviews. Therefore, he suggests six quality criteria which served as guidelines in this research study: First, an interview should have brief questions and long answers. Second, it should provide spontaneous, rich, specific and relevant answers from the interviewee. Third, the interviewer needs to follow up and clarify the meanings of the relevant aspects of the answers. Fourth, the ideal interview is to be largely interpreted throughout the interview. Fifth, the interviewer tries to verify his or her interpretations of the participant's answers during the interview. Finally, the interview has to be self-communicating. In other

words, it is a story contained in itself and it does not require much extra descriptions and explanations.

Patton (1990) indicates that there are four major interviewing strategies that are employed in educational research, namely, informal conversational interview, interview guide approach, standardized open-ended interview and closed, fixed response interview. The researcher chose to utilize interview guide approach due to the several advantages it offers: To begin with, in this approach, a list of topics and issues to be covered or questions to be asked are specified in advance, in outline form and the outline increases the comprehensiveness of the data and makes data collection somewhat systematic for each respondent. Besides, the interviewer is free to ask some additional questions to get in-depth information on the issue. Moreover, interviewer decides sequence and wording of questions in the course of the interview. Also, the interviewer has the flexibility to skip some of the questions answered by the interviewee previously or give up asking some of the questions. This further adds to the naturalness and relevance of questions and answers. Finally, compared to other interviewing strategies, it is easier to organize and analyze the data obtained through an interview guide approach due to the presence of an interview form.

A semi-structured interview guide for the participating teachers was used as the data collection instrument. The review of related literature and the research questions raised helped the researcher to identify the areas to be explored and formulate the interview guide.

The interview guide consisted of four parts (See Appendix B for the interview guide). In the first part, questions concerning the participating teacher's background were posed. The second part inquired teachers' general views of critical thinking and critical thinking development. It specifically investigated how the teachers conceptualized critical thinking. In other words, it aimed to find out what skills, dispositions standards and criteria the teachers believed were central to critical thinking. Besides, it enabled the researcher to gain insight into their definitions of critical thinking underlying their classroom practices. The third part aimed to illuminate the teachers' practices for the development of the critical thinking at the seventh grade of the elementary education. It particularly focused

on the teachers' assessment of the seventh grade curriculum in terms of its potential to teach for critical thinking, the adaptations that they made to the curriculum in order to incorporate critical thinking into their instruction, and the learning strategies that they used, classroom activities that they conducted, and assignments that they gave their students, for the purpose of fostering their students' critical thinking, besides the ways they assessed their students' critical thinking. In addition, it shed light on the perceived long-term and short-term effects of the teachers' practices in relation to critical thinking development on their students. The final part of the interview guide inquired the factors that teachers believed facilitated and / or inhibited their efforts to develop their students' critical thinking in the school they worked at.

After the interview guide was designed, it was pilot-tested to ensure that the questions posed were appropriate to collect meaningful data and answer the research questions (See Appendix A for the first copy of the interview guide). The issues checked during the piloting were whether 1) the questions focused on issues and topics relevant to the particular research questions, 2) the questions made sense to the respondents, 3) the questions were related to their circumstances and experiences, 4) the flow of the questions was appropriate to assist the interview interaction, 5) the questions are ethical, 6) the timing was appropriate, in that, the questions were not too long (Kvale, 1996).

Having all these concerns in mind, the first copy of the interview guide was piloted with five teachers in one of the elementary schools. The piloting process revealed that some teachers found it hard to articulate the skills, abilities, dispositions, and standards that were associated with critical thinking. However, it was discovered that the same teachers were able to reflect on their classroom practices with the aim of developing critical thinking in their learners or judge the effectiveness of the particular curriculum in terms of its capability to foster critical thinking when they were provided with brief information about the constituents of critical thinking at the beginning of the third part of the interview where they were asked to reveal what they did in practice for the purpose of enhancing critical thinking. Thus, a short introduction about the cognitive and affective dimensions of critical thinking was included at the start of the third part of the interview for

respondents who needed such guidance. Furthermore, it was also discovered that there was a need to add some questions to the interview form about the teachers' assessment of the curriculum at the seventh grade in terms of its potential to teach for critical thinking. Moreover, it was noticed that there was a need to include some questions about how the students reacted to the learning activities, assignments and exam questions that required them to think critically. Finally, in the interview guide alternative statements and probes were also provided for some of the questions to prevent misinterpretation on the side of the interviewees and to further explore their perceptions.

3.4. Data Collection Procedures

Having received the official approval from the Ministry of Education to conduct the interviews with teachers in the 18 specified elementary schools in Ankara through the end of the fall term of 2007 / 2008 Academic Semester, the researcher started with the piloting of the interview guide in one of these specified elementary schools. After making the necessary alterations to the instrument, the researcher started the actual data collection procedure in November, 2007 and it was completed in July, 2008. The researcher spent about two weeks in each school. She preferred to visit one site at a time since doing more than one site at a time could be difficult (Bogdan and Biklen, 1998). By the end of the data collection period of nine months, the researcher was able to interview a total of 70 teachers in 14 elementary schools in Ankara.

In each of the 14 elementary schools that she visited, the researcher first arranged a meeting with the school administration to inform him / her of the purpose of the research study and the data collection procedures. With the collaboration of the school administration, 6 or 7 prospective participating teachers in each site were determined based on the sampling criteria. Afterwards, the researcher contacted these teachers personally to inform them of the aim of the study, and inquired whether they would be willing to participate in the research. This way, the researcher assured that the five teachers in each school were selected by mutual consent of the researcher, the school administration and the teachers to be interviewed. Having obtained the approval of the teachers to be

interviewed, the researcher made appointments with the participating teachers. On the day of each interview, the researcher went to the site earlier than the actual meeting time to arrange a room to conduct the interview in private without disruption. This afforded both the interviewer and the interviewee a degree of comfort.

At the beginning of each interview session, the researcher briefed the interviewee about the purpose of the study and the interview, and where the interview data were to be used. Further information was provided about time needed to conduct the interview. Moreover, anonymity of data collected was ensured. Consent for audio recording was also requested from the participants and of the 70 teachers interviewed, two participants did not agree, whereas all the others agreed to be audio recorded.

The researcher conducted the interviews with a theoretical background about the topic without exhibiting her knowledge about the theme of the study. Then, she structured the interview by introducing the purpose, outlining the procedure, summarizing what she learnt from the interview and inquired if the interviewee had any questions. She tried to pose clear, simple and short questions. Having prepared some alternative questions, statements and probes, she tried to avoid any misunderstandings or misinterpretations. Also asking the same question in different ways during the interview enabled the researcher to check his or her understanding of what the interviewee was saying. The researcher paid utmost attention to behave gently during the interviews allowing the participants to finish what they were saying, leaving time for their own rate of thinking and speaking and pauses. Another important criterion was sensitivity. The researcher listened to the content of what was said attentively and actively seeking to get the nuances of meaning fully and paying attention to not only what was said but also how it was said. Moreover, being open was another point during the interviews. The researcher was open to any new, relevant aspects that were introduced by the interviewees and followed them up. Furthermore, being aware of her focus of investigation in the study, the researcher steered the interviews and did not hesitate to interrupt kindly when the interviewees digressed from the topic. The researcher also adopted a critical approach during the interviews to test the

reliability and validity of what the interviewees told. She took notes and kept in mind what the interviewer said at the earlier parts of the interview and asked them to elaborate on the topic reminding the previous statements they told when necessary, and she related what was said during different parts of the interview. Finally, the researcher managed to clarify and extend the meanings of the interviewees' statements during the interviews to ensure reliable interpretation. She repeated her interpretation of what she heard to get confirmation or disconfirmation from the interviewees especially at times when the interviewer was not exactly sure about what she heard. Another strategy was to ask the interviewees to illustrate and further support what they said through some classroom practices of their own.

At the end of the interviews, the researcher thanked the participants for their contribution to the study and inquired whether they would like to get the transcripts of the interview. Furthermore, they were informed that the findings of the study would be shared with them if they wanted.

It should also be noted that during the period of time the researcher spent in a particular school (in the teachers' lounge, in the principal's office, in the garden, etc.), she also made some observations with the purpose of understanding the physical conditions and facilities of the school, relationship between the teachers, rapport between the administration and the teachers, the teachers' level of satisfaction about the programs they were currently implementing, their opinions of the student profile in the particular school, teacher-parent communication, and problems that were frequently voiced by the teachers. Such unobtrusive observation helped to validate or better understand some of the issues that the teachers raised in the interviews and above all, interpret what the teachers revealed with respect to their contextual factors. She took some notes of her observations to which she referred in the data analysis stage.

3.5. Data Analysis Procedures

As Bogdan and Biklen (1998) point out, data analysis is the process of systematically searching and arranging the interview transcripts, filed notes and other materials that the researcher collects to increase his / her understanding of

them and to enable the researcher to present what s/he has discovered to others. The analysis process involves working with data, organizing them, breaking them into manageable units, synthesizing them, searching for patterns, discovering what is important and what is to be learned, and deciding what to tell others.

Thus, the data collected through interviews in this study were subjected to content analysis in order to explore the patterns of perceptions in relation to the teachers' conceptions of critical thinking and perceptions on critical thinking development which underlie their classroom practices. Content analysis mainly involves searching for meaningful phenomena in the data, assigning them descriptive codes and exploring their relations to arrive at themes, and to describe the data as a meaningful whole (Miles and Huberman, 1994). In the analysis of the data in this research study, the steps followed by the researcher were as follows:

First of all, all 14 schools where the interviews were conducted were numbered according to the socio-economic level of their locations. Thus, Schools 1-5 were the ones located in areas where the socio-economic status was high, Schools 6-10 were situated in districts where the socio-economic level was middle, and Schools 11-14 were the ones which were located in districts where the socio-economic level of the residents were low. Then, each of the participant was coded according to the school they teach at from 1 to 14, their branch ('M' referring to a math teacher, 'SS' a social studies teacher, 'T' a Turkish teacher, 'ST' a science and technology teacher) and the number of the teacher interviewed in this branch. For instance, '2ST' referred to the science and technology teacher that was interviewed in the school labeled as 2 and '13M2' referred to the second math teacher that was interviewed in the school labeled as 13. This afforded a degree of practicality in analyzing, interpreting and making meaning out of the data.

Second, all the interviews that had been tape-recorded were transcribed verbatim by the researcher herself by using a computer-based word processing program, and by the end of the transcription process, 375-page raw interview data were generated. Meantime, the transcript was formatted by leaving some space on the right margin so as to be able to take notes of the codes that emerged or the

researcher's interpretations of what was said by the respondents. In addition to the transcribed data, however, there were also the researcher's notes that she had taken about how a respondent said what s/he said during the interview. Thus, the researcher inserted all these non-verbal interview events into the transcript so as to get a detailed and precise account of what the participating teachers told. Also, she had some other notes that she had taken about her observations during the time she spent in the schools as was pointed out above. Thus, the researcher referred to these notes in making sense of what the teachers said.

Third, the researcher identified the interviews that took the longest and generated a revealing insight into the concept of critical thinking as conceived, planned, implemented and evaluated by teachers. Then, among these interviews she had identified, she chose a group of interviews that represented the variation she had built into the design, that is, mathematics, science and technology, Turkish and social studies teachers with differing years of experience, from schools located in districts with high, middle or low socio-economic status. She then skimmed the transcripts of these interviews. Meantime, she took notes of the categories that emerged as a result of the first reading of these interviews. Keeping in mind the emerging categories in the preliminary reading of these interviews, the research questions and interview questions, the researcher made a *tentative* list of themes.

At this point, as Seidman (2006) clearly states, in the reading, marking and labeling process it is important to keep the labels *tentative* as locking in categories too early can lead to dead ends. As he clearly points out, some of the categories may work out. In other words, as the researcher continues to read and mark interview transcripts, other passages will come up that seem connected to the same category. However, some categories that seemed promising early in the process may die out. New ones may appear. Or categories that seemed separate and distinct may fold into each other. Thus, having born in mind the account of Seidman, in this study, the initial categories were considered as tentative, and they were subject to refinement until the write-up stage.

After reaching the tentative list of categories, the researcher devised a table on a word processing program. The table consisted of three columns: categories /

codes, interviewee and quotations. She wrote all these aforementioned preliminary tentative categories under the column on the codes / categories.

Fourth, the researcher started to read the interviews paragraph by paragraph and word by word, marking off each time a particular idea or concept was mentioned or explained, and indicating in a code the subject of each segment on the space provided in the right margin. (See Appendix C for a sample coded interview). After having read and coded each interview, she reviewed and noted down all the codes that she came up with under the related coding category in the table. When there was no related general category / parent category / sub-parent category under which a particular code fell into, she thought of a new category to fit the data, and inserted it in the table. Whenever the researcher added new coding categories, she had to go back and recode the material already examined. This allowed the researcher to continuously modify the coding categories to fit all the data. (However, since the researcher drew the preliminary coding categories from the analysis of a group of interviews that were reasonably representative of all interviews, she did not have to make many adjustments to her coding categories later and she made few changes when she applied these categories to the rest of her interviews.) In the second column on interviewee, the respondent code was indicated, which made it possible to know which codes were drawn from which interview. In the third column on quotation, however, the pages of the interview segments that explained or exemplified a certain code were provided. This enabled the researcher to read different examples of the same issue, idea or concept raised by several respondents interviewed. Also, it made it easier for the researcher to find these examples or explanations during the write-up stage. An example excerpt from the table displaying the categories and codes, interviewee and quotation is as follows. Thus, the teachers' responses with regard to the standards and criteria perceived to be central to critical thinking are gathered in this table.

Table 3.8. *An Excerpt from the Table Displaying the Categories, Interviewees and Quotations*

CATEGORIES	INTERVIEWEES	QUOTATIONS
5.6. Negative effects of teachers' efforts to integrate critical thinking into their instruction and assessment on their students		
Cognitive Entry Characteristics of the Students		
- students' lacking prerequisite knowledge and abilities in *mathematics*	4M2, 11M1, 14M, 12M2, 8M2	4Q187, 1Q223, 5Q332, 3Q277, 1Q225
- students' lacking some cognitive skills of critical thinking, namely, paraphrasing, summarizing, and synthesizing needed in *social studies, Turkish and science and technology*	3ST1, 4ST, 4ST, 4SS, 13T1, 13T2, 13ST, 12ST2, 3ST2, 10ST, 11T1, 12T1, 12SS, 14SS, 10T, 8T, 9T1	2Q164, 3Q187, 1Q204, 3Q289, 3Q310, 1Q318, 2Q269, 3Q141, 1Q144, 2Q174, 4Q177, 2Q119, 6Q241, 1Q245, 3Q264, 3Q283, 3Q343,
Affective Entry Characteristics of the Students		
- the disinterest towards learning, the particular subject matter, the learning activities or assignments aiming for critical thinking	12T2, 12SS, 14ST1,14SS, 14ST2, 12M1, 2T1, 4SS, 4M2, 7ST, 7SS, 9T2, 12T2, 13ST	3Q274, 1Q280, 1Q325, 2Q341, 1Q344, 2Q347, 2Q258, 3Q349
- a lack of self-confidence	3ST1, 4M1, 4SS, 5M, 5ST2, 7ST, 9SS, 9T2, 10ST, 11SS, 11M2, 12M1, 12M2, 12SS, 13M, 13T2, 14T, 12ST1, 1M	2Q158, 2Q169, 2Q175, 2Q203, 2Q14, 2Q79, 6Q102, 4Q121, 1Q130, 5Q231, 3Q245, 2Q254
- lack of a sense of responsibility	14ST1, 12ST1, 14SS	2Q326, 1Q254
- tendency to passively accept everything they read or hear in *social studies, Turkish and science and technology*	10T, 3ST2, 5SS, 5ST2, 6ST, 10T, 10SS1, 12ST, 12T2, 4SS, 5T, 5ST2, 9T1, 10ST, 10M	1Q107, 3Q258, 4Q278, 2Q279, 5Q283, 5Q319, 2Q338
- a misconception of discussion in *Turkish and social studies*	6SS, 7SS, 12T1	2Q352, 3Q356, 3Q21, 1Q261

Table 3.8. (continued)

CATEGORIES	INTERVIEWEES	QUOTATIONS
Students' Expecting Their Teachers to Teach to the Central Exams		
- reluctance to read the stories, or conduct the learning activities in the book, and do the research assignments	13SS, 13M, 3ST1, 14SS, 1SS, 4SS, 10T, 11SS, 3SS, 4M1, 4SS, 14M M2, 7T1, 9M, 11M1, 14T	3Q298, 1Q306, 3Q138, 4Q343, 6Q108, 2Q229, 1Q157, 2Q170, 3Q171, 2Q189, 4Q99, 2Q225, 4Q338
- students' expecting their teachers to teach didactically	13SS, 13M, 9SS, 10SS1, 11ST, 11T2, 13ST, 3T	4Q298, 2Q305, 2Q78, 2Q116, 2Q235, 3Q250, 4Q317
Depth		
- superficial coverage of too much content resulting in low achievement in *mathematics*	3M, 9M, 7M, 12M, 6M, 4M2	1Q151, 4Q97, 2Q269, 1Q363, 3Q189, 2Q326

Up to this stage, the coding procedure fragmented the interviews into separate categories of themes, concepts, events or stages. In fact, the process of coding the interview data and the process of grouping the codes which fit together meaningfully into categories went hand in hand in this research study. After arriving at the coding categories in this manner, the researcher inquired whether any category overlapped with another, or whether there was a need to break down some categories into further categories to attain a comprehensive classification. The necessary alterations were done on the table displaying the categories, interviewees and quotations. This way, the categories were refined and reorganized until the final version of themes was reached.

The last step in the research was to report the findings and the interpretations of the findings of the research study. At this stage, the table displaying the final version of themes, interviewees, and quotations was of great help as it provided easy access to different examples or explanations of the same issue or different viewpoints that the respondents expressed in relation to a particular argument. All the themes that were focused in the research questions

were described, explained and exemplified in detail by "letting the voices of the interviewees come through at appropriate moments" for the qualitative assessment of teachers' conceptions of critical thinking and perceptions on critical thinking development (Marshall and Rossman, 1999, p. 67). Figure 3.2. presents all the steps followed by the researcher in the data analysis process:

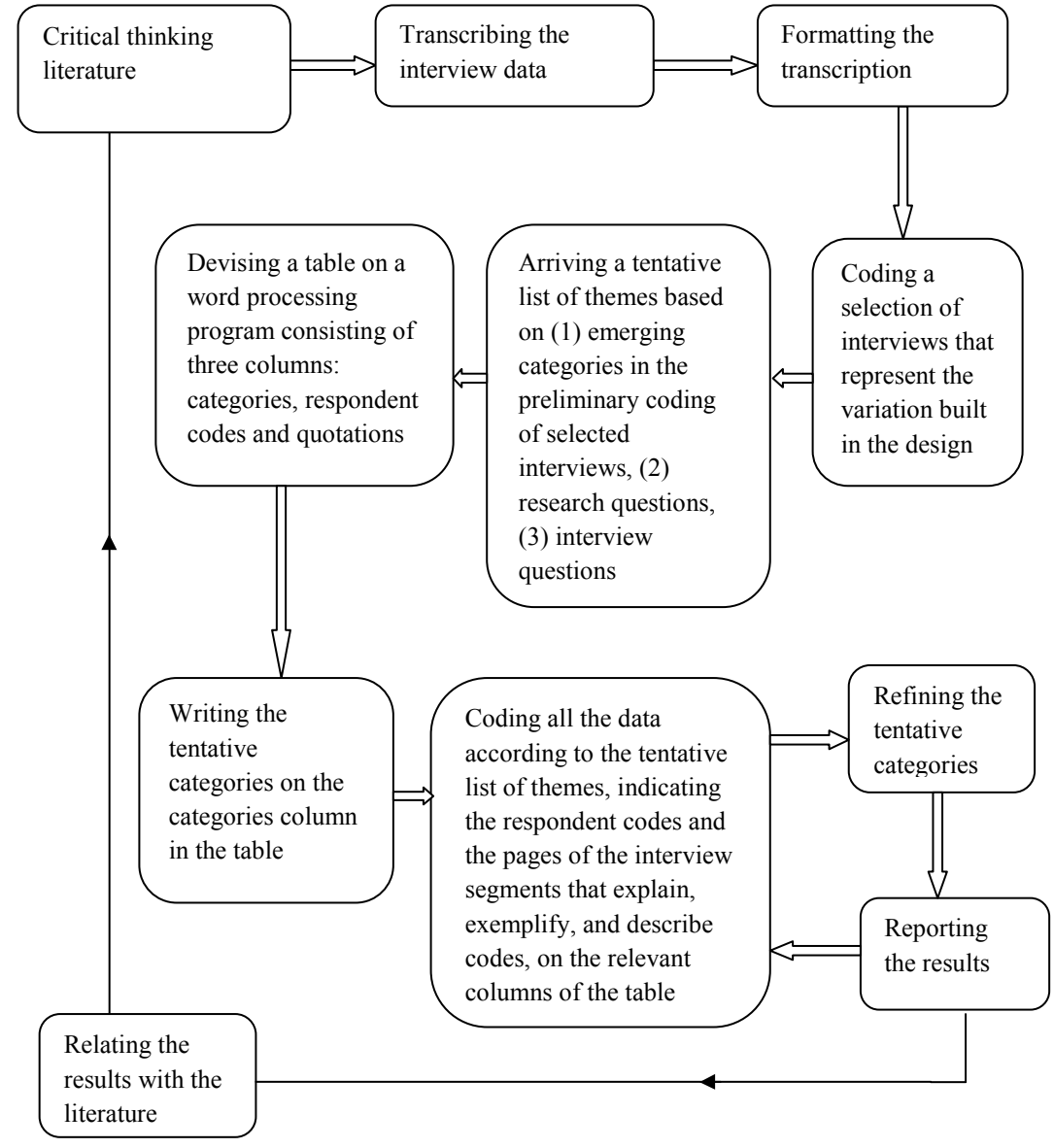

Figure 3.2. *Data Analysis Process*

3.6. Trustworthiness

To refer to the overall quality of a piece of research, Lincoln and Guba (1985) use the term "trustworthiness" of research. They write, "The basic issue in relation to trustworthiness is simple: How can an inquirer persuade his or audiences that the findings of an inquiry are worth paying attention to, worth taking account of? What arguments can be mounted, what criteria invoked, what questions asked, that would be persuasive on this issue?" (p. 290). To ensure trustworthiness in the research study, the following techniques were used:

To begin with, purposeful sampling strategy was used in the selection of both the schools and the participants. Thus, fourteen schools were purposefully selected based on socio-economic level of the districts that they were located in. This way, it was ensured that the schools located in areas with high, middle and low socio-economic level were represented. In addition, the participants were purposefully selected on several criteria, namely, their field of study (math, sciences, social studies and Turkish), year of experience in teaching, year of experience in the particular school, gender, educational background of teachers, and likelihood of providing rich data. A purposive sampling approach in selecting the schools and the teachers within these schools for interviews further enhanced the possibility of accessing as wide a variety of perspectives as possible.

Besides, the researcher consulted two experts after the formation of the interview guide and did the necessary modifications such as changing the wording of some of the questions, deleting some of the questions and adding new ones. Furthermore, the interview schedule was piloted before the actual data collection process to ensure that the questions posed were understandable for the participants to respond to, and appropriate to gather meaningful, in-depth data in relation to the research topic. All these contributed to the reliability and validity of the data collection instrument.

Next, some measures were taken in the process of data collection by the researcher to provide trustworthiness. Prior to all interviews, the participants were all briefed about the purpose of the study and the interview, and where the interview data were to be used. Moreover, confidentiality was also assured so that private data identifying the subjects were not reported. Consent for audio

recording and the future use of the interviews was also requested from the participants. Thus, three important ethical issues called informed consent, confidentiality and consequences were addressed during the study (Kvale, 1996). The other measures taken at the data collection process included respecting the participant being interviewed, developing an appropriate rapport with the participant, asking the same question in different ways during the interview, avoiding leading questions, asking one question at a time, and not interrupting the participant (Fraenkel and Wallen, 2003). Moreover, the interviews were tape-recorded, which prevented any data loss. All these helped the researcher to collect valid data on the issues of concern in this study.

Also, in the process of data analysis, the following points contributed to the trustworthiness or the study: First, the data were transcribed by the researcher herself, which enabled her to get acquainted with the data more. Second, in order to ensure reliability, during the coding process, the researcher went back to the previously coded interview data at intervals, and checked whether the codes and categories provided a good fit to the data. Reading and rereading the data and the corresponding codes assigned to the different segments of the interview data at intervals resulted in the refinement of the codes and the categories in an ongoing fashion until the final stage of the data analysis, which added to the validity of the themes that were reached in the end. In addition, she had some colleagues who had expertise in translation proofread her translations of the interview segments to be used in the report and this contributed to the validity of the findings and the interpretations of the findings.

Moreover, the researcher provided a detailed description of the data collection method, data analysis procedure, the context and the participants of the study so that "potential audiences for research findings themselves are able to determine whether the context in which they are interested is sufficiently similar to the context from which research findings derive to make their transfer possible and reasonable" (Lincoln and Guba, 1985, p. 298).

Finally, audit trial was conducted in an attempt to ensure the dependability and confirmability of the study, which, in turn, contributed to the trustworthiness of the study. As Erlandson et al. (1993) indicate, in the process of audit trail, an

auditor is provided with all the records kept during all stages of the research study including the raw data, data reduction and analysis products, data reconstruction and synthesis products, process notes, and materials relating to intentions and dispositions and information related to any instrument development. Then, s/he audits all these documents and provides feedback on all stages of the research study. In this study, the thesis supervisor acted as the audit. After the completion of the study, the auditor was provided with all the raw and analyzed data, data reduction tables, outlines and the report of the research study.

3.7. Limitations of the Study

First, this is a qualitative study the results of which are applicable only in the fourteen primary schools where the research was conducted. Thus, the results cannot be generalized to all population. However, the findings of the study provides a revealing insight into the concept of critical thinking as conceived by the participating teachers in the particular contexts, the conditions of which were comprehensively described in the research study.

Second, only interviews with teachers provided the data in the study. Some other data collection methods such as observation and document analysis could have been employed in order to provide a deeper analysis. Also, teachers were the only data source in this study. Thus, triangulation of multiple sources of data and methods was lacking in the particular study.

Third, in the data collection process, where teachers' conceptions of critical thinking and practices for critical thinking development at seventh grade level were focused, the teachers who were not able to articulate the skills, abilities, dispositions and criteria related to critical thinking were given brief information about what critical thinking involved in the third part of the interview. However, it should be remarked that of the 70 teachers interviewed, only 3 teachers needed such guidance.

Finally, due to the time limitations, the researcher did not have any chance to apply inter-coder reliability; that is, to have another researcher analyze the same data to see whether similar results are obtained. However, the audit trail compensated for the lack of inter-coding in this study to some extent.

CHAPTER IV

RESULTS

In this chapter, parallel to the research questions that the study aimed to shed light on, the results of the study will be presented under seven main headings: Teachers' conceptions of critical thinking, teachers' perceptions on the process of critical thinking development, planning for the integration of critical thinking into instruction at seventh grade, practices for the integration of critical thinking into instruction at seventh grade, assessment of students' critical thinking at seventh grade, factors that inhibit teachers' ability to focus on critical thinking and factors that foster teachers' ability to focus on critical thinking. In order to provide an overview of the results allowing for a brief comparative analysis of Turkish, social studies, science and technology, and mathematics teachers' reflections with regard to the issues concerned, a summary will be presented at the end of each of the seven sections.

4.1. Teachers' Conceptions of Critical Thinking

In order to get insight into teachers' conceptions of critical thinking, they were asked to define the concept of critical thinking from their own perspectives and reveal the constituents of critical thinking. The analysis of the findings with regard to teachers' conceptions of critical thinking produced two main categories namely definition of critical thinking and dimensions of critical thinking.

4.1.1. Definition of Critical Thinking

It was noted that when the teachers were asked to define their conception of critical thinking, they all provided definitions in which they mainly equated critical thinking with one or more skills or dispositions. Thus, some example

definitions were as follows: “Critical thinking is the ability to consider things from different angles and reaching some conclusions.” “Critical thinking is the method for reaching the truth by observing, experimenting, and exploring cause and effect relationships.” “Critical thinking is questioning the truth or validity of what one hears.” “Critical thinking is questioning for a purpose.” “Critical thinking includes both having skeptic attitude towards what you read or hear, and respecting other viewpoints.” It was noted that although teachers in general did not seem to have a broad understanding of critical thinking, some definitions were relatively lengthier and more elaborate than some others. Having examined the skills and dispositions together with the other elements that their definitions included, a collective definition was drawn by combining the recurrent elements in their definitions as follows:

Critical thinking is defined as purposeful thinking (1) exercised by people predisposed to display sensitivity to what is happening in their own environment and the world, take responsibility for their own learning, challenge dogmas, clichés and stereotypes, question the credibility of any piece of information they hear or read, grant respect to other views, self-correct, express their line of thought freely and confidently in a proper style of communication (2) involving a process for understanding issues in depth, seeking the truth, making a decision, solving a problem and reaching judgment including such skills as critiquing what they read or hear on the basis of their prior knowledge, experience, and observations, analyzing issues in depth, considering issues from different angles, drawing conclusions, making interpretations, relating what they learn to real life, building on their prior knowledge through reasoning, reaching a synthesis through their own reasoning, establishing cause and effect relationships, noting similarities and differences, listening actively, and reading critically.

Teachers’ definitions of critical thinking showed that some teachers from all four disciplines equated critical thinking with some other higher order thinking skills, namely, creative thinking and problem solving. For example, critical thinking students were described as creative. When they were asked to talk about their classroom practices requiring students to think critically, especially some Turkish teachers mentioned some creative writing tasks. Similarly, some

mathematics teachers also explicitly said that critical thinking involved problem solving skills.

Teachers' definitions of critical thinking also revealed their perceptions on the purpose of critical thinking. According to the results, teachers commonly agreed that people thought critically in order to understand issues clearly and adequately, discover the truth, reach a judgment and generate a solution to a problem. To begin with, some teachers from all four disciplines indicated that critical thinking was an important means of understanding an issue with all its dimensions, which, in their mind, required people to continuously probe into matters so as to learn them in depth. Second, some teachers emphasized that people thought critically in order to discover the truth. According to these teachers, seeking the truth required people to get continuously engaged in trying to find answers to how and why questions and some other questions that they themselves asked in this process. Also, some teachers pointed out that people thought critically to reach a judgment, as in distinguishing between the right and the wrong, the good and the bad, and the appropriate and the inappropriate. Finally, some teachers, especially mathematics teachers, suggested that people thought critically in order to solve a problem. Thus, they believed that in the process of understanding a problem, thinking of a suitable method to solve it and finally reaching a conclusion required people to think critically. On the other hand, it should be noted that the individual participants were able to touch upon only one or two of these purposes. Thus, their understanding of the purposes of critical thinking could be considered rather restricted in this sense.

Besides, while teachers were explaining their understanding of critical thinking, some teachers from all four disciplines referred to some prerequisites to critical thinking, which included a good command of the language, prior knowledge and experience concerning the issue, disposition to think critically, and intelligence. Some teachers indicated that language was an essential tool for understanding a subject or a problem clearly and adequately, developing views, making some judgments, working out problems and sharing one's viewpoints with others. Therefore, people with a good command of language, in their view, were likely to explicate their viewpoints more effectively. Besides, most of the

teachers from all four disciplines believed that people could think critically on matters which they had prior knowledge and / or experience about. In their view, students should be knowledgeable enough to be able to think critically. Also, some teachers pointed out that some people might not be able to think critically over the course of their life due to their personal traits. Thus, they pointed out the necessity of a disposition to question and think critically. Finally, some teachers across all four disciplines suggested that there was an association between intelligence and critical thinking. One of the teachers said, "You cannot expect unintelligent students to think critically and build relationships between concepts." That was considered to be one of the reasons why some students performed poorly in activities requiring critical thinking.

Consequently, it is noteworthy that all these teacher beliefs were proved to be influential in teachers' practices for critical thinking development and their reflections on students' reactions to classroom practices aiming at critical thinking development, which will be discussed in the following sections.

4.1.2. Dimensions of Critical Thinking

The teachers interviewed reflected on three dimensions of critical thinking, namely, cognitive skills of critical thinking, dispositions of critical thinking and criteria for critical thinking, which will be presented in this section.

Cognitive Skills of Critical Thinking: The teachers interviewed were asked to reveal the cognitive skills that they perceived to be central to critical thinking. When they were asked to answer the question "What skills do you expect your students to display while they are dealing with a task requiring them to think critically?" they referred to their classroom practices where they thought these skills were used as they did not have specialized critical thinking skills vocabulary. It was noted that in addition to the cognitive skills perceived to relate to critical thinking across all four academic disciplines, there was one discipline-specific cognitive skill.

Across all four disciplines, considering issues from different angles, making connections between prior knowledge and the new knowledge, listening

actively, drawing conclusions based on one's prior knowledge and observation, analyzing, making a synthesis, applying knowledge to different situations, noting similarities and differences were commonly perceived to be the cognitive skills of critical thinking. Teachers' understanding of each of these skills with reference to their practices is as follows:

Considering issues from different angles: The teachers interviewed suggested that their critical thinking students were able to look at an issue from some particular ways of thinking. Most of the teachers were able to give some example responses of their critical thinking students who looked at an issue from different angles. For example, one of the Turkish teachers said,

> While dealing with a text on 'doors from the past to the present time', I asked students whether they preferred wooden doors of the past or the doors of today. The majority said they preferred today's doors as they thought they were much safer. For example, they talked about the doors opened by the fingerprint. On the other hand, one of the students said she thought wooden doors of the past were more valuable because there was a friendly neighborhood in the past and people could leave their doors open, without having to lock them. She considered the issue from a different angle. That is a skill that critical thinking students display.

Another Turkish teacher said as their critical thinking students were skillful at looking at issues from different angles, they had some original responses to questions like What would you do if you were the hero in this story?, In what ways do you agree, and in what ways do you disagree with the author of this text? Parallel to this view, social studies teachers said that these students were able to take into account different aspects of the issue. One of the social studies teachers, for example, said that the students who had the skill of looking at an issue from different angles were especially concerned about positive, as well as negative (or vice versa), consequences of a specific historical event, or they were able to look at the same issue economically, sociologically, morally, in short from different perspectives. Likewise, mathematics and science and technology teachers also believed that considering issues from different angles was an important skill that their critical thinking students possessed. These students, they said, were especially good at solving a problem with some other alternative

methods which they themselves developed, rather than with the already known methods introduced by their teachers previously.

Making connections between prior knowledge and the new knowledge: Teachers believed that this particular critical thinking skill involved building upon the existing knowledge when introduced a new topic by continuously making connections between the knowledge one acquired previously and the new one. That was a skill especially social studies, mathematics and science and technology teachers were concerned with. They pointed out that especially when they were introducing the topic through a questioning method, they asked their students many questions for the purpose of getting them to remember the previously acquired knowledge and make some connections between the previous knowledge and the one introduced. Thus, they said that it was the critical thinking students who were able to make these connections.

Listening actively: According to the teachers interviewed, listening included listening attentively, continually questioning, in one's mind, the credibility of what s/he heard, asking questions if s/he recognized any contradiction between what was said and what s/he had already known about it. One of the teachers emphasized that she could differentiate these students even by their facial expressions very easily as "they are nodding, frowning, or showing their amazement by their mimics while they were listening." Thus, this further implied that according to teachers, active listening involved continually testing, in one's own mind, the credibility of what s/he had heard and responding to it, rather than passively listening to it.

Drawing conclusions based on one's prior knowledge and observation: The teachers interviewed pointed out that their critical thinking students were able to draw some logical conclusions especially when they were trying to teach a subject inductively. To exemplify, one of the social studies teachers said that when he introduced some facts about the policies of the Ottoman government in three different periods (stagnation, retrogression, and dissolution), the critical thinking students were able to draw plausible conclusions on the relationships between the power of a state and its policies. Also, Turkish teachers who presented the grammar topics by discovery learning methods, science and

technology teachers who got students to conduct an experiment to reach some conclusions based on their observations, and mathematics teachers who got students to draw a formula inductively shared the same concern.

Analyzing: According to the teachers from all four disciplines, analyzing meant considering a matter at length in an attempt to understand it fully, in detail. For example, critical thinking students were reported to be good at analyzing a given text, which referred to the ability to identify main ideas, supporting details, facts and opinions stated in it, or they were able to analyze a problem in an attempt to understand it adequately before getting engaged in solving it.

Making a synthesis: Most teachers indicated that their critical thinking students were able to make a synthesis when they were asked to conduct research in order to gather information on a topic from several different sources and synthesize the information gathered, which involved combining all the information gathered and preparing, in their own words, a well-organized presentation where they also added their own perspectives.

Applying knowledge to different situations: According to the teachers, this involved the ability to use the knowledge in new situations, as in problem solving in mathematics and science and technology.

Noting similarities and differences: Most of the teachers believed that critical thinking included the skill of noting similarities and differences, as in comparing and contrasting the council of state in different periods of the Turkish history, comparing and contrasting two types of writing like essay writing and fiction writing in terms of their various features, or noting the similarities and differences between a mathematical problem solved previously and the new one.

Besides these, there was one discipline-specific skill that Turkish teachers conceived as a cognitive process of critical thinking:

Reading critically: In Turkish teachers' view, this critical thinking skill involved a procedure which included reading and understanding a text adequately, questioning the arguments stated in them (rather than accepting all these views and arguments passively) on the basis of their prior knowledge, observations, and life experiences, and reaching judgments about the validity of these arguments

having examined the explanations and examples supporting these arguments in a given text.

Dispositions of Critical Thinking: The participating teachers were asked to reveal the dispositions, affective traits or habits of mind that they perceived to be essential to think critically. It was noted that there was no discipline-specific disposition. Across all four disciplines, the dispositions that they regarded as central to critical thinking with some brief explanations revealing their understanding of these dispositions are as follows:

Courage to question: Almost all the teachers interviewed suggested that critical thinking students were characterized by the courage to question everything. According to teachers, having the courage to question, these critical thinking students were skeptical of dogmas, clichés and stereo-types in the first place. Besides, they were predisposed to question the credibility of any information or argument that they encountered while listening to someone or reading a text, to continually seek answers to such questions as what caused something to happen, and also question what the teacher said and where s/he got that piece of information rather than accepting them passively.

Assertiveness: Most of the teachers interviewed described their critical thinking students as "assertive". According to those teachers, the ability to express themselves, raise their objections, and assert their counter-arguments freely and confidently without any fear of making mistakes or being ridiculed by their friends differentiated the critical thinking students from the others.

Self-confidence: One of the qualities that most of the teachers attached importance to was self-confidence. The teachers said their critical thinking students had faith in themselves as they believed that they were important and they could achieve. One of the Turkish teachers, for example, said, "When I ask students to write a composition stating their own views on an issue, critical thinking students write their own perspectives without copying from somewhere because they respect their own ideas." All the teachers agreed that the lack of self-confidence usually prevented students from being engaged in critical thought or

sharing their viewpoints with others as they did not have much faith in themselves and their reasoning.

Curiosity to learn: Most of the teachers pointed out that their critical thinking students were the ones who were eager to learn. Their curiosity to learn, together with their courage to question, brought about a desire to research, in their view. Besides, some teachers also pointed out that these students were eager to go beyond what the teacher introduced due to their curiosity. The students with curiosity to learn were also characterized by the ability to ask good questions and a love of experimenting according to many teachers.

Sensitivity: One of the traits of critical thinking students, in most teachers' view, was sensitivity to what was happening in their environment, their country and their world. Particularly social studies teachers and Turkish teachers who were concerned with getting students to keep a track of current issues concerning their country or world said that it was their sensitive and responsive students who eagerly voiced their concerns and offered some solutions in discussions on such issues. The students who had sensitivity to what was happening in their environment, their country, and their world were also described as good observers.

Respect to others and other viewpoints: According to most teachers, critical thinkers were not only those who never blindly believed in anything they heard and read, or those who could assert their own views freely and confidently without any fears but also the ones who respected others and other viewpoints. Thus, the teachers also suggested that critical thinking students showed willingness to listen to others' viewpoints and try to understand their line of thought by empathizing with them rather than stubbornly dismissing them.

Effective communication: Most of the teachers also indicated that critical thinking students were the ones who had effective communication skills, by which they meant "presenting their arguments in a clear way so that their peers could understand what they said," "defending their arguments effectively with accurate and fluent language," "raising their counter-arguments, objections or criticisms assertively but without going beyond the boundaries of respect," and "listening to their friends attentively."

A sense of responsibility: The teachers interviewed indicated that their critical thinking students were also characterized by a sense of responsibility. As a result of their having a sense of responsibility, for instance, they were more likely to come to class prepared, having read about the topic to be covered in class, which enabled them to participate more in class discussions. In addition, they were also described as punctual. The teachers also expressed contentment with regard to the quality of the work the critical thinking students with a sense of responsibility produced. Moreover, one of the social studies teachers indicated, "When I give feedback to students who have a sense of responsibility about the weaknesses of the work they had done, they show a willingness to improve on these, by doing that assignment again." Thus, he seemed to suggest that having a sense of responsibility involved a disposition to complete a given task properly. All these implied that critical thinking students were more likely to willingly take a responsibility and fulfill it properly.

Reading habit: Most of the teachers emphasized that their critical thinking students were fond of reading. They believed that having developed a reading habit, they were more likely to be predisposed to question everything and think critically. It was noted that what teachers in general meant by a reading habit was not the habit of reading a lot of books in a short period of time word by word without paying attention to what was meant in the book, but the habit of reading books by analyzing and critiquing the issues or ideas put forward in the book in detail. Teachers believed once the students acquired such a reading habit, they would also develop a habit of thinking critically.

Criteria for critical thinking: The teachers referred to some criteria by which they judged their students' critical thinking in dealing with tasks requiring critical thinking in class and responding to exam questions which aimed to assess students' critical thinking.

The criteria that teachers across all four disciplines applied included grasping, originality of the views, sufficient evidence, clarity and logicalness. These criteria with some brief explanations as to teachers' understanding of these criteria are presented below:

Grasping: Most of the teachers interviewed emphasized the importance of students' showing an understanding of the arguments stated in a text that they were asked to respond to, or the questions and problems that they were expected to tackle with. The teachers commonly believed that understanding required analyzing these arguments, problems or questions in the first place. The Turkish teachers, for example, expected students to analyze the reading texts identifying the main or support ideas stated in them, and thus understand the author's point of view very well before attempting to critique them. Parallel to this perspective, one of the mathematics teachers said,

> When given a problem, the students usually hastily get engaged in reaching a result by multiplying, subtracting or dividing the numbers without grasping what the problem is. The first and the foremost thing that I expect from students is to understand what the given data represent and the relationship among the data before working out the problem. Therefore, in classroom practices, I frequently test students' understanding of the problem by asking them some questions. In marking the exam papers, it is very easy to understand whether a student understood a problem or not: When they put the data in the formula, I can understand whether the students are really aware of what the data represent.

Originality of the views: The teachers from all four disciplines said that they liked to elicit from their students some original responses. What they meant by "original" was the kind of responses "not copied from the book," "outside the classical framework," "stated in their own words," "reflecting students' own unique ways of looking at the issue," and "which had not crossed the teacher's or their friends' mind before." One of the social studies teachers indicated how she responded to such answers from students:

> Sometimes a student asserts a point of view which is completely contrary to what I have said. But she provides such logical explanations to support his / her idea that you accept what s/he put forward. What s/he actually does is to look at the issue from a different perspective.

It was discovered that the mathematics and science and technology teachers also expected their students to look for and explore some alternative ways of solving a problem. Thus, they said they encouraged students to solve the problem by

pursuing a method that they themselves thought of with their own reasoning both during the lesson and exam.

Sufficient evidence: Most of the teachers from all four disciplines stated that they expected students to support their points of view by sufficient evidence which exemplified, explained, concretized, and supported their line of argument adequately. At this point, some Turkish and social studies teachers pointed out that they expected their students to refer to some relevant articles or books they had read, news they had watched or listened to, and events they had witnessed in order to justify their viewpoints more effectively. When considered from a different perspective, this also meant that teachers required their students to look at an issue on the basis of their prior knowledge, experience or observations.

Accuracy: It was noted that apparently, all teachers attended to the accuracy of the results that students reached in solving a problem or applying the knowledge to a given situation especially in dealing with multiple-choice questions. Thus, they all said correctness of the answers was one of the criteria that they were concerned about both in classroom practices and exams. However, especially the mathematics and science and technology teachers frequently emphasized the fact that they were more interested in whether students pursued a suitable method in dealing with the problem concerned rather than accurate results.

Clarity: The teachers interviewed were generally concerned with the clarity of what was said, for example, in exchanging ideas in a discussion, or in responding to a question requiring students to think critically in writing. In deciding whether students' responses were clear enough to understand, they said they attended to such features as meaningfulness of the sentences and choice of vocabulary.

Logicalness: Most of the teachers stated that they attended to *logical* conclusions, *logical* solutions, *logical* proposals, *logical* arguments, and *logical* explanations in both classroom activities and exam. Thus, they were concerned with students' connecting ideas and reasons in a sensible way.

In addition to these criteria, there were two discipline-specific criteria, namely genuineness of the criticism and considering historical issues within the scope of their historical context:

Genuineness of the criticism: Some Turkish teachers indicated that whether the students raised a criticism for the sake of doing so, or they raised it being aware of what they were saying was an important criteria that they applied in their classroom practices, where for example, the students raised some opposing views with regard to what their friends said, or where they evaluated the performance of their peers in a presentation. They said the level of knowledge the students had with regard to the topic helped them decide whether it was a genuine criticism or not. One of the teachers who was concerned with genuineness of the criticism emphasized that he attended to this criterion in an attempt to convey students the message that "trying to refute any argument one encounters is not a talent."

Considering issues within the scope of their historical context: Several social studies teachers were concerned with students' capability to examine an event within its historical context, taking into consideration the prevailing circumstances at the period of time when it happened.

4.1.3. Summary of Teachers' Conceptions of Critical Thinking

Table 4.1. summarizes teachers' conceptions of critical thinking in light of their definitions of the particular concept and perceptions on the dimensions of critical thinking.

Table 4.1. *Teachers' Conceptions of Critical Thinking*

Category	Across All Disciplines	Discipline Specific
Purpose of Critical Thinking	- Understand issues clearly and adequately, discover the truth, reach a judgment, generate a solution to a problem.	
Requirements of Critical Thinking	- A good command of the language, prior knowledge and experience concerning the related issue, disposition to think critically, intelligence	

Table 4.1. (continued)

Category	Across All Disciplines	Discipline Specific
Equation with Other Higher Order Skills	- Creative thinking, problem solving	
Cognitive Skills of Critical Thinking	- Considering issues from different angles, making connections between prior knowledge and the new knowledge, listening actively, drawing conclusions based on one's prior knowledge and observation, analyzing, making a synthesis, applying knowledge to different situations, noting similarities and differences	Reading critically in *Turkish*
Dispositions of Critical Thinking	- Courage to question, assertiveness, self-confidence, curiosity to learn, sensitivity, respect to others and other viewpoints, effective communication, a sense of responsibility, reading habit	
Criteria for Critical Thinking	- Grasping, originality of the views, sufficient evidence, accuracy, clarity, logicalness	Genuineness of the criticism in *Turkish* Considering issues within the scope of their historical context in *social studies*

4.2. Teachers' Perceptions on the Process of Critical Thinking Development

Teachers' perceptions on the process of critical thinking development shed light on teacher beliefs in relation to acquisition of critical thinking, ideal approach to achieve the goal of furthering students' critical thinking, the roles that they assumed in the enhancement of students' critical thinking, and conditions necessary to develop students' critical thinking in class, each of which will be dealt with in this section.

4.2.1. Acquisition of Critical Thinking

Teachers were asked whether they perceived critical thinking to be an innate ability or an ability that they developed over the course of their life. The findings revealed that none of the teachers conceived critical thinking merely as an innate ability. In fact, there were two lines of thought in relation to this matter. One the one hand, many teachers perceived critical thinking to be an innate ability which people needed to develop over the course of their life. On the other hand, many others considered critical thinking to be developmental only.

The teachers with the former line of argument thought everybody naturally started to question things in the early stages of their life. At this point, however, it is worth noting that according to some of these teachers, inheritance was an important factor that determined the extent to which one thought critically. One teacher explained,

> When I meet the parents of my students, I notice that children take after their parents. For instance, a student whose parent is talkative has the same trait. Obviously, the child inherited this quality. The genes, I think, play a role.

Moreover, some teachers pointed out that everyone was not born equally as far as intelligence and the capacity to use their brain were concerned. Thus, they concluded that some people were naturally better at analyzing or thinking things through. At this stage, they seemed to associate critical thinking with intelligence. As a result of this situation, they believed that some people could have the innate ability to think critically due to their perceptiveness.

Similar to the majority of the teachers holding the opinion that critical thinking was developmental, these teachers agreed that critical thinking was a skill that people developed over the course of their life with the influence of family, school, teacher, friends, social environment, media, and the whole society. Some people who had this line of thought suggested that as people extended their knowledge on a range of topics, they got more interested in thinking critically. At this point, some other teachers directed the attention to the contribution of reading habit to the development of one's critical thinking. Therefore, they suggested that

children should be encouraged to develop a reading habit and helped to acquire the skill of reading critically so as to enhance their critical thinking.

Moreover, the findings from most of the interviews revealed that upbringing was a critical factor leading to either inhibition or development of children's critical thinking. One teacher pointed out the importance of the parents' approach towards their children as they started to ask questions at the early stages of their lives. She revealed that when children were not discouraged from asking questions by their parents at that stage and their curiosity to learn was continually kept alive, they were more likely to become critical thinkers. Another teacher emphasizing the impact of the way children were brought up in their families on children's critical thinking further suggested that valuing children, giving children a chance to have a say in family matters, developing a sense of responsibility in children and instilling in them a love of reading were influential in developing children's critical thinking.

Besides upbringing, schooling was considered to be one of the most important factors in the development of students' critical thinking. At this point, most teachers indicated that cultivating in learners curiosity to learn through schooling, was an important step to make students critical thinkers. One of the teachers clarified this by saying that,

> If I can get students to love the subject matter [science and technology], if I can stimulate students' interest in what we study, then this interest will make students to ask why's and how's, and this will, in turn, encourage them to think critically.

Moreover, most teachers also pointed out the need to adopt a systematic approach to the improvement of students' critical thinking. That is, starting at preschool, and at all grades of both the first and second cycle of elementary education, all teachers needed to cooperate in the development of students' critical thinking. With this respect, all the teachers interviewed revealed that they assumed certain roles in fostering students' critical thinking throughout their education at school.

4.2.2. Content- and Skill-oriented View of Teaching Critical Thinking

The teachers were asked whether they were in favor of content-oriented view for the development of students' critical thinking, which suggests that critical thinking skills should be taught within the context of academic disciplines, or the skill-oriented approach, which assumes that critical thinking skills should be taught through separate courses where students are provided with explicit training and practice in critical thinking skills.

The results revealed that all teachers adopted content-oriented view for critical thinking development. To begin with, it was noted that most teachers who argued for content-oriented view believed teaching should never be reduced to the transmission of knowledge and students should be made to think what they were introduced meant. Parallel to this belief, one teacher indicated "Our job, as a teacher, is not to equip students with knowledge, but make them think critically in light of the knowledge they get." Moreover, another teacher pointed out, "There is so much content to be covered in each course. However, students can learn this content in its real sense to the extent that they question it or think it through." With this respect, on the one hand, content was regarded as a means of thinking critically, and on the other hand, critical thinking was perceived as a means of making sense of the knowledge they were introduced. Thus, they asserted that critical thinking should be at the core of any programs. At this point, they all seemed to agree that each of the academic disciplines provided a fertile ground for critical thinking development. Therefore, they argued that every course could help students to develop different dimensions of critical thinking. One teacher clarified this by saying,

> In a science and technology course, for instance, the students may practice reaching some generalizations on the basis of an experiment they conduct in a lab, and in a Turkish course, they can practice considering an issue, an argument or an event stated in an article or a story from different perspectives. Such efforts in each course will surely contribute to the development of students' critical thinking.

Besides, some teachers believed in the integration of critical thinking into all courses on the grounds that when a certain skill is emphasized in all the courses

on a systematic manner, the learning of it becomes more meaningful and the students are more likely to apply it in their real life.

At this point, all teachers directed the attention to the importance of teacher cooperation at all levels of elementary education if a content-oriented view of teaching critical thinking is to be adopted. One of the teachers said,

> If we want students to adopt certain attitudes, behaviors or dispositions, we should act consistently and cooperatively to this end. When such collaboration does not exist, when for example, a Turkish teacher strives to get his / her students to think critically and the music teacher does not, the students will be conditioned to think critically in the Turkish course to please their teachers, but they will not feel it necessary to do so in the music course. In such a case, they will not develop their critical thinking skills.

Another teacher revealed how inconsistent practices of different teachers caused confusion on the part of the students:

> The students sometimes get confused when they are encouraged to think critically in a democratic classroom environment in a course, and they are made to memorize some facts without questioning them in a strict classroom environment in another course. In such a case, they cannot decide whether they should passively accept what they are introduced or think it through before accepting it. This is evident in the objections that the students raise, when they encounter contradictory practices of different teachers: 'You expect us to do this, but the other teachers don't. Who should I believe?' the students sometimes say.

Moreover, one of the teachers drew the attention to an important condition to actualize content-oriented teaching of critical thinking. He pointed out that such a view could be put into practice with only professionally developed and financially satisfied teachers, which in their view, did not exist at present. One of the teachers explained,

> Teachers are not adequately prepared for their career at university. What is more, after graduating from university, they are not given effective in-service training through which they would keep up with developments and innovations both in their discipline and teaching. Also, teachers are financially dissatisfied with their job. Most teachers do not have an access to internet to make research at home. As this is the case, teachers cannot develop themselves as a teacher. And under these circumstances,

> integration of critical thinking into all courses in a cooperative manner is a dream.

It was noticed that almost all teachers pointed out the need for training on critical thinking for teachers who were not educated to be critical thinkers.

As far as the skill oriented approach was considered, however, some of the teachers appeared to have some reservations about a separate course on critical thinking for several reasons. First of all, a group of teachers argued that if students were introduced critical thinking within the scope of a course on critical thinking, they would be likely to conceive critical thinking as a set of skills to be learned and practiced for only the requirement of that course, at the end of which they would sit an exam and get a grade. Thus, they believed students may not necessarily develop it as a lifelong skill. Parallel to this perspective, one of the teachers said,

> Even the most carefully designed programs sometimes do not reach its targets. Thus, a separate course alone aiming at developing students' critical thinking does not guarantee the acquisition of critical thinking skills and dispositions.

Furthermore, one of the teachers pointed out that such a separate course on critical thinking could give the branch teachers the impression that they did not have to focus on critical thinking in their own courses as it was focused within a separate course. All these constituted the major reasons that some teachers had some doubts about the benefit of a separate course on critical thinking. Thus, the majority of the teachers argued for a separate course on critical thinking only in addition to the integration of critical thinking into all courses. These teachers believed that such a separate course could help to kindle an interest for critical thinking in the first place. They further pointed out that through this course, the students would learn the basics of thinking critically, getting insight into what critical thinking was, what it involved, and what research had unraveled about critical thinking so far. Moreover, to some teachers, a course on critical thinking would teach students to tolerate and respect different viewpoints, which, in their view, was a quality that most students lacked. Also, some teachers thought such a course would be of great help in providing students with the opportunities to

reinforce critical thinking skills, which they could not offer to their students due to the time restraints in keeping up with the pace of their programs they implemented.

Consequently, the teachers from all academic disciplines agreed critical thinking should be integrated into all courses on a systematic basis throughout the elementary education and that a separate course aiming for the enhancement of critical thinking could also be beneficial. Yet, they remarked that all the teachers should be trained to teach for critical thinking in the first place.

4.2.3. Roles Assumed by Teachers in Developing Students' Critical Thinking

The analysis of the findings helped to identify five categories with regard to the roles the teachers undertook in fostering students' critical thinking, namely, teachers' modeling, inductive approach, researching, looking at issues from different angles, and reading critically. It was noted that except for reading critically, all other categories applied to all four disciplines.

Teachers' Modeling: Some teachers indicated that they strived to model critical thinking with their students in a variety of ways. First of all, some teachers pointed out that they always encouraged their students to question whatever they themselves told the students. One teacher said,

> I especially want students to question whatever I say on the grounds that teachers are not perfect human beings. They can make mistakes or they may forget to give them the information they needed or they may even give misinformation unintentionally.

Furthermore, some teachers systematically got students to evaluate various aspects of the course and themselves. To most teachers, this meant conveying students the message that they needed to approach everything with a critical eye.

Several teachers further talked about their efforts to encourage their students to question and raise their objections freely and confidently, but politely and in a non-offending manner at the same time. Two teachers, for example, said that they challenged their students to object to the authority – the teacher – when

they thought they were treated unfairly or when they got less than what they deserved. A common practice cited by several teachers for this purpose is given in the following excerpt from an interview with a mathematics teacher:

> When I'm announcing the results of an exam, a quiz etc., I sometimes misinform some of the students in class about their mark telling them, for instance, they got 60 instead of their actual mark, which is above 60. And I expect them to object to this. Yet, the students are usually hesitant to do so at first. However, if they are encouraged by their teacher to speak up for their rights, they naturally start to raise their objections confidently. After a period of time, I observe that students in my classes have no qualms about coming to me to correct me when they spotted any mistake that I did while marking their papers. I think that is mostly due to my efforts to set a good example for the students to acquire this behavior.

Similarly, some other teachers took pride in having students who could correct the teacher's mistake (such as a spelling mistake they did while writing something on the board) freely and confidently as a result of their endeavors to help their students to become assertive.

Moreover, some Turkish teachers attaching importance to modeling critical thinking said that they modeled alternative views on a particular issue and played the devil's advocate for the purpose of starting an argument or an interesting discussion in the classroom. They suggested that such opportunities could get students to analyze different sides to a particular issue with their friends in the classroom, which, in their view, triggered critical thinking.

Consequently, it should be noted that all these teachers actually point to the importance of providing a non-threatening learning environment where every student can express their opinions, feelings and criticisms freely and confidently, which, they believed, was absent from the teaching practices of the past and they suggested that the ways the teachers posed themselves as models for their students were important in promoting critical thinking.

Inductive approach: Most teachers from all four disciplines seemed to favor discovery approach to teaching, which, in their view, contributed to the development of students' critical thinking as well as discouraging them from rote-learning. One science and technology teacher said,

> When the students are explicitly introduced a topic, their only job is to listen, but in the other case [where they are introduced the topic inductively] they start to think, ask questions, and seek answers to these questions themselves in a cooperative manner. They construct some meanings on their own, which makes the learning memorable.

Another science and technology teacher who also argued for inductive ways of teaching explained, "Rather than introducing a topic explicitly, I set the stage and wait for the students to reach some conclusions and inferences, with the guidance of some questions." Parallel to the belief expressed in the excerpt above, another science and technology teacher was also in favor of inductive ways of teaching as a means to foster students' critical thinking as follows:

> We are currently dealing with the respiratory system. Rather than telling students that they mustn't smoke. I get them to learn the damages smoking can cause on their lungs and they themselves reach the conclusion that they should never smoke. I think this way, I can help students to get a critical look into matters. Similarly, introducing students photosynthesis in green plants, I expect them to draw the conclusion that they need to protect the green.

Inquiry: Besides setting the stage for the students to discover facts and relationships and new truths to be learned by means of discovery methods of teaching, encouraging students to investigate areas of concern on their own was another strategy which some teachers thought could help foster students' critical thinking. One teacher explained,

> Rather than providing students with explicit instruction on a subject, at the beginning of each unit, I give them a research question just to arouse curiosity on the topic of concern. Then they look for the answers to this question as well as the other related questions that themselves come up with. This, I believe, leads to memorable learning because they are more likely to remember things that they learn through their own search. This way, they are also more likely to participate in the discussions in class.

Looking at Issues from Different Angles: The teachers from all four branches agreed that they had an important role in encouraging students to look at issues from different angles in the name of developing critical thinking. One mathematics teacher indicated that different methods and strategies could be

employed in generating a solution to a specific problem in mathematics. Thus, she said that there were occasions in which her students thought of alternative logical ways of solving a certain mathematics problem. Encouraging such students to share their own ways of solving a problem, in her opinion, helped her to get other students to see that there was not just one way of dealing with a problem. To most mathematics teachers interviewed, this also meant "departing from rote-learning" as their students were not made to adopt only the methods of solving a problem that their teachers suggested, but encouraged to develop their own particular ways of looking at the problems.

The social studies teachers also pointed out the need to get students to look at issues from different angles. One of the teachers explained,

> Especially in history lessons, rather than making students memorize facts, dates or other details, we need to make them focus on how and why it happened, what were the circumstances that led to it, or what were the consequences of it etc.

She believed some guiding questions getting students to take into account different aspects of the issue, in turn, encouraged her students to look at the issue from different angles. Another teacher exemplified,

> For example, having studied all the circumstances leading to the conquest of İstanbul, preparations made for it by the government, living conditions and the structure of the society at that period of time etc., I ask the students "what would you do if you were in Fatih's [the conqueror's] shoes? What *other* preparations would you make taking into account the technical aids available at that period of time?

The Turkish teachers also pointed out the importance of giving students opportunities to look at issues from different angles, and one of the most cited classroom practice where they had their students to consider things from different angles was the one in which they got students to look for answers to such questions as What would happen if the course of events in a story had been different?, What would you do if you were the hero in this story?

Likewise, the science and technology teachers were concerned with providing opportunities for students to consider things from different angles. One

of the teachers, for instance, made her students to think about negative as well as positive consequences of certain technological developments and inventions.

Reading Critically: Emphasizing the fact that the development of critical reading skills was at the core of the Turkish programs at all grades of the second cycle of the elementary education, almost all Turkish teachers agreed that reading critically was one of the critical thinking skills that they put a high priority on. One of the teachers explained,

> What we mainly do in Turkish lessons is to get students read a short story, an article or a poem and critique what they read. In the process of critiquing what they read, students first understand what is meant in the text then they evaluate these arguments expressed in an article. At this stage, they especially learn not to accept passively all arguments they are introduced in an article. They learn to question these arguments they are introduced in an article. They learn to question these arguments on the basis of their own prior knowledge, life experiences or observations, before they decide to accept or refuse them. Similarly, they critique the characters in a story, they are especially made to think what they would do if they were in the characters' shoes. The most important step in this process of critiquing what is read, is however, share and compare their perspectives with their friends and teacher freely and confidently in discussions. They are also asked to respond to a text, a poem or a short story in writing, expressing their viewpoints. At this stage, they learn that there may be different viewpoints on a particular argument.

It was noticed that almost all Turkish teachers assumed an important role in developing students' critical reading skills, which required teachers to get students to read and critique a text and communicate their views on it.

4.2.4. Conditions Necessary to Develop Critical Thinking in Class

The teachers interviewed were asked to state the conditions which they deemed to be necessary for the enhancement of students' critical thinking in class. The teachers' responses regarding the conditions necessary to develop critical thinking in class concerned class size, classroom climate, physical conditions of the classrooms, and cooperation among teachers.

Class Size: Most teachers pointed out that class size was an important factor in allowing for the active participation of all students in a lesson where they were asked to question things, draw inferences or conclusions based on their experiments conducted in class and share them with their teachers and peers, reveal their points of views with regard to an argument raised in a text, and present the results of their search on a topic. Moreover, one of the science and technology teachers said that especially for the group work activities to be conducted properly, the number of students in each class should be suitable. At this point, one of the Turkish teachers who pointed out the need to ensure reasonable class size said,

> In a classroom with 40 students, it is impossible to provide the participation of all students. What happens in such classrooms is that only 5-10 students are always taking turns to express themselves in all courses, whereas the others remain silent.

He suggested that in order to involve each student in the discussions, the class size should be appropriate. Some teachers believed that ensuring reasonable class size was important for the teacher to be able to establish good communication with the students as well. Finally, it was noted that the participants in general agreed that the number of students in each class should be 25 at the maximum in order to allow for more participation in any course focusing on the development of students' critical thinking.

Classroom Climate: According to the teachers, a classroom environment conducive to critical thinking was characterized by "an encouraging teacher who promoted broad-mindedness", "a democratic environment," "good rapport," "respect for each other and respect for different views," "politeness," and "genuine communication." They said that they assumed certain roles in creating such a learning environment. First, they agreed that the teacher should be an encouraging one. Regarding this, one of the Turkish teachers said if the teacher showed indifference to or got cross with students who shared a divergent viewpoint, this would discourage students from thinking critically. Parallel to this perspective, one of the science and technology teachers indicated, "The teacher

should not be narrow-minded himself or herself, nor let his / her students be narrow-minded. S/he should cultivate broad-minded attitude in their students." This, in her view, would ensure that no student was excluded by their peers because of the viewpoints they held. Thus, most of the teachers believed a democratic classroom environment where students were able to raise their counter-arguments freely, confidently, and without any fears was conducive to thinking critically. What is more, the teachers commonly pointed out the importance of good rapport among students. They believed the students should show a willingness to listen to their friends attentively, understand them and the viewpoints that they expressed and try to empathize with them when required. Most teachers believed that the teacher should be responsible for creating an environment where students granted respect for their peers and for different viewpoints. One of the science and technology teachers explained,

> The students should know that they can raise their counter-arguments, raise criticisms with regard to a viewpoint that their teachers or friends mentioned, even correct their friends and teacher, but they can do all these without humiliating anybody or breaking anybody's heart. In addition, they should not do these just for the sake of criticizing or for the sake of finding a fault with what their friends said.

Thus, it seemed that the teacher was concerned with providing students with opportunities to express their "divergent" viewpoints or "genuine" criticisms freely, but politely and without offending anybody.

Physical Conditions of Classrooms: The majority of the teachers interviewed suggested that classrooms specially designed for their particular branch would be suitable in the implementation of a program which had such elements as experiential learning, discovery learning, researching, questioning, critical thinking, and increased interaction. Teachers from all four branches described their dream classrooms equipped with the aids, technological devices, and other materials. For instance, one of the social studies teachers who was in favor of thematically equipped classrooms described a classroom which, in her view, would be more likely to get students be involved in any activities or tasks in class as it would attract their attention in the first place:

> I should have a classroom of mine, where there are some cabinets to keep my visuals, maps, books, authentic materials, and globes. The classroom should have an access to a computer, internet, projector, and a camera. Besides, I can put a table on which there is some sand, which we can use in geography lessons, in making mountains, rivers, valleys.

Similarly, one of the Turkish teachers said,

> I should have a Turkish classroom of my own, equipped with books, and weekly and monthly magazines. For instance, I sometimes ask students to bring to the classroom some columns in order to get them to learn different views on a topic and critique them. So, I would do such activities more if I had such a classroom. Such activities help us develop in students a sensitivity to what is happening in the world and their countries… I could get students watch some films and review them as well in such a class.

Most science and technology teachers indicated that they would like to do the lesson in a specially designed classroom where students could not only deal with the theoretical content but also do their experiments or observations or access to the internet to make research on a question or a problem that they had just come up with during a class discussion. One of the science and technology teachers further said,

> Sometimes just spontaneously, you think of a teaching idea, or an experiment to make a concept more concrete in the minds of the students. If you are in the laboratory, it is easier to do this, but if you are in the classroom, you cannot. Thus, I wish we could always do our lessons in a classroom equipped like a lab.

It was noted that most mathematics teachers also called for thematically designed classrooms. One of the mathematics teachers said it could be especially beneficial in displaying the students' products.

Cooperation among Teachers: Most teachers from all four braches pointed out the necessity of a shared ground among teachers with regard to teaching for critical thinking. They believed that without the cooperation of all teachers working in a school and without the support of the administration, it would be very difficult to achieve this educational goal merely with the efforts of some individual teachers. The teachers interviewed were especially concerned about a consistent teacher approach more likely to get students to think critically.

Regarding this, one of the science and technology teachers said, "When the students are confronted with a teacher who provides a democratic and positive environment in a course and then, with a strict teacher who only lectures and does not get students to question in another, then my efforts lose all meaning." Furthermore, one of the Turkish teachers pointed out,

> In the school corridor, a teacher and a student are talking. Another teacher passing them rebukes the student saying, 'How can you talk to your teacher like this?' Or, while students are working noisily on a task under the guidance of their teacher in class, the principal pops in and asks, 'Where is your teacher?'

She went on to say that these kinds of incidents discouraged teachers from such activities and compelled them to switch to lecturing method, which would surely provide the absolute silence the administration required.

4.2.5. Summary of Teachers' Perceptions on the Process of Critical Thinking Development

Table 4.2. summarizes teachers' perceptions of the process of critical thinking development in terms of the acquisition of critical thinking, teacher roles, approaches to teaching critical thinking, and conditions necessary to develop critical thinking.

Table 4.2. *Teachers' Perceptions of the Process of Critical Thinking Development*

Category	Across All Disciplines	Discipline Specific
Acquisition of Critical Thinking	- Critical thinking is not merely an innate ability. - Critical thinking is an innate ability which people need to develop over the course of their life with the influence of family, school, teacher, friends, social environment, media, and the whole society. - Inheritance and intelligence are important factors that determine the extent to which one think critically.	

Table 4.2. (continued)

Acquisition of Critical Thinking	- Extending one's knowledge on a range of topics and developing reading habit can contribute to one's critical thinking. - Upbringing is a critical factor leading to either inhibition or development of children's critical thinking. - Schooling is one of the most important factors in the development of students' critical thinking.	
Teacher Roles	- Teachers' modeling, allowing for discovery learning, assigning students to the task of inquiring, encouraging students to look at issues from different angles.	Providing opportunities for reading critically in *Turkish*
Approaches to Teaching Critical Thinking	- Critical thinking should be taught within the context of academic disciplines. - A separate course aiming for the enhancement of critical thinking, along with the integration of critical thinking into all courses, could also be beneficial in kindling an interest for critical thinking and introducing the basics of critical thinking.	
Conditions Necessary to Develop Critical Thinking in Class	- Class size is an important factor in allowing for the active participation of all students focusing on questioning and thinking critically. - A classroom climate conducive to critical thinking is characterized by an encouraging teacher who promotes broad-mindedness, a democratic environment, good rapport, respect for each other and respect for different views, politeness, and genuine communication. - Classrooms specially designed for each branch would be suitable in the implementation of a program which has such elements as experiential learning, discovery learning, researching, questioning, critical thinking, and increased interaction. - A shared ground among teachers with regard to teaching for critical thinking is needed to achieve this educational goal.	

4.3. Planning for the Integration of Critical Thinking into Instruction at Seventh Grade

The teachers were first asked to evaluate the seventh grade Turkish, social studies, science and technology and mathematics curricula in terms of their potential to teach for critical thinking in an attempt to identify both the opportunities for and obstacles to the enhancement of students' critical thinking in the curricula. Then, they were asked to reveal how they planned for the integration of critical thinking into their instruction at seventh grade level. Their assessment of the programs constituted the rationale behind any adaptations that they made to the programs, in the planning stage, in their efforts to teach for critical thinking.

To begin with, it was revealed that teachers from all four branches seemed to praise the seventh grade programs due to the attempts in these programs to provide the students with opportunities to look at issues from different angles, relate knowledge to real life situations, make interdisciplinary connections and conduct research - taking responsibility for learning. In addition, they were fond of the methodology of the programs highlighting inductive approach and experiential learning.

With regard to the opportunities to look at issues from different angles, the teachers pointed out that there were both individual and group work studies where students were encouraged to question, rather than blindly memorize some facts stated in the course books. One of the Turkish teachers said,

> In the previous program, the students used to read a passage and answer some comprehension questions, the answers of which were directly stated in the text. But now besides such [comprehensions] questions, there are also questions such as "What would you do if you were the character in this story?, do you think s/he is right?, what if the courses of events had been different?

Such questions, in her mind, provided a good starting point for the students to think critically. What is more, the mathematics teachers suggested that the students were encouraged to generate different methods of solving a problem, which, they thought, brought about considering things from different perspectives.

Moreover, teachers from all four academic disciplines agreed that there were a lot of opportunities for students to relate knowledge to real life, which they

thought were beneficial in letting students think critically. To exemplify, one science and technology teacher mentioned that the students were asked to find some examples for what they studied from real life. For instance, after studying lever, the students were asked to find where they would see it in real life. One of the mathematics teachers also gave another example: "They learn that salt delays the boiling point, and they are made to think of real life situations where such knowledge could be of help to them."

Besides the opportunities for students to relate knowledge to real life, some teachers also appreciated the opportunities to make interdisciplinary connections. One of the mathematics teachers explained,

> For example, in teaching students the proportions in mathematics, there was a sample problem in which the students were told 'a bee consumes 20 kilograms of honey to be able to produce one kilogram of honey', before they were asked to calculate the proportion of the honey consumed, to the honey produced. In such an example, the students also learn the mathematical side of a biological issue.

Another mathematics teacher who was in favor of such instances where interdisciplinary relations were made indicated, "Sometimes in a mathematics lesson, while working out a problem, the students ask, 'is it a science course?', I tell them, 'That's natural, because there is no branch that mathematics is not used in.' " The teacher seemed to be particularly happy about the opportunities where students could see, with their own eyes, how mathematics related to other disciplines.

Furthermore, some teachers suggested that assigning students to the task of researching was likely to help develop a sense of responsibility in students for their own learning, which, in turn, led to critical thinking. They believed that conducting research was an important step to start questioning.

Finally, the teachers also appeared to be satisfied with the methodology of the program, which allowed for experiential learning and discovery learning. It was observed that it was especially the mathematics and science and technology teachers that expressed strong approval of such a methodology, presumably due to their concern about the concretization of the abstract concepts in their students' mind. One of the mathematics teachers expressed,

> The students in the new program learn by doing. This way, they learn what it [the concept under concern] means. For example, when they are told that 'infinite number of lines passes over a point', this may not make sense for all students. Yet, if you put them in an experiment where they fold a piece of paper, which proves this piece of factual information, they can understand what it means clearly and easily.

The teachers also appreciated the opportunities allowing for discovery learning, which they thought triggered critical thinking.

At this point, it should be noted that despite the fact that all teachers, irrespective of their academic disciplines, appeared to praise the seventh grade curriculum due to its aforementioned aspects which, in their view, supported critical thinking development, they never found these opportunities enough, and besides they mentioned certain limitations of the programs in teaching for critical thinking. Accordingly, in the planning stage, they had to make certain alterations to eliminate these limitations, and set the stage for the students to think critically. The categories that emerged with regard to the teachers' assessment of each of the four programs (Turkish, social studies, science and technology and mathematics) in terms of their potential to enhance critical thinking and the adaptations that they made to this end are presented in the following section.

4.3.1. Planning for the Integration of Critical Thinking into Turkish Course

The findings revealed that the Turkish teachers were concerned with the overload of learning activities and the inappropriate texts in the course book, which they thought were two constraints on teaching for critical thinking. Pointing out the difficulties posed by these, they mentioned the alterations that they made in planning for the lesson allowing for more student participation and critical thought.

Overload of Learning Activities: The Turkish teachers interviewed, who were highly concerned with the active participation of their students, stated that there were too many activities to conduct, and that this prevented them from giving all students equal chance to take turns to express themselves in the learning activities. Therefore, many of them indicated that they skipped some of the

activities. One of the teachers put her view on the overload of activities as follows:

> We have to skip some of the activities as we find it difficult to conduct all of them in the limited time allotted. For instance, in speaking activities, all the students in the classroom are expected to actively participate in the activities. However, it is sometimes very difficult to abide by the time limits in such activities. The students who take turns to speak may exceed the time limits set before. Even if we follow the time schedule strictly, there are 40 students in each class, and thereby, we allocate more time for a speaking activity than expected [in the teacher guide.] Say, 5 hours is allocated for dealing with a text, 2 hours is allotted to only the speaking part, and the remaining 3 hours is never enough for the rest of the activities in the plan.

Therefore, very few students could take turns in each activity. At this point, it is noteworthy that large class size is one of the major reasons who teachers cannot conduct the learning activities in the time allotted. As a result of this situation, most Turkish teachers stated that they had to skip some of the learning activities so that they were able to conduct properly the ones they had chosen, eliciting views, opinions, and feelings on a topic from most of the students in their classes.

On the other hand, one of the Turkish teachers mentioned the difficulty of omitting the learning activities in some units:

> Sometimes, it is difficult to skip learning activities. This is because there is a chain of learning activities which usually have a meaningful sequence in each unit, and when a single learning activity is omitted from this chain, the unity [in the arrangement of the activities] is lost.

Thus, the particular teacher preferred to reduce the number of texts to be dealt with, which would also allow students to deal with a text in depth, in addition to ensuring the participation of more students in each task. She particularly suggested, "For instance, instead of introducing to the students characteristics of a poem by reading two poems, we can do it by reading one poem." This way, she believed they would not rush and thus, students would be allowed sufficient thinking time as well.

Text Selection: All Turkish teachers agreed that the texts to be exploited in their lesson were very crucial on grounds that all the learning activities conducted

during pre-reading, in-reading and post-reading stages centered around the text itself and the feelings, opinions and arguments stated in it. These texts were conceived as a means of making students to read and critique. On the other hand, the findings revealed that in general the Turkish teachers were not contented with the reading texts that were provided in their seventh grade course book for several reasons: The major problem was that the texts did not appeal to their students' interests. One of the teachers said,

> You ask students, who read *Harry Potter*, to read and critique a text on Hazerfen Ahmet Çelebi and his life. It is better to start with something which students are already familiar with, just for the sake of attracting their attention and interest.

She went on to say that she preferred to start with reading poems, short stories and articles written by the most well-known authors. To exemplify, she chose to introduce Aşık Veysel, a more famous poet, before dealing with a literary work by Pezene, a relatively less known author. Another Turkish teacher who shared the same concern indicated that she tried to exploit some reading texts that were more likely to arouse students' interest and curiosity which, she believed, was a prerequisite for reading critically, instead of using the texts that did not address her students, in the course book. She said,

> My students are rather reluctant to read essays in which some arguments on an issue are stated or scientific articles in the course book. Their favorite type of reading is short stories that have an interesting plot, twists and turns, and a happy ending. Thus, I try to find such stories for my students. They read stories as if they were watching a movie. They like to read such stories that they can draw lessons on.

Another Turkish teacher who complained about the inappropriateness of the texts they were provided with in their course book said she exploited songs, poems, slight shows, and newspaper articles touching upon the current issues which, in her view, triggered critical thinking. All these signify that the teachers are especially concerned with exploiting the kinds of reading texts that are likely to address their students, attract their attention and curiosity, which, in turn, would get them to think critically on what they read in teachers' mind.

Another reason why some teachers found it necessary to exploit some other texts was that the ones in the course book were not suitable for the level of their students due to the overload of unknown vocabulary they contained. This was, for example, the reason why one of the teachers could not deal with a three-page essay by Montaigne given in the course book. Besides, some teachers mentioned the difficulty that their students had in tasks where students were required to guess the meaning of the unknown words from context. They said that there were not sufficient clues in the texts for students to deduce the meaning of unknown words from context. Therefore, students were unable to do these tasks. As a result of this, some teachers preferred to exploit some other texts that they thought were appropriate for their students in terms of the unknown vocabulary load.

4.3.2. Planning for the Integration of Critical Thinking into Social Studies Course

The social studies teachers in general criticized the seventh grade curriculum for a lack of unity, depth and objectivity - the elements which they believed any curriculum focusing on critical thinking should maintain. Besides, they also mentioned the limitations of the learning activities in teaching for critical thinking. Then, they explained how they tackled with these problems in their planning, and how they paved the way for critical thinking.

Unity: Some social studies teachers complained that there were not effective interrelations in the arrangement of the historical events. One teacher explained,

> 700-year Ottoman history is covered at seventh grade. There appears to be a division among different periods of Ottoman Empire. However, while the division is being made, a sense of unity is not maintained. This lack of a sense of unity prevents students from building up relationships between and among different historical events.

The social studies teachers thought the lack of unity in the arrangement of historical events made it difficult for the students to draw conclusions and build cause-effect relationships between and among different historical events. Thus,

most of them stated that they themselves provided students with clues or additional input so that they could draw conclusions on their own. For example, some social studies teachers indicated that they included some historical events, which they regarded as "critical historical events" in the Ottoman history. The foundation of Ottoman Empire, the reign of Beyazid II, Cem Sultan event, Karlofça Agreement, Preveze War, and the capitulations were among these historical events that several teachers included in their planning as they thought these events had some important consequences in the Turkish history. The teachers thought including such events, they could get their students to better understand certain issues in the course book as they were able to see the big picture.

Depth: All social studies teachers expected a curriculum centering around critical thinking to emphasize depth rather than the breadth of coverage. However, they all pointed out that too much content was superficially covered in the course book, and that depth was ignored at the expense of breadth.

With regard to the issue of depth, one of the teachers said that they were expected to cover Turkish economy including such issues as agriculture, stockbreeding, industry, mining, and energy sources in one single unit, which he found rather unrealistic. However, due to the fact that students take some central exams in which these topics would be asked, he felt compelled to cover all these subjects without skipping. On the other hand, when he tried to deal with each of these issues in depth, he faced time restraints.

In line with this argument, most of the social studies teachers also argued that 700-year Ottoman Empire, from its foundation to dissolution, was covered at a very superficial manner. One of the teachers clarified this by saying, "In the seventh grade, we have a unit called 'a journey in Turkish history'. In this single unit, you deal with the historical events that took place between 1071 and 1914 rather superficially." At this point, the majority of the teachers who pointed out the need to familiarize students with the circumstances surrounding events, movements, reforms, or wars in history for an in-depth understanding of issues indicated that the seventh grade curriculum was far from providing this

opportunity. One of the teachers gave an example: “Before dealing with how İstanbul was conquered, we need to deal with the circumstances surrounding the conquest of İstanbul. In studying this crucial historical event, it is important to consider the grounds for it.” She went on to say that without doing so, it was impossible to think critically on that. Most of the social studies teachers who shared this concern stated that they either themselves provided input in relation to the historical context where an event took place, or got students to gather some information on that.

Another teacher had the same concern: He said that they dealt with reforms that were introduced at stagnation, retrogression and dissolution periods of Ottoman Empire at the seventh grade, one of the themes, which, in his mind, was highly conducive to thinking critically on grounds that the students were supposed to think under what circumstances these reforms had to be introduced. However, the problem was that all these reforms were dealt with under a single heading and that they were not separated from each other in terms of the time they were adopted. In other words, they were superficially covered. From this point on, the teacher started explaining how he presented the topic allowing for depth:

> I first provided my students with a graph in which the stagnation, retrogression and dissolution of the Ottoman Empire were shown. Then, we studied the policies of the government in each of these periods one by one so that the students were able to see the changes in these policies from one period to the next, which were conquering new lands at one period, taking back the lands that were lost at another, preserving the lands at hand at another, and finally seeking the support of the Western World when it became impossible to keep their lands in their hand. This way, they were able to deduce the relationship on their own between the power of a state and its policies. Thus, I raised the awareness of the students to the fact that as government policies change, the programs of reforms to be adopted should also change. While Ottomans did not need to model on the western systems as their military, economic, social and educational systems were effective enough in the previous periods, at the stagnation period they started to lose wars against the western which meant they got better in many areas.

The teacher, at this point, pointed out that after such an insight into the context in which the reforms were adopted, students better understood the rationale behind each of these reforms. Thus, he seemed to be in favor of getting the students to

view the historical events within the larger context in which they took place, which implies a preference for depth of coverage. He believed the students were able to start building cause-effect relationships, an important skill required in critical thinking, so long as they were given such an opportunity.

Another teacher who seemed to share the same concern also pointed out that there were issues in history that should not be dealt with under a separate heading in 40 minutes. One of these topics was, in his view, the qualities of the Turkish. However, much to his surprise, the seventh grade curriculum dealt with this issue as a separate theme under one heading and rather superficially. He explained how he chose to present this topic, allowing for opportunities to integrate it to all units covered:

> Right after we moved to Turkish history, I told the students that the Turkish have three important qualities: They are warriors, they are good at organizing, and they are tolerant. Then throughout the course, while we were dealing with the Turkish history, the students looked for some evidence for these qualities.

The social studies teachers who were concerned about the depth of the content stated that they provided their students with some additional materials such as additional input, graphics, maps and questions to allow for an in-depth coverage of content. However, they all emphasized that they faced time restraints in such a case.

Objectivity: One of the social studies teachers pointed out that it was essential to provide objectivity in historical content in a program aiming for developing students' critical thinking. She added that the seventh grade social sciences curriculum failed to provide students with opportunities to exercise fair-mindedness. To exemplify this, she said,

> The fact that Ottomans had a culture praising such values as tolerance, philanthropy, and humanism were highlighted sufficiently in the program. On the other hand, for instance, the fact that the janissary plundered some of the European cities that they invaded was excluded from the content. Moreover, there is no mention of the failures of Ottoman administration. Then, how can we expect students to criticize Ottoman Administration?

She went on to say that she herself provided students with such opportunities to consider both the positive and negative aspects of the issues raised. Another social studies teacher also said that she opened up discussions on all sides of an issue to allow for the exercise of fair-mindedness. For instance, while dealing with the government system of land in Ottoman Empire in the growth, stagnation and dissolution periods, she got her students to focus on both positive and negative aspects. Likewise, another social studies teacher gave another example: He said the issue of the conquest of İstanbul was considered only from the perspective of Ottoman Empire in the program. So, he got students to study what the conquest of İstanbul meant not only from the perspective of Ottoman Empire but also Western World.

Learning Activities: Some social studies teachers who pointed out the importance of providing students with activities that were likely to attract students' interest and curiosity, which in turn brought about critical thinking in their view, stated that there was a lack of such activities in their course book and that they, therefore, themselves devised some activities for this purpose. One of the social studies teachers who pointed out the need to hold students' attention and interest to make them think critically suggested that role-playing activities were the best way to do that. He said,

> Some students find history lessons rather boring. Therefore, I ask my students to put themselves in the shoes of a famous person who lived in the past. For example, I tell one of my students, "You are Kanuni Sultan Süleyman. The next lesson, come and tell us why and how you conquered Belgrade. Such activities help eliminate the monotony, attract the students' interest, activate their brain more and lead to memorable learning. They get a lot of fun during such activities. Besides, they concentrate all their attention on the subject, which I believe, is a starting point to think critically, as they start to say 'If I were him, I would do this or that because…etc.

The teacher went on to say that such activities got students to empathize, which he believed was an important skill of critical thinking. Besides, he pointed out that students could use their imagination in such activities. However, he noted that

there was a lack of such activities in the course book and that he tried to insert such activities from time to time.

One social studies teacher who was concerned about the insufficient opportunities in the course book to concretize the concepts in the minds of the students indicated that she made use of maps, visuals, and authentic materials to achieve this. To illustrate this, she explained that while they were discussing the effects of geographical discoveries on Ottoman Empire in class, her students found it difficult to comment on it first. But the following lesson, she provided them with some maps on which she showed the regions discovered and the land of Ottoman Empire, after which the students started raising some comments on the issue.

4.3.3. Planning for the Integration of Critical Thinking into Science and Technology Course

Similar to the social studies teachers, the science and technology teachers also pointed out that depth of content was lacking. Besides, it was noted that they were especially concerned about the learning activities which, they thought, were not effective in teaching for critical thinking. They further mentioned the adaptations that they made to facilitate students' thinking critically.

Depth: The science and technology teachers were in favor of dealing with fewer units in depth for high level understanding. One of the teachers said, "if we covered fewer units, we would give students more opportunities to do experiments, watch some CDs about the subjects, and report the results of their research they themselves conducted." The teachers were particularly dissatisfied with the fact that they could offer no opportunities for students to digest and reinforce, which, in their mind, were essential in getting students to think critically on the subjects dealt with. They said they still tried to provide students with opportunities to reinforce what they learned by introducing more supplementary revision materials on a topic covered to allow for in-depth learning.

Learning Activities: The science and technology teachers interviewed evaluated the effectiveness of the learning activities in the course book in terms of their potential to allow for critical thinking on the subjects studied. The findings revealed that most of the learning activities hardly served the purpose of engaging students in critical thought for several reasons.

First, most science and technology teachers were concerned about the duration of these activities. One of the teachers explained,

> In the teacher guide, we are expected to allocate a specific time to each activity. But usually we spend more time than expected in a real classroom situation for some reasons [e.g., large class size]. When the time allocated to a specific activity is long, the students get lost. They forget about the point of doing the activity. Giving students the essential knowledge through these activities becomes very difficult in such a case.

Another science and technology teacher who shared the same concern said,

> At seventh grade, the learning activities take too much time. Long duration of the learning activities prevents students from understanding the meaning of the activity and reaching some conclusions. Only the clever students who concentrate their attention on the lesson can catch the point of the learning activities and reach some conclusions.

As a result of this situation, these teachers preferred to skip these activities that took too long, replacing them with some experiments, slight-shows, and some other activities for the purpose of attracting students' attention, presenting a new concept, and practicing and reinforcing what is learned.

Second, another science and technology teacher believed that a learning activity that students conducted in the classroom should serve the purpose of concretizing relatively more difficult concepts in the minds of the students. Therefore, she suggested that teachers needed to make sure that a learning activity for which both students and themselves would make preparations in advance and to which they would allocate some of their precious time was worth doing it. In other words, she argued that the learning activities should not be conducted for the sake of doing it, but should serve the purpose of concretizing a concept. To illustrate this, she said,

> In order for the students to grasp the concept of atom, there were pages of learning activities where the students threaded beads for hours. Besides being time-consuming, these learning activities were not worth doing because students do not have any difficulty in understanding the fact that atom is the smallest unit of an element and that it combines with other atoms to make molecules.

She added that the first year the program was implemented she tried these activities in class. However, she said she skipped them the following year on grounds that they were time-consuming, and did not serve the purpose of concretizing a difficult concept.

Third, another science and technology teacher also suggested that the potential of a learning activity to concretize difficult concepts in the minds of the students was an important factor that helped her to determine, in the planning stage, whether to conduct a learning activity or skip it. She argued that most learning activities in the course book were far from doing this. Besides, there were not such learning activities in the course book in teaching certain abstract concepts in her view. Therefore, she herself thought of some activities in order to make students grasp the concepts clearly and easily. The following excerpt exemplifies her concern:

> For instance, while dealing with the subject of electricity, the students were asked a question in the course book: 'Assume that at a time electricity was cut off throughout Turkey, the electric power was obtained from Atatürk Dam, [which is situated on the boundary of Şanlıurfa and Adıyaman]. How long would it take for the electricity to be back in Ankara, [which is hundreds of kilometers far from Atatürk Dam]? The answer is 'immediately, due to vibration.' But how will you explain the concept of vibration to students without demonstrating it?

In the teacher guide, there was actually a two-paragraph explanation. But the teacher said it was very difficult for the students to understand the concept by giving such pure knowledge without any demonstration. Thus, she devised the following activity to help them concretely understand it:

> In the classroom, we all stood up and lined up. [The teacher stood at the end of the line] Then, I pushed the student in front of me, he immediately pushed the one in front of him, and finally, the one at the other side of the line was pushed. This way, they were able to visualize how it all happened.

> [how the electric was immediately on in Ankara as soon as it was transmitted from the dam, due to vibration.]

The teacher added, "When you concretize the abstract concepts in the minds of the students, they start questioning. Otherwise, they remain silent. I mean students learn by experiencing and they start to ask questions at that point." With this respect, she believed that concretization of concepts and knowledge through such activities ensures more critical questions from students. And as this was neglected in the program, she herself thought of some demonstrations for this purpose.

Fourth, most teachers who pointed out the importance of providing students with activities that were likely to attract students' interest and curiosity, which in turn brought about critical thinking in their view, stated that there was a lack of such activities in their course book and that they, therefore, themselves devised some activities for this purpose. One of the science and technology teachers said,

> In order to arouse students' interest and curiosity, which, I believe, is an important condition in getting students to think critically, I insert some activities. Taking a jar of oralet [fruit juice powder] to the classroom and getting the students to observe its solution in water, or playing a relevant song as a warm-up at the beginning of a lesson to name but a few of these.

Fifth, some teachers were concerned about the inappropriateness of the learning activities in terms of their level. Several teachers suggested that the activities are too simple for their students. One of the teachers pointed out, "The students attending to this school come from high-income families; and therefore, they are open to learn more. The activities and examples in the book are too simple and do not make the students think critically at all." That is why these teachers skipped these activities in the course book, and replaced them with some challenging ones.

Finally, one of the science and technology teachers expected the visual supplements in their course book to offer more chances to think critically, but indicated that most of these pictures and the accompanying questions did not necessarily require the students to think critically. She gave an example:

> For example, at the beginning of a unit in the course book, a picture of three cavemen talking in front of a fire was given, and the students are asked what these men are talking about. It is obvious that they built a fire for the first time, and they are talking about it.

Thus, the teacher did not think that the students needed to think much in order to answer such a question. She added that she preferred to provide the students with pictures and make them think what they see beyond that picture, in other words, what implicit messages it had, rather than asking them to tell what they saw in it.

4.3.4. Planning for the Integration of Critical Thinking into Mathematics Course

The mathematics teachers who pointed out the importance of the maintenance of depth, maintenance of consecution, and provision of the kind of reviews that particular group of students needed in allowing for critical thinking mentioned how they adapted the curriculum to foster students' thinking critically.

Depth: The mathematics teachers also complained about the superficial coverage of too much content. One of the teachers said,

> It seems that there is a false belief among the curriculum developers that the more content we cover, the better. I think how much students learn a specific subject is more important. To achieve this, we need to allocate more time for a topic to be covered.

In relation to the problem of time restraints in covering too much content, another teacher indicated that in order to keep up with the pace of the program, she could only present the topic with a couple of example situations or problems, without giving much opportunities for students to tackle mathematical problems relevant to the subject covered on their own. Some other teachers, however, said that they tried to allow for depth of coverage by providing more revision materials, but they added that they faced time restraints.

Spiral Content: Most mathematics teachers explained that each mathematical subject to be covered in their curriculum was fragmented into

sections, and that these sections were scattered around different units. One of them exemplified this by giving an example,

> For instance, at seventh grade, we started with whole numbers, then turned to rational numbers. Before completing rational numbers, the subject of parallelism was inserted. Then, once more we turned back to rational numbers to deal with addition, subtraction and multiplication in rational numbers.

Almost all mathematics teachers interviewed found it so difficult to follow this type of order. In addition, they said that there were certain limitations of such an order. First, despite the fact that curriculum developers intended to get students to digest the concepts over a longer period of time and achieve memorable learning by presenting a subject in chunks spirally throughout the semester, most teachers argued that the teachers were required to move to another subject before they did sufficient exercise for high level understanding of the subject, the kind of practice requiring students to make analyses and interpretations. Second, the teachers indicated that when they turned back to a subject, they usually found that their students had forgotten all about what they had covered before. In such a case, they needed a lot of reviews which, they asserted, led to unnecessary repetitions and time restraints to cover the new aspect or dimension of the subject. This further implies the difficulty to implement a spiral curriculum where breadth of coverage was more important than depth of coverage.

Thus, most mathematics teachers indicated that they combined all these fragments scattered around different units in one unit, and dealt with the particular subject as a whole without any interruption, contrary to the sequence in the plan. This, in their view, helped them to deal with each subject in depth. Above all, the students were more likely to establish relationships, and build upon their existing knowledge as most mathematics teachers argued.

Reviews: One of the mathematics teachers said that she had a lot of weak students who needed more reviews to reinforce what they learned. However, she complained that there were not enough reviews which included respectively easier questions or problems requiring critical thinking for such weak students. She said that she found such questions to take to her classrooms in order to develop her

students' self-confidence and help them overcome their fear of mathematics in the first place.

At the other extreme, however, one of the mathematics teachers said that although there were many reviews for students to further practice and reinforce a subject in isolation, there were not any challenging reviews in which students were to combine their knowledge of a few mathematical subjects to work out a certain problem, which was likely to foster critical thinking in her mind. She said, "When a subject is dealt with and a new topic is introduced, the interrelations between the previous and the later subjects are not strong enough." Therefore, she tried to compensate for the lack of such connections by providing students with some questions and problems requiring students to combine their knowledge of different mathematical concepts they had been introduced before. To exemplify, she said, "For instance, after I deal with surface area of circle and probabilities, I provide my students with questions or problems where they have to apply their knowledge of both these subjects at the same time."

4.3.5. Summary of Planning for the Integration of Critical Thinking into Instruction at Seventh Grade

Table 4.3. displays the results with regard to teachers' planning for the integration of critical thinking into instruction at seventh.

Table: 4.3. *Planning for the Integration of Critical Thinking into Instruction at Seventh Grade*

Discipline	Limitations	Alterations
Turkish	Overload of learning activities, which prevented teachers from giving all students equal chance to take turns to express themselves	Skipping some of the learning activities so as to be able to conduct the ones chosen properly, eliciting views, opinions, and feelings on a topic from most of the students

Table 4.3. (continued)

Discipline	Limitations	Alterations
Turkish	Reading texts which do not appeal to the interests of the students / which are not suitable for the level of students due to the overload of unknown vocabulary they contain / which do not contain sufficient clues in the texts for the students to deduce the meaning of unknown words from context	Exploiting the ones that are more likely to arouse students' interest and curiosity, which is believed to be a prerequisite for reading critically / the ones that are thought to be appropriate for their students in terms of the unknown vocabulary load / the ones which include sufficient clues for the students to deduce the meaning of unknown words from context
Social Studies	Lack of a sense of unity, which prevents students from building up relationships between and among different historical events	Providing students with clues or additional input so that they could build up some relationships and draw conclusions on their own
	Superficial coverage of too much content / depth ignored at the expense of breadth	Allowing for depth of content, giving students the opportunity to view the historical events within the larger context in which they took place and build cause-effect relationships, but facing time restraints
	Lack of activities with the aim of attracting students' interest and curiosity	Conducting role-playing activities
	Insufficient opportunities in the course book to concretize the concepts in the minds of the students	Making use of maps, visuals, and authentic materials to concretize the concepts in the minds of the students
	Lack of opportunities to exercise fair-mindedness	Providing students with such opportunities to consider both sides of the issues concerned

Table 4.3. (continued)

Discipline	Limitations	Alterations
Science and Technology	Superficial coverage of too much content / depth ignored at the expense of breadth	Providing opportunities to reinforce what is covered, but facing time restraints
	Long duration of the learning activities preventing students from understanding the meaning of the activity and reaching some conclusions	Skipping these activities that take too long, replacing them with some experiments, slight-shows, and some other activities for the purpose of attracting students' attention, presenting a new concept, and practicing and reinforcing what is learned
	Learning activities that are not worth doing as they do not serve the purpose of concretizing difficult concepts	Skipping the time-consuming activities which are not worth doing
	Lack of learning activities to concretize difficult concepts in students' mind	Providing students with some demonstrations to concretize the relatively more difficult concepts in students' mind, which is believed to trigger critical thought
	Lack of activities which have the potential to attract students' interest and attention to the topic	Bringing to the class such activities that can attract students' interest
	Activities that are too simple	Replacing them with some challenging ones which can lead to more critical thought
	Visual supplements in the course book not offering chances to think critically	Exploiting pictures which will make them think what the students see beyond that picture, in other words, what implicit messages it has, rather than asking them to tell what they see in it

Table 4.3. (continued)

Discipline	Limitations	Alterations
Mathematics	Superficial coverage of too much content / depth ignored at the expense of breadth	Providing opportunities to reinforce what is covered, but facing time restraints
	Problems faced in implementing a spiral mathematics curriculum where breadth is more important than depth	Combining all these fragments scattered around different units in one unit, and dealt with the particular subject as a whole without any interruption, contrary to the sequence in the plan
	Lack of reviews which include respectively easier questions or problems requiring critical thinking for weak students / lack of challenging reviews in which students are to combine their knowledge of a few mathematical subjects to work out a certain problem	Taking to the classroom relatively easier reviews requiring critical thinking in order to develop weak students' self-confidence and help them overcome their fear of mathematics / taking to the classroom more challenging questions and reviews requiring students to combine their knowledge of different mathematical concepts they have been introduced before

4.4. Practices for the Integration of Critical Thinking into Instruction at Seventh Grade

In order to illuminate the teachers' classroom practices which, they thought, involved elements of critical thinking, the teachers from all four branches were asked to state the instructional strategies that they employed, learning activities that they conducted and the assignments that they gave to their students, for the purpose of enhancing students' critical thinking skills. It should be noted that although their responses to that question did not reveal the extent to which they incorporated critical thinking into their instruction, they still provided us with an opportunity to analyze the traces of critical thinking in their practices. Besides, they helped to gain some revealing insight into the reflections of the teachers' aforementioned conceptualizations of critical thinking on their practices to some extent. The common instructional strategies, classroom activities and assignments

that the Turkish, social studies, science and technology and mathematics teachers cited are presented under the related headings below.

4.4.1. Practices for the Integration of Critical Thinking into Turkish Course

The teachers pointed out that most of the learning activities which revolved around a particular text provided students with many opportunities to practice critical thinking. To begin with, the findings revealed that the teachers followed a three-stage procedure while dealing with a text in their course book which can be named as the pre-reading stage, while-reading stage and post-reading stage. It was observed that the teachers cited certain strategies, questions, activities or assignments that they used in all these stages of a reading lesson for the purpose of fostering students' critical thinking skills:

Pre-reading Stage: One of the common activities that most teachers used in the pre-reading stage was providing students with some related pictures and find answers to such questions as, "What does this picture remind you of?" The aim of such questions, as the teachers pointed out, was to get students to make some predictions about the issues to be dealt with in a text, besides attracting their attention to the issue raised in the text to be read.

Another common activity requiring critical thinking involved getting students to brainstorm on what a specific concept, like culture, reminded them of, and drawing a mind map on their own before dealing with a text on the particular concept. Moreover, one teacher mentioned a specific pre-reading activity in which the students were asked to read a short poem titled as "Atatürk the artist", and asking students to share the feelings that it evoked, before reading a text on the importance that Atatürk attached to art.

Finally, some Turkish teachers stated that they sometimes asked students to conduct, in advance, a mini research on the author of the literary work, such as the poem, story, or article, to be dealt with. This, in their view, provided their students with some chances to relate their findings with the themes discussed in the text to be read, getting them familiarized with the social, economic or historic

events of the time the author lived in. Moreover, one of the Turkish teachers especially pointed out,

> After a brief introduction about the author of the text [his life, his works, and the themes that s/he touched upon in his / her works] to be dealt with in this [pre-reading] stage, where I also mention for example, why I chose this text for them, students can better understand the issues raised in the text from the author's own perspective [in the while-reading stage]. Thus, I get them to empathize with the author at this step. After they clearly understand the ideas, opinions and feelings stated in a text, I make them question these arguments, opinions, or feelings.

The teacher, then, aimed to set the stage for the students to grasp properly the stated arguments in a text with such tasks where the students made some preparations in advance.

All in all, it can be seen that the activities or assignments containing elements of critical thinking aim for getting students to make predictions, activating their schemata about what they already know about a particular concept, and getting students to build relationships.

In-reading Stage: That is the stage where students start reading the text critically, trying to identify the main ideas and the supporting details in the text, and responding to the arguments and feelings raised in the text from their perspectives through such questions as "What lessons can you draw from this story?", What would you do if you were the hero / heroine in the story?", "What would have happened, if the course of events had been different?", "What is your own evaluation of the argument / suggestion / proposal stated in the reading passage?", What did you find interesting about the viewpoints raised in a text?", "What are the things that you find difficult to understand in the text?" Which viewpoints stated in the text do you disagree on and why?", "What is the relevance of what you read to your daily life?".

Besides these questions requiring critical thinking, teachers also cited some activities that they conducted in the while-reading stage for the particular purpose: For example, in dealing with a story, students were not given either the beginning, or the middle or the ending of the story, and they were asked to guess what happened in that missing part, taking into consideration the given parts of

the story. In addition, they were asked to evaluate the heading of a story or an article they read, determining whether it was a suitable one or not stating their reasons for that. Or they were asked to find a suitable title for a story or article whose title was missing. Finally, one of the teachers stated that the students were asked to do some tasks where they compared and contrasted a given picture with a text that they read. Or they were asked to find which picture matched with the text.

The point that deserves attention in all these in-reading questions or tasks is that they all engage students in thinking what the arguments, feelings or opinions stated in an article or story meant to them, thereby, engaging students in evaluating and interpreting what they read from their own perspectives. As one of the teachers pointed out, "as students have differing life experiences, each text, poem or story read reminds each student of different things." As a result, she believed that such tasks helped open up a discussion where different sides to an issue were raised by the students, which, she believed, was a very useful tool in making students think critically, and particularly, look at issues from different angles. However, another element in some of these questions or tasks which the teachers thought aimed for critical thinking seemed to be creative thinking, as in the task requiring students to complete a story whose ending was not provided.

Post-reading Stage: It was reported that after the completion of the in-reading tasks provided in the textbooks, students were asked to do some composition writing or speaking activities, like oral presentations, debates or discussions, in which they expressed their own stance on an argument raised in the text, indicating in what ways they agreed or disagreed with the author of the text.

Besides activities requiring students to think critically in dealing with a text, the Turkish teachers also mentioned some writing or speaking tasks, which, they thought, contained elements of critical thinking:

Writing Activities: One of the most cited writing activities requiring critical thinking was the one in which the students were asked to write a story, a

poem, an essay using the words, or the set of pictures that the teacher gave as a prompt in advance. Some teachers said that they occasionally made their students to do brainstorming on a specific topic or concept, getting them to list the words that reminded them of the particular concept or topic and asked them to write a story, essay or poem by using these words that they came up with. Besides, some teachers also indicated that they provided their students with a prompt, like a saying, or a quotation taken from the texts that they read and asked their students to write their own evaluations of the arguments or viewpoints raised in them, with some sufficient supports for their beliefs. In another activity, however, the teacher said students were asked to read a case in a small paragraph, and they were asked to write how they would react to the situation given in the paragraph. Such activities, they believed, could contribute to the development of students' critical thinking on grounds that students would engage in reasoning, building cause-effect relationships and developing their viewpoints.

Speaking Activities: The teachers said that through most speaking activities in their course book, they were able to get their students to think critically. Among these speaking activities were asking students to prepare a talk based on a given case / a set of pictures / several related words / the words that they themselves came up with through brainstorming, on an argument, or an issue and getting them prepared for a debate where they discussed with their peers, for example, whether every book should be read or not, whether we need to protect our language from the influence of other languages or not, etc. Another type of speaking activity cited by some Turkish teachers was role-playing activities, which, they thought, brought about critical thought: In such role-playing activities, first, the students were assigned some roles and a topic such as a certain type of behavior, and in groups, they prepared a drama. After they presented their role-playing, the teacher got the students to hold a discussion in which they critiqued the behaviors that were displayed in that short play, criticizing the inappropriate behaviors and styles of communication. As can be seen, most of the speaking activities actually served as a means to state their own evaluations on the issues covered.

In addition to these classroom activities, Turkish teachers also mentioned some assignments which required students to critique what they read or listened to and conduct research for the purpose of getting them to engage in some critical thinking activities, which are presented under the following headings:

Tasks Involving Critiquing: As it was pointed out earlier, all teachers, regardless of their academic discipline, agreed that developing a reading habit was essential in getting students to acquire the skills, dispositions and habits of mind to think critically. At this point, it should be noted that all Turkish teachers strongly emphasized the contribution of getting students to read and review books on the development of a reading habit which in turn would foster their critical thinking. They said that at the beginning of most of the units they covered in their course book, the students were advised to read certain books. They added that there were certain tasks that they needed to do while reading these books, such as summarizing the book in their own words and reflecting on what they read by seeking answers to such questions as, "What lessons did you draw from this story?," "What ideas or arguments stated in the book do you agree on, and which ones do you disagree on?," "What event(s) influenced you the most in the story, and why?," "Would you do the same if you were the main character in the story? Why (not)?", "Did it [book] change the way you look at the issue? How?". Besides, one of the teachers who believed that students learned from the experiences of the characters in a book made her students think what were the things that applied to their own life from the story they read. Thus, assuming that the things narrated in the books were some invaluable "ready-experiences" which students could make use of, she looked for opportunities to get students to relate what they read to their own life experiences.

Besides book reviews, some teachers got students to read newspaper columns on a regular basis so as to make them critique the ideas and arguments stated in them. The procedure that the students were to follow was choosing a column, the theme of which they found interesting; reading it and identifying the main ideas stated in it; writing a composition in which they evaluated the arguments stated in the column and put down their own stance on the issue. One

of the teachers said that she asked her students to keep all the columns that they read and reviewed in a portfolio and that she made this activity as part of her assessment. Similarly, one of the teachers said she asked her students to gather the caricatures in different newspapers. In the classroom, the students were asked to find the messages in the caricatures and respond to these messages by stating their own viewpoints on them. She went on to say that students had a chance to compare and contrast their own views with that of their peers in the discussions that followed the analysis of the caricatures. Moreover, some teachers frequently asked their students to listen to some news, decide whether they are partial or impartial and make some personal comments on these pieces of news.

Research Assignments: Some teachers said that they had their students to conduct some survey research on a given topic, summarize the findings of their research and present them to their peers in class. Similarly, one of the teachers stated that she had her students to do observations and share the results in the classroom. For instance, for this purpose, she made her students to observe and note down the common language errors that were made by people in their environment. Several teachers said they asked their students to conduct survey and share the results with their peers in the classroom. These teachers added that in such research assignments, students had a chance to discuss what the results meant, and even offer some solutions to problems, which enabled the students to think critically. Also, as some teachers pointed out, students were also asked to conduct some research by gathering some information on a specific topic. The teachers, then, asked their students to make some comparisons and contrasts based on the information they gathered. For instance, having students to conduct research on the theatre of the past in Turkey in advance, the students were made to compare the theatre of the past with that of the present time, expressing their own preferences. Similarly, getting students to learn about two different types of literary work such as essays and stories, one teacher got her students to compare and contrast these two types of work, stating which one they preferred by giving reasons.

4.4.2. Practices for the Integration of Critical Thinking into Social Studies Course

Questioning method, opportunities for students to make comments, drama, and opportunities for considering issues from different angles and research assignments were the main tools for getting students to think critically in the social sciences course.

Questioning Method: Most of the social studies teachers interviewed revealed that they adopted a questioning method, where they continuously asked their students questions aiming to refresh students' mind about what they learned previously and building on it and getting students to build some cause-effect relationships between previous and later historical events, rather than lecturing method where the teacher solely provided explicit instruction on the topic without making them question what they heard. This way, they believed that the students departed from rote-learning.

Commenting: Most social studies teachers interviewed said that they created many opportunities to get students to make comments on the issues dealt with in many ways. One of the teachers stated that she encouraged her students to offer some examples from real life for any piece of knowledge provided in the course book so that they were able to establish its relevance to their life in the first place before making them evaluate it. Moreover, another teacher said that she engaged her students in expressing their perspectives in some writing tasks. For instance, having studied some important issues concerning Turkey, she asked them to state how they would solve that problem if they were the authority.

Drama: Some of the teachers were in favor of conducting some role-playing activities while dealing with some topics such as communication, communication breakdowns, empathy, or even some critical events in history. The students, in groups, were asked to prepare a short play on these topics, after which the issue was open to a discussion.

Considering Issues from Different Angles: Some social studies teachers who attached great importance to the ability to consider issues from different angles in dealing with historical content cited certain activities to this end: One of the teachers described an activity for that purpose which he called "a map drawing activity":

> For example, two of the topics that we deal with in the seventh grade are Silk Road and Spice Road. First, the students learn all about these two roads, where they start, and where they end. They know, for instance, the countries they lie in. They learn the impact of these two roads for these countries and others. Then, we deal with geographical discoveries. Having covered both these topics, I tell them that I have found a new road, and show it to them on the map. Then I ask the students to state what this [the new road] means for the Western world, and why, and similarly, what it means for some other countries and why. Besides, I ask them to look at this issue from the perspective of a businessman, and think which countries would gain economic benefits from it, or consider it from the perspective of a politician, and think which countries would gain geostrategic reputation.

Thus, the students were made to think the possible consequences or impact of a situation they were presented from the perspectives of people with differing concerns. As it was pointed out earlier, social studies teachers also looked for opportunities to evaluate critical events from the eyes of different countries. Thus, while dealing with a historical event, like the conquest of Istanbul, the teacher made students to think what it meant for the European world as well as the Ottoman history, and what consequences or impact it had on both the European and Ottoman history. Thus, students were required to look at this crucial event from the eyes of both Europeans and Ottomans.

As for assignments, most social studies teachers argued that the research assignments that they give their students involved some elements of critical thinking:

Conducting Research: The students were assigned to the task of researching the topics that would be covered in class. The social studies teachers particularly emphasized that the students were not only required to gather information about what, how and why something took place, but also make some

evaluations based on some guiding question like “What is your own viewpoint on that?”, What conclusions have you reached as a result of your research?”, “What did you find interesting?”, What solutions can you offer to the problems that you identified with regard to an issue?” etc. Thus, they were required to present the results of their research by including their own interpretations of the issues.

At this point, one of the teachers pointed out that he especially assigned research tasks about the issues that he himself covered in the classroom. He explained, “If I asked students to prepare a presentation on a topic that they were not familiar with, this would be futile. The student may not know what to do.” So, that teacher stated he asked his students to prepare presentations in which they only concentrated on their own observations, understandings, and synthesis of the issues dealt with beforehand.

4.4.3. Practices for the Integration of Critical Thinking into Science and Technology Course

Experiments, questioning method, concept mapping, games, research assignments and keeping a science and technology diary constituted the practices for the integration of critical thinking into science and technology course at seventh grade level.

Experiments: According to most science and technology teachers interviewed, experiments were the essential tools in making students think critically as the students were encouraged to make predictions, do some observations and check their predictions and draw conclusions on their own. Several science and technology teachers were able to clearly explain the procedure that they went through in an experiment allowing students to practice some critical thinking skills. One of the teachers said,

> We dip the two sides of an electrical circuit into a jar filled with orange juice, and see whether the lamp on the circuit is turned on or not. At this step [before they conducted the experiment], the students share their predictions with each other, discussing the chances of the lamp being turned on and stating the possible reasons why it would or not be on. Then, conducting the experiment where they observe that the lamp is turned on when the circuit is put into orange juice, they check their predictions.

> Afterwards, they start to talk about the possible reasons why it was turned on. They finally reach the conclusion that the acid in the orange juice conduct the electricity. Then, they also reach the conclusion that certain solutions, like the one in the experiment, can conduct electricity.

The teacher went on to say that such experiments helped students to reach some conclusions on their own and learn the subject concretely, which, she believed, led to success in the central exams.

Some science and technology teachers believed that creating opportunities for students to make observations enabled them to learn by experiencing, develop their interpretation skills, and relate what they learn to their life experiences. One of the teachers exemplified this situation by saying,

> I ask my students to plant onion and garlic in two different pots, keeping one of the pots in shadow, and the other one, in a place getting a lot of sun, and regularly watering and talking to the plants in both pots. As a result, students observe that the plants which get a lot of sun grow best, and then they draw some lessons on their own.

She added that when students learn by experiencing, they were more likely to apply it in their own lives. Another science and technology teacher who shared the same concern suggested that students enjoy experiencing certain things on their own. For this purpose, she allowed her students to make some observations in the lab in which they themselves discovered a piece of scientific fact. This awakens the students' curiosity, where, she believed, questioning and learning start.

Questioning Method: Some science and technology teachers said they mostly engaged their students in thinking why's. Thus, they seemed to be in favor of questioning method. One of the teachers said that he introduced a new subject by using some relevant CDs and slight shows, and while he was doing that he frequently stopped to ask students to make some predictions, make comments etc. Another science and technology teacher said,

> Throughout the lesson, even when I introduce a new subject, I ask some relevant questions. The students may be giving correct answers or incorrect answers to questions that I ask. There are 40 students in each class. They can freely share their viewpoints. What I do is to direct the students according to their responses. Sometimes, I ask further questions to

> get students form or develop their answers and viewpoints. Therefore, we sometimes go away from the point that we are discussing. It takes some time to go back to the point where we have left.

One science and technology teacher who shared the same concern said that she continually asked her questions so as to get them build their existing knowledge. She explained, "What I want is to get students to acquire new knowledge by moving from what they had already known, and building upon existing knowledge." At this stage, she pointed out that she did this by asking them questions throughout the lesson. She added that she preferred to get students to reconstruct their knowledge in a collective manner.

The science and technology teachers who were in favor of questioning method emphasized the value of providing students with opportunity to self-correct. One of the teachers, for instance, said "When a student gives an incorrect answer, instead of immediately correcting him or her, I ask some further questions so that the student himself or herself corrects his or her own mistake." Science and technology teachers who emphasized self-correction considered it as a means of learning and suggested students learned from their mistakes.

Concept-mapping: One of the science and technology teachers indicated that concept-mapping tasks in the course book in which the students were required to brainstorm on the ideas or concepts related to a certain concept, and make a sentence that explained the relationship between the concept under discussion and the concepts which students thought were related to it. This way, she believed that the students made some connections between and among different concepts, revealing their understanding of a concept, which she believed, triggered critical thinking.

Games: One of the science and technology teachers said she got her students to play some games which, she believed, brought about critical thinking. To exemplify this, she said,

> For example, after dealing with electroscopes, I get students to play the drama of electroscope. In this drama, one of the students plays the role of an electroscope, his head representing the head of the electroscope and his

> arms, the leaves of the electroscope. The other students in the classroom, on the other hand, represent either proton or neutron. (Each student has a tag that shows whether s/he is a proton or neutron and how many protons or neutrons s/he carries.) As students with differing numbers of protons or neutrons give out their electric charge, the student representing the electroscope opens or lowers his arms.

The teacher said that in such a game, the students were all engaged in calculating the movements of the electroscope through collaborative decision-making.

Besides these learning strategies and classroom activities that were perceived to bring about critical thinking, the teachers also mentioned some assignments to this end as follows:

Research Assignments: Most science and technology teachers said they asked their students to conduct research either individually or in groups on a specific topic and present their findings to their peers. One of the teachers pointed out that she had certain expectations from her students whom she assigned such homework: First, they were asked to include their own comments in the presentations they made. Second, they were asked to relate the knowledge to real life by providing some examples from real life so as to concretize the concepts, during the presentations, in their friends' minds as well. Third, she also asked her students to present the result of their research with their own sentences, and from their own perspectives. At this point, she emphasized that she modeled her students in the presentations that she did so that the students had an idea about what a good presentation involved.

Keeping a Science and Technology Diary: Some teachers asked their students to keep a diary in which they regularly wrote a short summary of the topics they covered in class. In this summary, the students were asked to include what they learned in the lesson and how they reached these results, with reference to the experiments and observations they had done.

In addition to diary keeping, one of the science and technology teachers asked her students to think of some questions after they reviewed their lesson notes or wrote their summary in their diary. Furthermore, she also expected her students to note down any contradictions between and among the pieces of

knowledge they acquired. The teacher said that the questions that the students brought to the class were of two types. One type of questions was due to students' not grasping certain aspects of the subject dealt with. She said these questions were invaluable in detecting any problems that students had in understanding certain subjects and providing some reinforcement activities. The second type of questions, however, was because of students' willingness to learn more about the topics covered and their attempts to build on their previous knowledge. She added that some of these questions were the ones that had never crossed her mind before. At this point, the teacher emphasized that the second type of questions encouraged both herself and the students to conduct further research in order to learn about different aspects of an issue.

4.4.4. Practices for the Integration of Critical Thinking into Mathematics Course

The findings revealed that focus on 'process' rather than 'product' and experiential learning were the two main aspects of their practices that, they thought, led to critical thinking. Moreover, as for assignments, problem solving and conducting research followed by discussions were the main tools in getting students think critically.

Focus on 'Process' rather than 'Product': Several mathematics teachers pointed out that while they were working out some mathematical problems with their students in the classroom, they focused on the processes that their students went through rather than the final results that they reached, which, in their mind, let students focus on the application of alternative methods in solving a particular problem, see and correct their own mistakes. One of the mathematics teacher said,

> I usually get my students to solve a problem at the board. While they are solving it, I ask them to think aloud, telling the whole class which steps they followed by stating their reasons. This way, they listen to themselves, and reflect on themselves.

Another mathematics teacher who emphasized the value of creating opportunities for students to explicate their ways of solving a problem and correct their own mistakes said,

> After dealing with a subject, I get students to solve some mathematical problems. I listen to all the student responses, whether they are true or false. Sometimes, I even get them to write, on the board, all these alternatives. Reviewing all these alternatives, they themselves decide on the correct method(s) of solving the particular problem, through collaborative decision-making. This way, the students focus on which method(s) help(s) them to reach accurate result rather than who got the correct or incorrect answer. Or, they learn why a particular answer is wrong. They notice how a particular problem can be solved by different methods. All these help students to get away from the pressure of making mistakes, and focus on what methods could be employed to reach an accurate result in solving a specific problem. So, they are more likely to participate in the lesson.

Another mathematics teacher also pointed out the importance of eliciting from the students alternative methods of solving a problem explaining in detail what steps they followed. At this point, she expressed satisfaction at eliciting some inaccurate answers as well as accurate ones since she believed that in such a case, the students learned from their own mistakes. She argued that letting the students who made a mistake correct their own mistakes paved the way for critical thinking.

Experiential Learning: Most mathematics teachers interviewed were in favor of letting students learn by experiencing, which, they believed, helped concretize the subjects in the minds of the students so that they were able to solve challenging problems requiring critical thinking. Thus, besides the learning activities in the course book, they themselves devised such tasks in which students learnt by doing. One of the teachers exemplified, "[In teaching the students the surface area of a cylinder,] I ask all the students to take out a piece of paper with the shape of a rectangle, and twist both sides of the paper to make the shape of a cylinder." At this stage, the teacher got her students to repeat twisting both sides of the rectangular-shaped paper to create a cylinder and unfolding it several times so that the students could make the connection between a rectangle and a cylinder. He continued,

> [While doing so,] the students concretely see that lateral surface area of a cylinder is actually equal to the surface area of a rectangle calculated by

> multiplying the long edge [width] by the short edge [length] of the rectangle. Then, they realize that the long edge [width] of the rectangle refers to the circumference of the circle, and that the short edge [length] of the rectangle refers to the length of the cylinder.

From this point on, the teacher got students to draw the formula to calculate the surface area of a cylinder by gathering all that information. The point that deserves attention in such an activity is the teachers' concern with helping his students to relate their previous knowledge (their knowledge of rectangle) with the one presented (cylinder) and reconstruct their knowledge of the new topic (cylinder) on their own by drawing some parallelisms with the previous topic (rectangle). Above all, he is concerned with getting students learn by concretely seeing.

As for assignments, mathematics teachers stated that they generally got her students to solve the problems given in their course books, in addition to the problems that they gave to the students. They said students had to apply what they learned in working out these problems.

In addition, some mathematics teachers also mentioned that they gave their students some assignments in which students were required to do research. One of the mathematics teachers, for instance, asked his students to prepare a mathematical strip. The students were, first, to conduct research on important mathematicians and their discoveries from the very old times to the present, finding or drawing some accompanying pictures as well. Then, they were asked to choose the most important ones on their own and present them on a strip of paper or cartoon in a chronological order. Then, the students compared and contrasted their products, by sharing with their peers why they chose these events as critical ones.

4.4.5. Summary Practices for the Integration of Critical Thinking into Instruction at Seventh Grade

Table 4.4. displays the results with regard to the teachers' practices for the integration of critical thinking into instruction in four disciplines.

Table: 4.4. *Practices for the Integration of Critical Thinking into Instruction at Seventh Grade*

Discipline	Practices
Turkish	Pre-reading Activities Aim: Making predictions, activating students' schemata about what they already know about a particular concept, and getting students to build relationships Sample Pre-reading Activities: (1) answering questions based on a given picture related to the text to be dealt with, (2) brainstorming on a specific concept and drawing a mind map on their own before dealing with a text on the particular concept, (3) reading a relevant poem and talking about the feelings that it has evoked before reading a text on a similar topic, (4) conducting, in advance, a mini research on the author of the literary work to be dealt with and relating the findings with that work In-reading Activities Aim: Reading critically Sample In-reading Activities: (1) responding to the arguments and feelings raised in the text from their own perspectives through such questions as What lessons can you draw from this story?, What would you do if you were the hero / heroine in the story?, Which viewpoints stated in the text do you agree / disagree on and why?, What is the relevance of what you read to your daily life? (2) guessing what happened in the missing part of a story (either the beginning, the middle or the ending of the story) taking into consideration the given parts of it, (3) evaluating the heading of a story or an article they read or finding a suitable title for a story or article whose title is missing, (4) comparing and contrasting a given picture with a text that they read, or finding which picture matches with the text Post-reading Activities Aim: Reading critically Sample Post-reading Activities: composition writing or speaking activities, like oral presentations, debates or discussions, in which students express their own stance on an argument raised in the text, indicating in what ways they agree or disagree with the author of the text

Table 4.4. (continued)

Discipline	Practices
Turkish	Writing Activities Aim: Thinking critically Sample Writing Activities: (1) writing a story, a poem, an essay using the words, or the set of pictures that the teacher gives as a prompt in advance, (2) brainstorming on a specific topic or concept by listing the words concerning the particular concept or topic and writing a story, essay or poem by using these words that they come up with (3) writing their own evaluations of the arguments or viewpoints raised in a prompt, like a saying, or a quotation taken from the texts read, with some sufficient supports for their beliefs (4) reading a case in a small paragraph and writing how they would react to the situation given in the paragraph Speaking Activities Aim: Thinking critically Sample Speaking Activities: (1) preparing a talk based on a given case / a set of pictures / several related words / the words that the students themselves come up with through brainstorming, on an argument, or an issue and getting them prepared for a debate (2) role-playing activities followed by a discussion Assignments Aim: reading and listening critically Tasks Involving Critiquing: (1) reviewing books, (2) reading and critiquing newspaper columns and caricatures, (3) listening to some news and decide whether they are partial or impartial and make some personal comments on these pieces of news Research Assignments: (1) conducting some survey research / doing observations / gathering information on a given topic, summarizing the findings and presenting them to their peers in class
Social Studies	Questioning: asking students questions aiming for refreshing their mind about what they have learned previously and building on it and getting students to build some cause-effect relationships between previous and later historical events Commenting: expressing their perspectives about the issues dealt Drama: some role-playing activities while dealing with some topics such as communication, communication breakdowns, empathy, or even some critical events in history

Table 4.4. (continued)

Discipline	Practices
Social Studies	Considering Issues from Different Angles: evaluating the impact of a certain historical event or a given situation from different perspectives, from the eye of different parties affected by that event / situation and from their own perspectives Assignments Conducting Research: (1) gathering information about what, how and why something took place and make some evaluations based on some guiding question like What is your own viewpoint on that?, What conclusions have you reached as a result of your research?, What did you find interesting?, What solutions can you offer to the problems that you identified with regard to an issue? etc (2) preparing presentations in which students only concentrate on their own observations, understandings, and synthesis of the issues dealt with beforehand
Science and Technology	Experiments: involving a procedure which includes making predictions, do some observations and check their predictions and draw conclusions on their own Making observations: for the purpose of enabling students to learn by experiencing, develop their interpretation skills, and relate what they learn to their life experiences Questioning: in the process of introducing a new topic, frequently stopping to ask students to make some predictions, make comments and build upon their existing knowledge Concept-mapping: brainstorming on the ideas or concepts related to a certain concept, and making a sentence that explains the relationship between the concept under discussion and the concepts which students think are related to it Games: allowing for application of the knowledge to situations, more student interaction and critical thinking Assignments Research Assignments: conducting research either individually or in groups on a specific topic, applying such principles as including their own comments, relating the knowledge to real life, presenting the result of their research with their own sentences, and from their own perspectives

Table 4.4. (continued)

Discipline	Practices
Science and Technology	Keeping a Science and Technology Diary: (1) writing a short summary of the topics covered in class, including what they have learned in the lesson and how they have reached these results, with reference to the experiments and observations they have done (2) having written in the diary on a topic, thinking of some questions about the aspects of the topic that they would like to learn further
Mathematics	Focus on 'Process' rather than 'Product': getting students to focus on the processes that they go through rather than the final results that they reach while solving a problem, allowing for opportunities to self-correct as well Experiential Learning: letting students learn by experiencing, allowing for the concretization of the subjects in the minds of the students to trigger critical thought Assignments Problem-solving, assignments requiring research followed by discussions

4.5. Assessment of Students' Critical Thinking at Seventh Grade

Participating teachers from all four branches were asked how they assessed their students' critical thinking at seventh grade. The findings revealed that the teachers were concerned about testing their students' critical thinking to some varying degrees.

4.5.1. Assessment of Students' Critical Thinking in Turkish

The findings revealed that Turkish teachers assessed their students' critical thinking both through some open-ended questions or composition writing in written exams and some performance assignments such as oral presentations and debates.

To begin with, most Turkish teachers stated that parallel to their classroom practices, they provided their students with a text, in the form of a paragraph or an essay, a short story, or a poem in the exam. Students were required to analyze a paragraph or an essay identifying the main ideas and the supporting details stated

in them, and respond to the text in some ways by answering such questions as "What title would be suitable for this paragraph or essay?, In what ways do you agree or disagree with the author on the issue raised in the paragraph or essay?" Besides, some teachers also got their students to read a given poem (which they ensured was an interesting one for the students), and find the ideas and thoughts stated in it or the kind of feelings that it evoked, and express whether or not they agreed with the author of the poem and why (not). Moreover, the students were provided with a short story, and answering some comprehension questions about the characters and plot, they were required to answer questions requiring critical thinking as follows: "How would you end the story if you were the author?, What lessons did you draw from this story?, What would you do if you were the character in the story?" One of the teachers said that she gave one-paragraph story through which she got students to analyze and evaluate a specific behavior, or an attitude displayed from their own perspectives. Also, some teachers said that they gave some part of a story which the students were required to complete on their own taking into account the given section. As for the criteria used in marking, some teachers said they gave higher marks to students who could think freely, and divergently, use the language accurately (making meaningful and uninterrupted sentences), and stay focused on the topic while supporting their views. Thus, the criteria that they used were divergent thinking, accurate use of language and relevance.

On the other hand, several teachers stated that although they got their students to engage in critical thinking in reading a text in their classroom practices, they could not do so in the exam for two reasons: One was that they were concerned about the level of their students. One of the teachers, for example, said "I cannot ask any questions requiring critical thinking, besides the comprehension questions which had some obvious answers, due to weak students. I cannot get any answers from these students to such questions." Therefore, she said she never asked such questions. Another reason why two teachers had some reservations about asking students some critical thinking questions based on a text in the exam was their concern about the standards and criteria to take into

consideration in marking their students' paper. One of them, for instance, explained,

> I can only ask students to identify the main ideas stated in a text in the exam. I never ask such questions as what would you do if you were the hero / heroine in this story?, how would you end this story? etc. That is because I don't know what criteria I should be using in evaluation. In a classroom environment, different viewpoints can be discussed, and these viewpoints can be respected. But, I cannot ask students open-ended questions based on the critical reading of a text in the exam since I may not be objective in marking.

On the other hand, all the Turkish teachers provided the students with a saying, a quotation, a problem, or a situation as a prompt and the students were asked to write a composition in which they expressed their own viewpoints, opinions or feelings, and / or offered some solutions. One Turkish teacher stated that she provided her students with a picture as a prompt, and asked them to write a poem, a composition or a short story about what the picture reminded them of. As for the criteria they used in marking, the Turkish teachers commonly said that use of language, relevance and capability to support their viewpoints sufficiently were the three main criteria they considered in marking.

Besides the written exams, some teachers said that they asked their students to prepare for a debate either individually or in groups. In such debates, the students were assigned some roles: One group arguing for, and the other arguing against something, another group evaluating how these two groups performed while supporting their line of argument, and finally another group of students in the classroom asking some questions to their friends in the two groups involved in the debate. Similarly, the students were required to conduct research, either individually or in groups, on a given topic where they synthesize the findings of their research and present their own perspective on it. Turkish teachers said that they used both self-evaluation and peer-evaluation criteria that were provided in their course book in evaluating the students' performance in such tasks. They said that the students also did self-evaluation, peer-evaluation, and group evaluation, which served the purpose of thinking critically about their performance. They indicated that the performances were judged by such criteria as consistency, clarity, adequacy, preparedness, expression of feelings, thoughts

and experiences, effective communication, respect for different views, and effective use of language.

4.5.2. Assessment of Students' Critical Thinking in Social Studies

The findings revealed that some social studies teachers assessed their students' critical thinking skills through written exams or performance assignments where students were required to make a presentation about a topic in class. These teachers gave some example exam questions that they asked their students for the purpose of assessing their critical thinking. However, others had some reservations about assessing students' critical thinking for several reasons, and therefore, they said they never assessed their students' critical thinking, although they got them engaged in critical thinking in class or in assignments.

First, some teachers stated that the exams that that they gave to their students included some questions requiring students to think critically, in addition to the ones aimed for recalling knowledge. When they were asked to give some example questions through which they tested their students' critical thinking, several social studies teachers said they gave a graph displaying the relationship between two things and asked them to draw some conclusions based on the information on the graph. For example, one of the teachers who provided a graph showing the rate of literacy among males and females asked students what conclusion could be reached based on the graph, providing them with four alternative conclusions to choose among. Similarly, in another example question, the students were given a graph displaying the size of population over the last ten years, and asked to decide which of the four conclusions they had already been provided could not be drawn from the graph. As for criteria, the students were expected to draw some logical conclusions based on graphs.

Besides graph reading, one of the teachers said that he frequently gave an item of a critical agreement in history, and asked his students to discuss what positive and negative consequences it had for the parties to the agreement, referring to both positive and negative consequences that followed from signing it. In another example question given by another social studies teacher, the students were asked how they thought the Crusades influenced the people living in

Anatolia. As for criteria, the teacher especially emphasized that she expected her students to combine their knowledge of the topic with their own ways of looking at the issue in answering such a question, and she added that she got some original answers from her students in such questions, which she was quite happy about.

Another social studies teacher who was greatly concerned with developing the ability to view any historical issue taking into consideration the context that it existed in said that he emphasized this skill both in his classroom practices and assessment, and he described a sample exam question in which he aimed for viewing issues within the scope of their historical context: "If you had been the owner of a caravan [kervan] living at the time Uighur civilization existed, what would you have had in your caravan?" In answering such a question, he expected his students to assume that he lived at that period of time and consider the conditions and technical aids available at that period of time. Besides, in another question, he expected the students to evaluate a specific reform or law that was introduced by Atatürk (like the hat law), explaining the rationale behind it by referring to the prevailing conditions at that period of time. At this point, he emphasized, "Nowadays, there are people who judge some of the reforms or laws introduced by Atatürk according to the conditions of the present time. So, these people cannot see the point of the reforms and they view them as unnecessary." Therefore, he said that he intended to get the students to acquire the ability to judge a past event taking into account the prevailing circumstances leading to it, asking them such questions both in classroom practices and exams.

Two social studies teachers who were concerned with the ability to apply knowledge that students acquired to a given situation asked some questions for that purpose. One of the teachers, for example, asked his students, "Which one of the countries is the closest to the starting meridian: Turkey, Japan, or India?" He said,

> To answer this question, they need to recall several pieces of knowledge [the location of these countries and their distance from the starting meridian]. So, moving from that knowledge, visualizing the places on the map in their minds, comparing and contrasting, they reach a conclusion.

Another social studies teacher mentioned a question with a similar aim: "The temperature in Beysukent is usually 5-6 degrees lower than the one in Kızılay. Explain why?" The teacher stated that in answering that question, the students were first to compare and contrast the two districts in terms of their characteristics (Kızılay mainly made of concrete and Beysukent being a green place). Then, they were expected to remember the effect of sun light on these two types of places, and reach a conclusion. As for criteria, they were concerned with accurate application of the knowledge to given situation.

Most of the social studies teachers also said that students were required to conduct research on a given topic usually in groups, and present their results by adding their own perspectives about the issue in class. The teachers had some criteria in judging their students' performance, namely, unity, continuity, adequacy of knowledge introduced, and effective communication with their peers.

On the other hand, the other teachers stated that although they tried to involve their students in critical thinking during their lessons or in homework they assigned, they could not assess their students' critical thinking in exams due to some student-related problems. First, they complained that their students did not take school serious and therefore they did not study regularly. Second, students were believed to abuse the flexibility in the system since they thought they would pass the class even if they did not study. Third, some teachers said their students did not develop a reading habit, and as a result of that situation, they were not able to answer such questions. Finally, some teachers also mentioned that their students did not have the courage and confidence to deal with such questions. These were the major reasons why some teachers preferred to ask questions merely requiring recall of knowledge.

4.5.3. Assessment of Students' Critical Thinking in Science and Technology

The findings showed that science and technology teachers in general tried to assess their students' critical thinking through questions in exams. These questions included true-false, multiple-choice, and open-ended questions.

In true-false question type, the students were given a statement, and determine whether it was true or false by applying the previously learned knowledge. One of the teachers, for instance, said,

> In the exam, I gave them the statement "Skeleton produces blood," and decide whether it was true or false. What I expect the students to do is that they will remember that bone produces blood. As skeleton is made of bone, they will reach the conclusion that skeleton produces blood.

The teacher was especially concerned about students' explaining why they thought the statement was true or false. Similarly, another science and technology teacher asked her students whether weight was a power or not. She explained,

> In order for the students to decide on this, they should recall and combine some pieces of knowledge they already acquired: These are the fact that power has a direction and the fact that weight is the force of gravity. Finally, based on these facts, they will reach the conclusion that weight is a power.

These teachers were especially concerned about accurate and logical application of knowledge to situations. Besides, they were also interested in the explanations that their students provided in answering these questions.

Besides the true or false question types, some teachers also asked multiple-choice questions in which the students were required to apply knowledge to situations. One of the teachers especially pointed out the opportunity to get students to make a lot of comparisons and contrasts while eliminating the alternatives that were not likely to be the answer.

Another science and technology teacher said that he asked his students some open-ended questions where students were to provide an explanation behind a specific situation. To exemplify, he said,

> I first give the students the following situation, 'I put some dried beans in between two pieces of cotton, keeping one of the piece in the fridge and the other in a room for some time, I observed that the one kept in the fridge did not sprout whereas the one kept in the room did.' Then I ask them to explain why.

The teacher went on to say that students were expected to remember the conditions necessary for the plants to sprout, and apply that knowledge to that

particular situation accurately. One science and technology teacher asked another open-ended question in which the students were required to generate some solutions to the problem of fungal infection. He said that students were first expected to recall what caused fungal infection, which they had previously studied in class. Then they were to think of some solutions to prevent it accordingly. Therefore, as for criteria, the students were required to explicitly or implicitly show their knowledge of the causes of the fungal infection, and offer some workable solutions accordingly.

Finally, the teachers also stated that they assessed their students' performances in the presentations. The criteria they judged these presentations by were "including their own comments in the presentations they made," "relating the knowledge to real life by providing some examples from real life so as to concretize the concepts," "presenting the result of their research with their own sentences, and from their own perspectives".

4.5.4. Assessment of Students' Critical Thinking in Mathematics

Mathematics teachers in general were quite concerned with assessing their students' critical thinking in exams. One of the teachers said, "I ask students some questions requiring students to apply their knowledge to a given situation." For instance, she explained that in testing their knowledge of surface area of a trapezoid, she asked the students to identify the trapezoid in a given shape (including rectangles, triangle etc. as well) and then do the necessary calculations, rather than giving students the shape of a trapezoid in isolation and the data concerning it and asking them to calculate its area by using the formula. Besides, some teachers said they asked their students some problems where they were expected to apply their knowledge of a mathematical subject that they covered, such as probabilities. One of the teachers pointed out that she especially tried to present an example situation or problem that they were likely to come across in their daily life so that they could get more involved in solving it.

Moreover, another mathematics teacher asked his students a graph-reading question in which the students were required to draw a logical conclusion based on a given graph, choosing among the four alternatives provided.

Besides, another teacher stated that she gave her students a set of numbers, and asked them to find the number that followed the particular set of numbers logically. At this point, she seemed to be concerned about the format of the question for the sake of attracting students' interests and attention more, which she thought led to more success on the part of the students as they concentrated more. She explained,

> In the past, I would just provide the students with the set of numbers and plainly ask them to find the number that will come next, but now just to make it more appealing for the students, I put each number in the set onto the folds of a caterpillar shape, and ask them to find the number that should come to the last fold of it.

As for criteria, it was noted that the teachers were mainly concerned with the use of a suitable method to solve the problem along with accuracy of the results.

4.5.5. Summary of Assessment of Students' Critical Thinking at Seventh Grade

Table 4.5. summarizes the results with regard to Turkish, social sciences, science and technology and mathematics teachers' efforts to assess their students' critical thinking at seventh grade.

Table: 4.5. *Assessment of Students' Critical Thinking*

Discipline	Perceptions on Assessment of Students' Critical Thinking
Turkish	Open-ended exam questions requiring students to - analyze and respond to a given text in some ways by answering such questions as "What title would be suitable for this *paragraph* or *essay*?, In what ways do you agree or disagree with the author on the issue raised in the paragraph or essay?" - read a given *poem* and find the ideas and thoughts stated in it or express the kind of feelings that it evoked, and indicate whether or not they agreed with the author of the poem and why (not) - read a *short story* and answer questions requiring critical thinking as follows: "How would you end the story if you were the author?, What lessons did you draw from this story?, What would you do if you were the character in the story?

Table 4.5. (continued)

Discipline	Perceptions on Assessment of Students' Critical Thinking
Turkish	- read *one-paragraph story* through which they analyze and evaluate a specific behavior, or an attitude displayed from their own perspectives - to complete the missing parts of a *short story* (beginning, middle, or ending) taking into account the given section of it Criteria used in judging students' responses to these open-ended questions in the exam - divergent thinking, - accurate use of language - relevance Reservations about assessment of students' critical thinking through the aforementioned open-ended questions due to - weak students - concerns with the difficulty to maintain objectivity Composition writing in the exam requiring the students to - express their own viewpoints, opinions or feelings, on a saying, a quotation, a problem, or a situation - write a poem, a composition or a short story about what a given picture remind them of Criteria used in judging students' writing in the exam - use of language - relevance - capability to support their viewpoints sufficiently Performances in debates / presentations Criteria in assessing performances in debates and presentations - clarity, adequacy, preparedness, expression of feelings, thoughts and experiences, effective communication, respect for different views, effective use of language
Social Studies	Multiple choice exam questions requiring students to - read a graph, identifying the logical conclusion given in the alternatives Open-ended questions in the exam requiring students to - discuss the positive and negative consequences of an issue - view issues within the scope of their historical context - apply the knowledge acquired to a given situation Criteria used in judging students' responses to these open-ended questions in the exam - combining their knowledge of the topic with their own ways of looking at the issue in answering such a question / original responses - ability to consider the context within which a historical event took place - accurate application of the knowledge to a given situation Performances in presentation

Table 4.5. (continued)

Discipline	Perceptions on Assessment of Students' Critical Thinking
Social Studies	Criteria in assessing performances in presentations - unity, continuity, adequacy of knowledge introduced, effective communication with their peers Reservations about assessment of students' critical thinking due to such student-related problems as - students' not taking school serious - students' perceptions of flexibility in the pass-fail system - lack of self-confidence - a lack of reading habit, which leads to failure in responding to questions requiring critical thinking
Science and Technology	True-false / multiple-choice / open-ended exam questions requiring students to - apply the knowledge acquired to a given situation Criteria used in judging students' responses - accurate and logical application of knowledge to situations, explanations as to why a given statement is right or wrong Performances in presentation - including their own comments in the presentations they made, relate the knowledge to real life by providing some examples from real life so as to concretize the concepts, present the result of their research with their own sentences, and from their own perspectives
Mathematics	Problem-solving exam questions requiring students to - apply their knowledge to a given situation Multiple choice exam questions requiring students to - read a graph, identifying the logical conclusion given in the alternatives Criteria used in judging students' responses - a suitable method to solve the problem - accurate results

4.6. Factors that Inhibit Teachers' Ability to Focus on Critical Thinking

The findings showed that the teachers, irrespective of their academic discipline, were generally discontented with the level of student participation and performance in any activity containing elements of critical thinking. They said that students were reluctant to participate in activities requiring critical thinking and even answer the questions that required them to think critically in the exams. Besides, many teachers also pointed out that some of the students who attempted to answer critical thinking questions in exams or participate in activities aiming for critical thinking performed poorly. All these factors that inhibit teachers'

endeavors to teach for and assess critical thinking will be discussed under the following headings: Cognitive entry characteristics of the students, affective entry characteristics of the students, students' expecting their teachers to teach to the central exams and depth.

Cognitive Entry Characteristics of Students: Bloom (1976) points out, "Education and learning at school are built on sets of prior learnings largely cognitive in nature. For each learning task, there are some prerequisite learnings that are required if the student is to attain the mastery of the task" (p. 167). He calls these prerequisite learnings as cognitive entry behaviors, and suggests that prerequisite learning is meaningful provided that it has availability, i.e., the remembrance and use of the prior learnings when they are required in a specific new task.

It was noted that some of the mathematics teachers interviewed were deeply concerned with their students' cognitive entry characteristics, as they thought students' *lacking prerequisite knowledge and abilities* prevented them from tackling the problems and questions requiring critical thinking. One of the teachers explained,

> There is such a problem requiring students to think critically in the course book: There are 4 bottles of milk, each of which is in different amounts [half a liter, one liter, two liters, and three liters]. The information concerning the amount of the milk and the cost is given on the bottle. They are expected to find the cheapest one. What are they going to do? They are going to work out how much one liter of milk in each of the bottle costs by means of making a calculation of proportion. Then, comparing and contrasting the findings, they will decide which product is the cheapest one. But the problem is that it is very difficult for the students to think that they need to do such a calculation of proportion. For example, most students in the classroom attempted to decide the cheapest one just by comparing the costs provided on the bottles. Even if they did think they needed to make a calculation of proportion to find the answer, they cannot do division. Besides, another problem is that the students cannot understand what they read as they have not developed reading skills yet.

The teacher believed the students read something without paying attention to what it meant.

Another mathematics teacher who shared the same concern indicated that if their students had acquired the prerequisite skills and knowledge in previous grades, and developed their reading skills which they needed in order to understand the problem or questions in the first place, they would not have had that much difficulty in getting them to solve problems requiring critical thinking at the seventh grade. Some other mathematics teachers said that they could not reach their students who lacked prerequisites by providing sufficient reviews and recycles due to the fact that they had so many things to cover. Besides, some mathematics teachers pointed out that even if they attempted to provide remedial teaching concerning the prerequisites before introducing the new topic, they could not get intended results.

In addition to the mathematics teachers who pointed out that their students lacked the prerequisite knowledge and skills needed to learn a new subject in mathematics, most Turkish, social studies and science and technology teachers were concerned about their students' *lacking some cognitive skills of critical thinking, namely, paraphrasing, summarizing, and synthesizing*, which they perceived to be the most important prerequisite critical thinking skills that students needed to have mastered in order to be able to deal with the tasks, assignments and exam questions requiring them to think critically.

These teachers commonly emphasized that their students performed poorly in dealing with any assignment or classroom task which required them to gather information on a topic through research, and synthesize the information gathered from several sources, putting together all the information and adding their own insights, perspectives and comments on the topic as well. It was revealed that dissatisfactory performance in such a task was due to students' lacking the skills of paraphrasing, summarizing and synthesizing, the skills required in conducting research on a topic and presenting the results of it. Most of the teachers stated that students only downloaded some information from the internet concerning the topic which was not always relevant to the topic, in the name of conducting research. With regard to this problem, one social studies teacher said,

> Students cannot do the research assignments properly. These assignments are usually done by the parents. In fact, there are some criteria that they

> need to consider in preparing these assignments, which include collecting information from at least 5 sources, synthesizing and presenting it with their own sentences and from their own ways of thinking. Yet, students can hardly do these tasks as they lack skills needed to conduct research.

Besides students' not knowing exactly what summarizing, paraphrasing and synthesizing involve, one of the perceived reasons why students were not good at these skills was that they had not developed a reading habit and that they had only limited vocabulary as a result of that situation, which prevented them from paraphrasing, summarizing or synthesizing.

In addition, some of the Turkish teachers interviewed also indicated that their students had difficulty in making a summary of the book they read, as they could not state their understanding of what they read with their own words and sentences. According to these teachers, as well, their students were not able to summarize and paraphrase due to a lack of reading habit.

At this point, the teachers from all four disciplines also evaluated the potential of the reading sessions to instill in students a love of reading books and help them develop a reading habit. Most teachers stated that only some students fulfilled their responsibility to read and review books, summarizing, and critiquing them in these sessions, whereas the others did not. One of the teachers who inquired why students were reluctant to spend these reading sessions reading and doing the tasks requiring them to critique the book they read said that students were expected to read the 100 books advised by the Ministry of National Education, which included classical literary works and books on history, and that the students did not find these books interesting. The teacher pointed out that students conceived the reading of these books that did not appeal to their interests merely as a duty, and that therefore, these sessions could not make them develop a reading habit. Some Turkish teachers, on the other hand, mentioned another reason why these reading sessions did not serve the purpose of developing a reading habit. They said that branch teachers, excluding Turkish teachers, were not so interested in how students spent these reading sessions. Besides, they also complained that teachers did not guide students in the selection of the books to be read, helping them to choose the books that they would like to read. Also, some Turkish teachers said that teachers in general did not monitor the students

effectively in these sessions. On the other hand, the branch teachers who were criticized by the Turkish teachers for not providing the students with effective guidance or feedback in these sessions said that they faced time restraints to cover the content in their program and that they, therefore, found it difficult to devote their attention to that issue.

Affective Entry Characteristics of Students: Affective entry characteristics are explained as a compound of interests and attitudes toward the subject matter of the learning task, the school and schooling, including more deep-seated self-concepts and personality characteristics (Bloom, 1976). Thus, it was pointed out that affective entry characteristics of the students (interests, attitudes and self-view) determine the conditions under which they will engage in learning task. Moreover, Paul (1995), who points out that higher order thinking requires more than higher order cognitive skills, suggests that the concept also includes, in a crucial way, certain attitudes, dispositions and traits of mind. He emphasizes that these affective dimensions are not merely important to critical thinking, but they are central to the effective use of higher order thinking.

At this point, it was noted that the teachers interviewed in general were greatly concerned about the affective entry characteristics of the students, including their low level of interest in learning, the particular subject matter, and tasks and assignments requiring responding, reacting and critical thinking; a lack of self-confidence; a lack of a sense of responsibility; together with the lack of some other attitudes, dispositions and traits of mind which the teachers conceived essential to the effective use of higher order thinking.

First of all, with regard to the issue of *the disinterest towards learning, the particular subject matter, the learning activities or assignments aiming for critical thinking*, the teachers from all four disciplines pointed out that they had some students in each of their classes who did not show any willingness to take part in classroom activities and discussions, or do any assignments, which they thought stemmed from the fact that these students did not believe in the value of education, that they did not set a target in their own lives, and that they had some

problems in their family. It was noted by these teachers that the lack of parental support and guidance was one of the crucial factors leading to student apathy.

Besides the lack of interest, teachers from all four disciplines were also concerned with *a lack of self-confidence* which they thought led to unwillingness to participate in activities containing elements of critical thinking. One of the Turkish teachers explained,

> Students lack self-confidence. There are only 4-5 students in each of my classes who can share their viewpoints courageously. The others prefer to remain silent since they are afraid of making mistakes and being ridiculed by their peers. That is the major problem that I observe in getting students to join in activities requiring critical thinking.

One of the social studies teachers who inquired why some students were reluctant to join such activities said, "When I ask the passive students why they do not participate in the lesson, they state that they are afraid of being mocked by their friends." The teacher went on to say that although she never allowed the students to mock their peer who took turn to express his or her views, she had difficulty in persuading those students to participate. Also, one Turkish teacher stated that these students avoided expressing their viewpoints, due to their fear that they might not express their views as effectively as their assertive friends in their class did. With regard to the issue of self-confidence, the teachers believed that both upbringing and teachers' approach in the first five grades towards their students were influential in developing students' self-confidence, which, in turn, would increase their courage to question and assert their views comfortably according to the teachers.

Next, most teachers, regardless of their academic discipline, also stated that they had difficulty in involving students *lacking a sense of responsibility*, in the learning tasks of any kind. They first emphasized the fact that the learner-centered curriculum that they were currently implementing required students to shoulder certain responsibilities for their own learning. One of the most cited responsibilities that students were expected to undertake was coming to class prepared, having read about the subject to be dealt with and / or conducted some research to get some preliminary information about the issue to be covered so that

they could join the discussions opened in class. One of the social studies teachers said,

> The participation of students [which he thought depended on whether students fulfilled their responsibility of coming to class prepared] determines how the lesson goes. You ask questions to students, and you deal with the subject according to the responses that you elicit from them. Similarly, the questions that the students ask guide the teacher in dealing with the content to a great extent.

However, he revealed that the students did not make such preparations in advance, and thus, they remained silent in class. One of the science and technology teachers stated,

> If they did some preparations about the content to be covered, for example if they read something about 'metabolism' prior to a lesson on this topic, when I raise a question about it in class, it would attract their attention as they will already have had some knowledge about it, and they would have something to say in the discussions.

The teacher said that when students come to class unprepared, the subject to be covered meant nothing for them, and they remained silent. As a result of this situation, the teacher felt compelled to step in, switching to a rather didactic mode of teaching. With regard to this issue, the teachers thought that the lack of a sense of responsibility among their students was mainly due to the practices in the first cycle of elementary education where the students had not been assigned to the task of reading or researching prior to the lesson, and the knowledge was given to the students directly by the teacher.

Also, some of the Turkish, social studies and science and technology teachers pointed out that most of their students tended to *passively accept everything they read or hear*. One of the Turkish teachers said,

> When students read a poem or an essay, a group of students state their opinions and criticisms about it. For example, there are students who make comments on the lines of a poem they read, replacing some of these by the ones they thought of. Or there are students who can present the findings of the research they conducted by adding their own perspectives. On the other hand, the majority of the students in a class tend to accept everything passively.

The teacher said their students did not question the arguments, viewpoints, or feelings stated in a text they read. She added, "They are not aware of the fact that there may be different viewpoints on a topic." Another Turkish teacher also stated that most of her students were unwilling to state their own viewpoints on a topic. She explained,

> I give out a form to the students on which they write down a summary of the book that they read, and answer such questions as 'How would you finish the story if you were the author of the book?, or what do you think about the argument raised by the author?,' etc. The responses that I get to these questions are 'I would do the same, if I were the author,' or 'I agree with the author on that.'

She said students did not like to make personal comments. Parallel to this view, one of the social sciences teachers said,

> There are many scientists from the past to the present time in our history. I want students to conduct some research on these scientists about their lives, achievements and struggles. Students download some information about these scientists and bring them to the class, even without reading them. To avoid this problem, I asked students to write, in a couple of sentences, what influenced them the most about these scientists. However, very few students did this.

At this point, the teacher pointed out that students were not predisposed to think critically as they thought critical thinking was peculiar to adults, which the participating teachers in general seemed to agree on. She said her students did not listen and read critically nor draw some conclusions, as a result of that situation.

In relation to the question of what caused students to believe that critical thinking was peculiar to adults, most teachers interviewed revealed that the way children were brought up in their family was influential. One of the teachers said, "When children are raised in an oppressive environment where they are given no opportunity to speak up, they prefer to remain silent in activities requiring them to reflect on in class." Parallel to this perspective, another teacher said,

> Some students are not given the freedom of thought in their family. They cannot express their criticisms about the ways their family members treated them. These children who are pressurized at home are not open to thinking critically and expressing their viewpoints.

This, in his view, discouraged them from participating in activities in class.

One of the Turkish teachers, on the other hand, complained about a lack of shared ground among colleagues on their approach towards the students. She explained,

> If we want our students to develop affectively as well as cognitively, if for instance, we want to develop their self-confidence, get them acquire a spirit of enterprise, develop their courage to question and think critically and develop their character, we all have to view our students, no matter how old they are, as individuals, and give up humiliating them.

At this point, she stated that while she was trying to develop students' confidence to participate more in learning tasks and activities by encouraging them and praising their efforts frequently, and criticizing them only for the misbehaviors, some other teachers were imposing tough discipline and insulting their students. "While I'm trying to encourage students by telling them, 'My students can achieve success if they want,' another teacher criticizes the students even for the questions they ask", she complained. She added that these teachers were destroying all her efforts to develop students' self-confidence and courage to question, which she viewed as an essential affective dimension needed for critical thinking. That was considered to be one of the reasons why students could not show a disposition to think critically. What is more, another Turkish teacher who was concerned about the way some students were treated by their teachers in the previous grades said,

> There are students in a classroom who were always given more opportunities to speak up in the earlier grades, besides the ones who were not. That is because these students were considered to be unintelligent. I try to focus on these neglected groups of students when they come to my classroom, by encouraging them to share their views and feelings. Yet, as they are not accustomed to this, they keep being silent.

While some teachers were concerned with students who did not open up in classroom activities requiring them to reflect their points of view, some Turkish and social studies teachers complained about students who, in their view, had *a misconception of discussion*. One of the Turkish teachers exemplified,

> Only a week ago, I tried to open a discussion on whether money brings happiness or not. As they started to discuss both sides of the issue, a quarrel broke out among students. I had to stop the discussion because they began hurling insults to each other.

One social studies teacher also indicated that when she opened up a discussion in which students were to analyze two sides of an issue, the discussion usually turned into a quarrel in which the students made offensive comments about each other's physical characteristics. According to the teachers, one of the reasons behind that was their equating a discussion with a quarrel. They also indicated that they had classrooms where students did not have good rapport with each other. One of the social studies teachers, for example, said, "Students in some of the classes do not have a good communication among each other, and just a mocking smile, or a sarcastic comment from their peers during a discussion can easily lead to some quarrels." Another commonly agreed reason why students behaved inappropriately in such discussions was that they did not try to understand other points of view on a specific topic at all, and that they were far from respecting other viewpoints. Some social studies teachers said that when students could not persuade others to adopt their own views, they behaved rudely to them. It seemed that students were concerned with reasoning selfishly from their own point of view without the benefit of understanding how others view the same issue, and therefore, they could not hold a discussion, in its real sense.

Students' Expecting their Teachers to Teach to Central Exams: Besides their cognitive and affective entry characteristics, students' expecting their teachers to teach to the central exams posed a difficulty for the teachers from all four disciplines in their efforts to get them engaged in tasks and assignments requiring them to think critically.

Almost all teachers pointed out that there was a mismatch between the programs highlighting such learner-centered elements as discovery learning, researching, critical thinking and task-based learning and the requirement of an exam-focused system, which mainly included developing multiple-choice test taking strategies. Most teachers suggested that it was only through extensive training on test-taking strategies that students got success in such central exams.

Being aware of this fact, students were reported to have certain expectations from the teacher. The teachers interviewed suggested that students were sometimes reluctant to read the stories, or conduct the learning activities in the book, and do the research assignments given as they viewed such practices as a waste of time. For example, some teachers said their students wanted them to present the subject didactically rather than conducting research themselves to learn it, in order to save more time for answering test questions. One of the science and technology teachers also said her students only tried to memorize some formulas that they could use, without questioning how they were formed. In addition, they expected their teachers to bring more tests that were likely to be asked in the central exams. As this was the case, some teachers felt compelled to bring to the classroom some multiple-choice tests that were likely to be asked in the central exams, skipping the learning activities, research assignments, and providing more explicit instruction.

Depth: Parallel to the findings revealing the impact of the teachers' efforts to integrate critical thinking into their instruction on their students, it was noted that the teachers from all four disciplines commonly agreed their students were generally either reluctant to answer exam questions requiring critical thinking or performed poorly even when they attempted to respond to these questions in the exam. The teachers cited some of the aforementioned reasons behind the poor performance in answering questions or dealing with tasks requiring critical thinking in assessment. In brief, the teachers thought some of their students could not perform at a satisfactory level in answering exam questions requiring critical thinking due to the fact that (1) they lacked prior knowledge and abilities in mathematics, (2) they had not developed effective reading skills, as a result of which students had difficulty in understanding the exam questions in the first place in four courses, (3) they lacked the skills of paraphrasing and summarizing, the two skills assumed to be essential in answering questions or dealing with tasks requiring critical thinking for assessment purposes in the Turkish course, (4) they were not accustomed to questions requiring them to use higher order thinking

skills, (5) they lacked self-confidence to tackle questions or tasks requiring critical thinking in four courses, (6) they did not set a target about their future.

Besides, the major reason for the low achievement in the assessment of students' critical thinking in mathematics was the fact that the teachers had to cover so much content in the limited time, which prevented them from providing their students with opportunities to learn a subject in depth before applying the knowledge they acquired to situations. With regard to this issue, one of the mathematics teachers argued that learning a mathematical subject was more than being able to answer some questions similar to the ones that had been answered by the teacher in class previously. She believed that students needed to be given sufficient time to think a subject through and understand its logic before applying that logic to different situations, which would be possible only through programs where depth, rather than breadth of content, could be maintained. Parallel to this perspective, another mathematics teacher indicated that students were bombarded with too much content and thus they could hardly digest a particular subject before moving to another subject. As a result, the students were not able to answer the exam questions in which they were required to apply the knowledge they acquired to different situations or problems.

4.6.1. Summary of Factors that Inhibit Teachers' Ability to Focus on Critical Thinking

Table 4.6. presents teachers' perceptions on the obstacles to the improvement of students' critical thinking across all disciplines. Besides, the discipline-specific categories with regard to the particular issue are also displayed.

Table 4.6. *Factors That Inhibit Teachers' Ability to Focus on Critical Thinking*

Category	Across All Disciplines	Discipline Specific
Cognitive Entry Characteristics of the Students		- students' lacking prerequisite knowledge and abilities in *mathematics* - students' lacking some cognitive skills of critical thinking, namely, paraphrasing, summarizing, and synthesizing needed in *social studies, Turkish and science and technology*
Affective Entry Characteristics of the Students	- the disinterest towards learning, the particular subject matter, the learning activities or assignments aiming for critical thinking - a lack of self-confidence - lack of a sense of responsibility	- tendency to passively accept everything they read or hear *social studies, Turkish and science and technology* - a misconception of discussion in *Turkish and social studies*
Students' Expecting their Teachers to Teach to the Central Exams	- reluctance to read the stories, or conduct the learning activities in the book, and do the research assignments - students' expecting their teachers to teach didactically	-
Depth		- superficial coverage of too much content resulting in low achievement in *mathematics*

4.7. Factors that Foster Teachers' Ability to Focus on Critical Thinking

Besides the majority of the teachers who expressed dissatisfaction with the level of student participation and performance in activities or questions requiring critical thinking, there were also the teachers who said that the kind of tasks that they took to their classes for the purpose of enhancing students' critical thinking generally met with positive reactions from their students. These teachers mentioned some sample classroom activities and assignments that their students eagerly did. Besides, they also pointed out that their students' performance in such activities, assignments and exam questions was getting better and better.

The point that deserves attention here is that while some teachers expressed discontentment about the student performance and participation in activities requiring critical thinking mostly due to the cognitive and affective characteristics of their students, their colleagues, who were teaching at the same school and sometimes even teaching the same class, seemed to be relatively more satisfied with their students' participation and performance in these activities. It was noticed that what differentiated these teachers from the majority and especially from their colleagues was that they mentioned some strategies to cope with, at least, some of the problems presented in Section 4.6. Thus, high participation and increasing performance in such tasks seemed to result from the resourcefulness of these teachers.

To begin with, most teachers pointed out the importance of knowing what students liked to do and bringing to the class the kind of tasks that they would eagerly do or assigning the kind of homework they would like to do. To exemplify, one of the science and technology teachers said that he sometimes gave his students some interviewing tasks where they talked to a professional to get information about a particular issue, rather than asking them to gather information about it from the books or the internet, as his students were more willing to do that. He added, "When the students do something willingly, they do it better, and they benefit more from such research. Besides, they add their personal comments more in sharing with their friends what they learned." Some assignments that he gave and his students did eagerly were interviewing a doctor about blood diseases, talking to a meteorologist in their working place about

certain meteorological events, and talking to an agricultural engineer about the effects of the chemicals used for plants to grow fast.

In addition, it was observed that most of the Turkish teachers who attached great importance to attracting students' interest and attention exploited the kind of reading texts that their students would like to read. Thus, taking into what their students would be willing to read, they exploited some short stories, songs, poems, newspaper articles, slight shows and poem recordings other than the ones in the course book. They emphasized that their students got more involved in the critical reading of the texts that appealed to their interest. Parallel to this view, another Turkish teacher who emphasized the importance of reading habit on enhancing students' critical thinking talked about her efforts to get students develop a reading habit:

> I believe that there is no point in forcing students to read. If you force them, they may dislike reading books. They should not read just because I have made them responsible for that. It should turn into a lifelong habit. What do I do for this? I try to determine first what types of books do my students like reading? I had some female students who hated reading books, for example. I advised them to read *Yeşil Kiraz* by Gülten Dayıoğlu. After they read this book, they came to me and asked for some other books. Just observing my individual students, I decide which book s/he would enjoy reading. This year, in seventh grade, for example, *Yeşil Kiraz* and *Mavi Zamanlar* were very beneficial in instilling in students a love of reading. Another thing that I pay attention is to choose books, usually narratives, to read, which are not only interesting for the students but also educative, something worth reading. Then they critique these books in the exam.

Thus, the particular teacher seemed to emphasize the merit of providing guidance in the selection of the kind of books that were more likely to develop a reading habit in students. The teachers' criteria in advising the books to be read were appropriateness of the book to the interest of the students besides its being educative.

Likewise, one of the Turkish teachers who indicated that she tried to give her students the kind of writing assignments that her students would be happy to do gave several example writing tasks that her students did eagerly. In one of these assignments, for example, she told her students, "Assume that there are two kites in the sky. One of them is you and the other is your friend. While flying in

the sky, what do you see on earth?" She said that her students saw various different things: Some of them saw the rubbish, some students, natural beauties, while some others, quarrelling people. The teacher seemed to be happy that her students offered some interesting and original ideas which they elaborated on in their writing. In another activity which she said her students were so willing to do, she told her students, "You have been delivered a box on the new year's eve. What does it contain?" The teacher said the students liked this activity as well and it inspired a lot of discussion while the students were reading aloud their writings. She especially noted that the students had the chance to use their creativity and their thinking skills in dealing with such tasks. She also said that she was able to learn more about her students' psychology, and family matters in such activities. In another writing activity, however, she asked her students to write a story and present it in a book format. The teacher said that although she assigned this task only to those who volunteered to do it, all the students did it. She added that after the students wrote their 'book', they did not forget to write the biography of the author (the students themselves) at the back cover of their book. It is noteworthy that in all these activities, students got a chance to personalize the issues raised, which may have resulted in active involvement with the task. The same teacher asked students to analyze a poem on father-child relationship written by Can Yücel to his father Hasan Ali Yücel, and express their own viewpoints with regard to the feelings and ideas expressed in the poem with a critical eye. The teacher said her students performed very well especially in responding to the feelings and viewpoints with regard to father-son relationship. It should be noted that the issue the students were asked to reflect on, father-child relationship, is something that students are already familiar with. Thus, satisfactory student performance in reacting to the issue raised in the poem can be attributed to the relevance of the issue to their own life experiences.

Similarly, some mathematics teachers emphasized that students were more willing to do the tasks that were relevant to their real life. One of the mathematics teachers said,

> In the past, we would mechanically ask students to do some mathematical operations. But now we introduce some problems that they are likely to

> encounter in their daily life as well. The students see how mathematics is used in their daily life. For instance, in solving a problem in which they decide on the most economical product, they actually practice how to economize at supermarket shopping. Therefore, they get more involved in such tasks.

The teacher said the students performed better as they concentrated more on a relevant task. Besides, the teacher also indicated that the students were more likely to apply what they learn in their life.

Besides, one Turkish teacher and one science and technology teacher who pointed out that they had students with differing levels and backgrounds in a class revealed that the tasks and assignments provided in the course book did not address each of the students in their class. Therefore, they said that they provided their students with some options to choose among, especially when they assigned them homework. They pointed out that their students had a chance to choose the tasks which they would like to do, and which was more appropriate for their level. These teachers said that they got better results when they provided students with some alternatives to select from. For example, one of the teachers asked his students in a class to either conduct a survey about the reading habits of the people living in their environment or do some research on a topic of their concern. He said his students had a chance to choose the task that they wanted to conduct, and that they were able to use their creativity and imagination more in such a case.

Moreover, one of the science and technology teachers whose students came from low-income families pointed out that when she first implemented the program, she realized that her students were not able to do the research assignments as they did not have any access to books, libraries or internet. Besides, she noticed that not all her students could afford to go to the internet cafes to do their research. Thus, to enable her students to do their research, with the support of the administration, she arranged a room with computers and an access to internet where students could go after class to do their search. Another problem was that her students had difficulty in coming together to do their group work assignments after class as the parents did not allow their children to go to their friends' house. To eliminate this problem, she got students to do their meetings in the school laboratory, which was available all afternoon. The teacher

said the students had a chance to work more collaboratively and effectively in group works.

Also, several teachers from all four disciplines who seemed to ensure active participation and better performance in tasks and assignments requiring critical thinking emphasized the importance of the teacher guidance while the students were doing these tasks. They said that providing students with a set of guiding questions when assigning such a task helped students to consider the important aspects of the issue to be researched, its causes and effects, advantages and disadvantages and their own perceptions of it. Besides giving guiding questions which acted as a route map for the students in doing their search, they explained that they guided their students by helping them about the sources the students could get information from. Moreover, they also said they gave feedback to their students about how they were going, and what else they could do while they were carrying out the task. These teachers said that when the students were provided with guidance, they knew what they were expected to do, and thus, they did better work.

In addition to teacher guidance, one of the Turkish teachers emphasized the importance of teachers' praising students for the good work they had done on encouraging students to participate more in activities requiring critical thinking. She said,

> For example, when I'm giving my students feedback, in class, on a composition they have written, I try to highlight the strengths of their writing more than the weaknesses. I believe when students get teachers' praise, their self-confidence increases. [Previously, the teacher indicated that her students coming from socio-economically low background lacked self-confidence.] And this gives them a sense of achievement.

She also added that it helped to establish good rapport between the teacher and students, which she deemed to be necessary in ensuring students' participation in class. Furthermore, unlike the teachers who complained about the fact that students showed the willingness to fulfill a responsibility only if they were extrinsically motivated (by grades, plus or minuses, presents), several teachers from all branches seemed to turn this into a kind of opportunity to make their students participate more in classroom activities or assignments. One of the

Turkish teachers said, “To encourage the students to speak up more, I give the active students some pluses, which are considered in their final grade.” She added that her students got more motivated to participate in activities as a result. One of the social studies teachers who frequently gave her students some mock tests requiring critical thinking said she gave the most successful ones some small presents like a sticker, pen, or ice-cream. She said that such rewards increased students’ motivation to study more and achieve.

Furthermore, some teachers from all four disciplines stated that as a result of their efforts to concretize the concepts in the minds of their students through demonstrations, pictures, realia, maps, exemplifications, or experiments, they found it easier to get students to clearly grasp the concepts being studied. They suggested that a clear understanding of the concept dealt with, in turn, triggered more critical questions from the students. Besides, the teachers said their students were more likely to tackle some problems or questions requiring them to think critically when they were given some opportunities to adequately understand the relevant concepts.

What is more, some teachers who were concerned about the egocentric students who granted no respect for ‘others’ and ‘other’ viewpoints and thus, had no qualms about attacking their peers verbally in the discussions said that they tried to get their students to acquire the dispositions of self-reflection and self-criticism. To this end, one of the social studies teachers gave her students an important ‘homework’. She said,

> I encourage my students to think, when they go to bed, how they treated their parents, friends, or teachers that day. I tell them that if they can answer that question honestly, without lying to themselves, that means they have made a self-criticism. Thus, I try to instill in my students a sense of self-criticism. The following day, they come and apologize me for their rude behaviors. This, way, I try to plant the seeds of self-criticism. The good thing is that I get good results of my endeavors to develop an attitude to self-criticize.

In line with this perspective, one of the mathematics teachers also got her students to make self-criticism. She said,

> When people do not get engaged in self-criticism, they continue doing the same mistakes. Therefore, I ask my students to make self-criticism by asking themselves every night, 'Did I listen to the lesson actively?, did I actively participate in the lesson?, did I treat any of my friends badly?, If I was treated badly by someone that day, was it his / her fault or mine? This way, I get my students to listen to themselves.

Another mathematics teacher whose students come from high-income families said that every year she took her students to the children's home, the home for the old, or the center physically handicapped children attended. She said, "Spending time with these people, I make the students to realize that there are some 'other' people around them who lived in conditions 'different' from theirs. I get them to empathize with these people." Through such extracurricular activities, the teacher seemed to aim at helping students get rid of their egocentric attitudes.

Finally, as for the student performance in exam questions requiring critical thinking, however, only some Turkish teachers and social studies teachers indicated that their students performed well in such exam questions. The other teachers whose teaching practices with regard to critical thinking development got positive reactions from their students said that their students had not been very good at answering such questions in the exam yet. On the other hand, most of these teachers indicated that they observed some improvement compared to past. When all these teachers were asked the reason behind satisfactory or improving performance in exam questions requiring critical thinking, they commonly emphasized the importance of the maintenance of parallelism between the classroom practices and assessment. Thus, they suggested that the more the students were offered opportunities to be engaged in tasks and assignments in class for the purpose of enhancing critical thinking, the better they would perform in such questions in the exam.

4.7.1. Summary of Factors that Foster Teachers' Ability to Focus on Critical Thinking

Table 4.7. displays teachers' perceptions on the opportunities for the development of students' critical thinking.

Table. 4.7. *Factors That Foster Teachers' Ability to Focus on Critical Thinking*

Across All Disciplines	Discipline Specific
- knowing what the students liked to do and bringing to the class the kind of tasks that they would eagerly do or assigning the kind of homework they would like to do - giving guiding question acting as a route map for the students in doing their search, guiding the students by helping them about the sources the students can get information from, giving feedback to the students about how they are going, and what else they can do while they are carrying out the task - concretizing the concepts in the minds of the students through demonstrations, pictures, realia, maps, exemplifications, or experiments in order to get students to clearly grasp the concepts being studied, the first step to think critically - maintenance of parallelism between the classroom practices and assessment with regard to critical thinking development	- providing guidance in the selection of the kind of books that were more likely to develop a reading habit in students in the *Turkish* course - ensuring that issues covered in a reading material exploited in the *Turkish* course / a problem to be solved in the *mathematics* course is relevant to students' own life experiences - providing students with differing levels and backgrounds in a class with some options to choose among, in giving assignment in *Turkish* and *science and technology* course - helping students who are socio-economically deprived and thus have no access to books, libraries or internet to reach sources to conduct their research and prepare for group work tasks in *science and technology* course - teachers' praising students for the good work they have done to increase their self-confidence and encourage them to participate more in activities requiring critical thinking in *Turkish* course - getting their students to acquire the dispositions of self-reflection and self-criticisms and overcoming egocentricity in *mathematics* and *social studies* courses

CHAPTER V

CONCLUSIONS AND IMPLICATIONS

This research study aimed to shed light on teachers' conceptions of critical thinking and practices for critical thinking development at seventh grade level. This chapter aims to present the conclusions of the study with regard to teachers' conceptions of critical thinking, perceptions on critical thinking development process, planning for the integration of critical thinking into instruction at seventh grade, practices for the integration of critical thinking into instruction at seventh grade, assessment of students' critical thinking at seventh grade, factors that inhibit teachers' ability to focus on critical thinking and factors that foster teachers' ability to focus on critical thinking. Also, the implications for practice and further research will also be discussed.

5.1. Teachers' Conceptions of Critical Thinking

Nugent (1990) lists five prerequisites for teaching critical thinking, two of which include the belief that teachers must have a sufficiently liberal definition of critical thinking and that educators must know how they come to understand critical thinking. Similarly, Kuhn (1999) argues that it is necessary to have a more systematic and precise definition of critical thinking if teaching it is to be a meaningful educational goal. Furthermore, Smith (1991) also indicates that the first step in making a commitment to critical thinking is to establish a definition that is manageable. Many research studies also showed that teachers who conceptualized critical thinking and were aware of strategies to teach for critical thinking did a better job regarding teaching thinking skills. Onosko (1991) found that teachers who developed a concept of critical thinking tended to have classrooms with a measurable climate of thoughtfulness and that how teachers

perceived thinking might inform instructional theory, which in turn could inform practice. Thus, the present research study aimed to investigate how teachers at elementary schools, who have been in charge of implementing a program which appears to place a high priority on the enhancement of students' critical thinking come to understand its meaning, purpose, and dimensions.

The findings with regard to teachers' *definitions* of critical thinking revealed that teachers were able to define critical thinking with reference to some skills, abilities, or dispositions, which, they thought, were closely associated with critical thinking, rather than defining it in general terms. This implied that although individual teachers had some notion of critical thinking, it was restricted to a limited number of skills and / or dispositions, which they believed constituted critical thinking. It was also observed that while few teachers were able to elaborate on their understanding of critical thinking by referring to more of these skills and dispositions of critical thinking and exemplifying, with some classroom events or practices, what these skills or dispositions involved, the others were able to provide a more superficial understanding of the concept as they could touch upon very few dimensions of critical thinking. This finding is actually parallel with several research studies on teachers' conceptions of critical thinking. Alazzi (2008) found that social studies teachers did not have a comprehensive concept of what critical thinking meant. Also, Innabi and Sheikh (2006), who studied secondary school teachers' conceptions of critical thinking, found that they did not have an adequate understanding of critical thinking.

An analysis of teachers' definitions also unraveled teachers' perceptions of why one thinks critically. According to the results, teachers believed that people thought critically for the purpose of understanding issues clearly and adequately, discovering the truth, reaching a judgment and solving a problem. In fact, all these purposes of critical thinking were also highlighted in the definitions suggested by a number of major theorists (Astleitner, 2001; Bickenbach and Davis, 1997; Browne and Keeley, 1990; Cüceloğlu, 1994; Kurfiss, 1988; Scriven and Paul, 1996). Similarly, Bailin et al. (1999) suggest that thinking regarded as critical thinking must be directed toward some end or purpose such as answering a question, making a decision, solving a problem, resolving an issue, devising a

plan, or carrying out a project. According to these authors, thinking that serves such purposes are characterized as thinking aimed at forming a judgment, i.e, making up one's mind about what to believe or do.

As for the requirements of critical thinking, teachers, from all four disciplines, seemed to be concerned with a set of prerequisites to critical thinking including a good command of the native language, prior knowledge and experience concerning the issue, and a disposition to think critically, all of which received a lot of attention from most authors in the literature. As for language, Aylesworth and Regan (1969) and Garcia and Valenzuela (2004) also point out that language is a necessary tool in the critical thinking process with the belief that it is through language that we can rethink ideas related to ourselves and build ideological constructs that will assist in developing a cultural foundation for self. Siegel and Carey (1999) who emphasize the role of language on critical thinking say,

> Language allows individuals to name their world. In naming the world, some chunk of subjective experience becomes objective. Language provides the sign that make thinking public, and it does another thing: It allows language users to distance themselves from their knowing. Ideas can be set aside, looked at, thought about, and evaluated (p. vi-vii).

They add that having a theory of critical thinking in which language plays a key role opens up instructional potentials. With regard to prior knowledge and experience, Bailin et al. (1999) point out that critical thinking always takes place in the context of already existing concepts, beliefs, values and ways of acting. This context, in their view, plays a very important role in deciding what will count as sensible or reasonable application of standards and principles of good thinking. Thus, according to the authors, the depth of knowledge, understanding and experience people have in a particular area of study or practice is a significant determinant of the extent to which they are capable of thinking critically in that area. Furthermore, attitudes or dispositions such as a "spirit of inquiry" are also seen by writers in the field as very important (Ennis, 1993; Tishman, 1993). On the other hand, teachers seemed to establish a link between intelligence and the capability to think critically. In fact, in a review of research on teachers' conceptions of critical thinking, the findings revealed the same misconception that

critical thinking was an "entity" associated with the level of one's intelligence. Thus, although teachers across all four disciplines believed that critical thinking was "developmental," that is, a skill that could be enhanced over the course of one's life especially through schooling, they also seemed to hold the view that intelligent people were at an advantage in thinking critically due to their capacity to use their brain and perceptiveness. This further implied that intelligence mattered more than dispositions to think critically in their conceptions of critical thinking.

The findings also revealed that there was consensus among teachers on a number of cognitive and affective dimensions along with certain criteria for critical thinking. In this sense, the findings of the present study is not parallel with that of Innabi and Sheikh (2006), who studied secondary school mathematics teachers' conception of critical thinking and found that teachers seemed to emphasize different aspects of critical thinking when they attempted to explain their concept of critical thinking, and thus, there was no consensus among teachers on what critical thinking involved.

As for the *cognitive skills* of critical thinking, across all four branches, teachers agreed that the cognitive skills of critical thinking were considering issues from different angles, making connections between prior knowledge and the new knowledge, listening actively, drawing conclusions, analyzing, making a synthesis, applying knowledge to different situations, and noting similarities and differences. Besides the cognitive skills of critical thinking that teachers from all four disciplines agreed upon, there was one discipline-specific cognitive skill, critical reading skill, which almost all the Turkish teachers attended to. It was observed that all these cognitive skills that teachers thought central to critical thinking were cited by various authors in the literature. It was noted that among these skills, considering issues from different angles received most of the attention from the participating teachers. With regard to this skill, Brookfield (1987) conceives the capacity to imagine and explore alternatives to existing ways of thinking from one's own particular ways of thinking as essential to critical thinking. Furthermore, Meyers (1986) regards the chief component of critical thinking as the ability to build on one's past experiences, knowledge and existing

mental structures. As for listening actively, Brookfield (1987) points out that taking on others' perspectives and coming to understand things from their viewpoints is the essence of attentive listening. Analysis, synthesis, and applying knowledge together with drawing conclusions and noting similarities and differences have also been widely acknowledged as some important cognitive dimensions of critical thinking as it is evident in the definitions of major theorists. What is more, Smith (1991) also pointed out the importance of critical reading skill which involved judging the veracity, worth and validity of what one read especially in educating children to become a more intelligent voter, citizen and consumer as a result of their informed skepticism. To sum up, the findings show that teachers across all four disciplines commonly cited some of the cognitive thinking skills that have been emphasized by various authors in the literature.

As for the *dispositions*, affective traits or habits of mind connected with critical thinking, across all four academic disciplines, students capable of thinking critically were characterized by the courage to question, assertiveness, self-confidence, curiosity to learn, sensitivity, respect for others and other viewpoints, effective communication, a sense of responsibility and a reading habit. The findings with regard to teachers' perceptions of dispositions revealed that most of the dispositions that teachers viewed central to critical thinking correspond to some of the intellectual virtues, that is, the traits of mind and character necessary for critical thinking in Paul's framework. For example, the courage to question, together with assertiveness and sensitivity, seem to be parallel with intellectual courage, which refers to the willingness to face, question, and fairly assess ideas, beliefs, or viewpoints encountered. Self-confidence, on the other hand, appears to be congruent with intellectual confidence or faith in reason. Moreover, curiosity to learn corresponds to Paul's intellectual curiosity, by which he meant "a strong desire to deeply understand, to figure out things, to propose and assess useful and plausible hypothesis and explanations, to learn and to find out" (p. 535). Respect for others and other viewpoints and effective communication, two of the dispositions cited the most by teachers across all four disciplines, however, referred to intellectual civility, which was, in Paul's view, a commitment to take others seriously as thinkers, to treat them as intellectual equals, to grant respect

and full attention to their views. He especially distinguishes it from intellectual rudeness, that is, verbally attacking others, dismissing them, stereotyping their views, and emphasizes that intellectual civility was not a matter of courtesy, but a sense that communication itself requires honoring others' views and their capacity to reason. Finally, a sense of responsibility that teachers thought was essential to critical thinking seems to match with intellectual responsibility in Paul's framework. Accordingly, the responsible person was believed to keenly feel the obligation to fulfill his or her duties with a high degree of precision and accuracy and be deeply committed to gathering complete, relevant, and adequate evidence. What is more, as Garcia and Valenzuela (2004) also points out, an eagerness to read critically also help develop a disposition to think critically. Similarly, the participating teachers in this study suggested that development of a reading habit would help enhance critical reading skills and thus critical thinking.

Thinking about what to believe or do must meet appropriate standards if it is to be regarded as critical thinking (Ennis, 1993). The *criteria* which teachers, irrespective of their disciplines, said they judged their students' critical thinking by included grasping, originality of points of view put forward, sufficient evidence to support their line of thought, accuracy of the results they reached, clarity, and logicalness. Along with these criteria held across all four disciplines, genuineness of the criticism emphasized by Turkish teachers and considering historical issues within the scope of their historical context by some social studies teachers were the two discipline-specific criteria. It was observed that the criteria that teachers uttered correspond to some of the standards of critical thinking commonly suggested by several authors. For instance, grasping corresponds to one of Bailin's standards for assessing one's critical thinking: Thinking critically in deciding whether to accept or reject a viewpoint or argument requires a clear understanding of the nature of the viewpoint or argument being judged. On the other hand, conceiving the ability to consider issues from different angles as central to critical thinking, the teachers interviewed said they expected their students to produce some "original" "creative," or "divergent" responses that they came up with through their own particular ways of thinking. Also, sufficient evidence, accuracy, clarity and logicalness were the four criteria which Paul

(1995) and many other authors in the literature commonly attended to. Furthermore, it was found out that different from the research studies on teachers' conceptions of critical thinking, the present study revealed that some Turkish teachers commonly attended to the genuineness of the criticisms raised by students. This further implied that criticisms that were made for the sake of doing so were dismissed by the Turkish teachers in this study. Similarly, the particular study also highlighted the importance attached to "considering issues within the scope of their historical context" by social studies teachers both as a cognitive dimension of critical thinking and criteria for critical thinking.

Finally, it was noticed that across all four disciplines, teachers tended to equate critical thinking with *problem-solving* and *creative thinking*. They seemed to believe that critical thinking students had some problem-solving skills. Besides, they also tended to hold the view that critical thinking students were more creative than others as they were able to put forward divergent ideas. In the literature, critical thinking has been contrasted with problem-solving and creative thinking. With regard to problem-solving, most authors agree that problem solving is seen as arenas in which critical thinking should take place (Bailin et al, 1999). In relation to creative thinking, it is commonly agreed that one may think critically while engaged in creative thinking. Similarly, it is pointed out that one may need to be creative in thinking critically about problems or issues. At this point, Bailin et al. (1999) emphasize that critical thinking often requires imagining possible consequences, generating original approaches and identifying alternative perspectives. Thus, they believe creativity plays an important role in thinking critically. It should be noted that teachers' equating critical thinking with creative thinking also explain why they perceived originality, creativity, or divergence as a standard of critical thinking.

5.2. Teachers' Perceptions on the Process of Critical Thinking Development

The findings regarding teachers' perceptions of *acquisition of critical thinking* revealed that rather than conceiving critical thinking only as an innate ability, they perceived it as an inborn ability which could be developed with the

influence of upbringing, schooling, social environment, media and the society. Along with these influences, teachers also believed that intelligence and inheritance were two important factors that determined how much a person thought critically. They perceived intelligence as an ability to perceive and understand things quickly and easily and they believed intelligence, together with the qualities that students inherited from their families, accounted for the degree which one could think critically. As a result of that situation, unintelligence and personal traits not conducive to critical thinking which, they thought, the students "inherited" were conceived to be some obstacles in the way of enhancing students' critical thinking. These seem to be the sources of teachers' low expectations of students. Teachers who held this view pointed out that these two factors partially constituted the reason behind dissatisfactory performance in tasks requiring critical thinking or failure in exams assessing critical thinking.

On the other hand, teachers said they assumed certain *roles* in enhancing students' critical thinking. For the purpose of promoting students' critical thinking, they said they modeled their students in getting them to become more assertive and challenging their students to raise their objections and modeling alternative views in discussions. While teachers were talking about the roles they assumed with the purpose of enhancing students' critical thinking, they referred to some of the principles of the programs, which they thought contributed to students' critical thinking. These included discovery methods of learning, experiential learning, and assigning students to the task of researching, which, in their view, triggered critical thought. Also, teachers said they undertook roles in providing students with opportunities to look at issues from different angles across all disciplines and read critically in Turkish courses – two skills conceived as some cognitive processes of critical thinking. Teachers' acting as model thinkers and then encouraging their students to imitate them much as apprentices do in the craft guilds, their asking questions in a manner that stimulates students to challenge their own views and to compare their views with those of their peers, and their getting students to be involved in comparing and contrasting, looking for and exploring alternatives, judging worthiness, and applying values to their own lives were also some of the roles that were cited in the literature (Brookfield,

1987; Dam and Volman, 2004; Paul, 1995; Smith, 1991). On the other hand, what all these authors emphasize strongly along with the aforementioned roles emphasized by the participating teachers in this study was teachers' allowing for more student interaction and cooperative learning. They commonly agree that the social process of interacting and collaborating to achieve a common purpose in class has a significant advantage for critical thinking as it forces ideas into a public forum. At this point, Johnson and Johnson (1986) who studied the effect of cooperative learning on students' achievement level also indicate that in cooperative learning situations more students achieve at higher levels and they retain the information longer. They reveal that talking about their school work rather than quietly completing worksheets gives students an opportunity to be more actively involved and more responsible for their own learning. It helps them become critical thinkers. As Johnson and Johnson indicate cooperative learning has been shown to facilitate the mastery of concepts, the application of information to other settings, problem-solving skills, creativity, verbal skills and the ability to take another person's perspective, which all, in turn, relate to critical thinking. Therefore, they suggest that teachers should assume a role in allowing for cooperative learning.

Furthermore, across all disciplines, teachers seemed to be in favor of a *content-oriented view* of teaching critical thinking with the belief that teaching was more than the transmission of knowledge, and that students could learn content provided that they questioned or thought it through in the process of acquiring knowledge. This implied that teachers regarded critical thinking as a means of learning. What is more, they viewed content as a means of thinking critically. Thereby, they all believed that critical thinking should be at the heart of all programs. It was noticed that they all seemed to agree that each of the academic disciplines provided a fertile ground for critical thinking development. Therefore, they argued that every course could help students to develop different dimensions of critical thinking. At this point, in order to actualize the content-oriented teaching of critical thinking, teachers mentioned two prerequisites: Professional development of teachers throughout their education at university and their teaching career and teacher cooperation at all levels of elementary education.

Meanwhile, across all academic disciplines, teachers also stated that students could benefit from a separate course aiming at enhancing students' critical thinking in addition to the integration of critical thinking into instruction in all courses.

At this point, the literature review revealed that there is a debate among educators about whether critical thinking should be taught in a course devoted particularly to it or infused into other courses (Beyer, 1988; Burden, 1998; Johnson, 2000; Maclure, 1991; Nisbet, 1993). On the one hand, it has been highlighted that infusion approach can provide for learning standards and principles of good thinking and appropriate habits of mind in a number of important contexts in history, art, music, science, mathematics, and language. On the other hand, it is pointed out that the courses where critical thinking is integrated into instruction do not engage students in thinking critically about what Paul (1995) calls multilogical problems that fall outside the boundaries of particular disciplines and require knowledge of several different kinds. Thus, Bailin et al. (1999) suggest that it is a mistake to choose between these two approaches and that there is a need for both infusion and special courses in critical thinking. They further explain that what is important is that appropriate habits of mind and appropriate use of intellectual resources are exemplified for students, and that they are given guided practice in critical thinking in appropriately rich contexts. The teachers interviewed also tended to be eclectic in their approach to teaching critical thinking. Thus, the particular result of the study is consistent with that of the study conducted by Yıldırım (1994).

With regard to the teachers' perceptions in relation to the *conditions* necessary to develop students' critical thinking, it was revealed that teachers from all four disciplines were concerned about reasonable class size so as to ensure the participation of all students questioning, drawing conclusions and expressing their own points of view, a classroom environment with such elements as "an encouraging teacher who promoted broad-mindedness", "a democratic environment," "good rapport," "respect for each other and respect for different views," "politeness," and "genuine communication," thematically designed and technologically equipped classrooms and cooperation among teachers. In the

thinking skills literature, there is an especially strong emphasis on the importance of classroom climate. Orr and Klein (1991) go so far as to say,

> Teachers and administrators should systematically evaluate the general culture of their classrooms and schools and should estimate how this culture affects their ability to promote critical reasoning habits among students" (p.131).

The point made by these writers and many others is that moving beyond one's mental habits and experimenting with new ways of looking at things involve risk. In order for students to be willing to participate in such activities, they

> need to feel free to explore and express opinions, to examine alternative positions on controversial topics, and to justify beliefs about what is true and good, while participating in an orderly classroom discourse" (Thacker, cited in Gough 1991, p. 5).

Along with these conditions necessary to develop students' critical thinking, Brookfield (1987) believes that one of the conditions necessary to foster critical thinking is to first have critical teachers. Borrowing from Freire, Shor (1980, cited in Brookfield, 1987) identifies the characteristics of competence, courage, risk taking, humility, and political clarity as necessary to be considered "critical."

5.3. Planning for the Integration of Critical Thinking into Instruction at Seventh Grade

The themes that emerged from the data regarding teachers' assessment of all four programs (Turkish, social studies, science and technology, and mathematics) in terms of their effectiveness in teaching for critical thinking and the alterations that they made to their programs in their efforts to eliminate the limitations of the programs and set the ground for their students to think critically yielded some discipline-specific thematic categories and a general category. The discipline-specific categories included text selection, spiraled curriculum, unity, objectivity, and learning activities whereas the general category was depth of coverage.

Most Turkish teachers, who attended to the quality of the *text* to be introduced for the purpose of getting students to read critically, commonly agreed

that the texts were not suitable for their students due to the fact that they did not attract their interest, that they included too much unknown vocabulary, and that they lacked contextual clues for the students to deduce the meaning of the unknown words. Due to these limitations of the texts in the course book, some Turkish teachers stated that they chose to exploit the ones which had the potential to arouse students' interests, included the amount of vocabulary that their students could tolerate, and contained sufficient clues for the students to guess the unknown words from context. It was noted that among these three alterations, the one that teachers laid greater emphasis on was exploitation of some other texts which had the capability to kindle an interest, which, in turn, inspired students to read critically in teachers' view. "Stories with an interesting plot, twists and turns and a happy ending," "songs, poems, slight-shows and newspaper articles touching upon the current issues," "the literary works of authors that students were more familiar with" were the ones that teachers exploited.

Research on critical thinking development in class has shown that the importance of input to initiate critical thinking is a neglected issue. Garrison et al. (2001) introduced a four-step model of critical thinking which included a triggering event for the purpose of activating the critical thinking process with the belief that it was only through such an event that it would be possible to proceed with exploration, integration and resolution. The triggering event was the one which involved a dilemma or a controversy. According to these authors, it was the teachers' responsibility to define or identify one such event for students to think critically. Likewise, to encourage students to think critically, Schmoker (2007) and Shanahan (2003) also place a high priority on the use of good texts to create catalysts for inquiry. Also, Raffetry (1999) makes a distinction between narrative literacy and expository literacy. She associates the former with "learning to read" and the latter with "reading to learn." She points out the importance of narrative literacy in teaching students to understand what they read and in equipping them with the skills that they will use while they are reading to learn. What is more, As Fazio (1995, cited in Leader and Middleton, 1999), who studied the factors which helped to trigger critical thinking and retain the attitudes associated with thinking critically in memory for their successful transfer from one context to another, puts

it, direct experience and sensory experience ensured by narrative texts, that is, real life stories, help students to commit themselves to an issue as reading a story in which one of the characters that learners identify themselves with act upon his / her problems in an authentic situation creates opportunities for direct experience. That is why some of the Turkish teachers interviewed said they preferred to exploit some stories that are likely to attract their attention and interest and thus, get students to be engaged in critical thinking.

The particular finding of the study is also parallel with that of Türkmen-Dağlı's (2008). In a qualitative study where she investigated teachers' integration of critical thinking into planning stage, she found out that the teachers were concerned with the fact that they were not always interesting for the students, that they were about trivial issues, and that they did not serve as springboards to start class discussions. She revealed it was one of the participating teachers that compensated for these problems in the course book by writing on his real life experiences and dilemmas in a story and exploiting it, in an attempt to contextualize the issues, corresponding to the direct experience component of critical thinking described by Fazio.

Most mathematics teachers were concerned about the "problems" that a curriculum where the content was arranged *spirally* brought along with. First, despite the fact that curriculum developers intended to allow for continuity, the planned repetition of content at successive levels each time at an increased level of complexity, by means of the spiraling of the mathematical content, according to most mathematics teachers, spiral curriculum posed some difficulties for the teachers. First, most teachers argued that in spiral curriculum, they were required to move to another subject before they did sufficient practice for high level understanding of the subject, involving analyzing, applying knowledge to situations and interpreting. Second, mathematics teachers indicated that when they turned back to a subject, they usually found that students had forgotten all about what they had covered before. In such a case, they needed a lot of reviews which, they asserted, led to unnecessary repetitions and time restraints to cover the new aspect or dimension of the subject. Therefore, some mathematics teachers preferred to combine all the fragments scattered around different units and deal

with these as a whole, which the teachers themselves and students were accustomed to, before the curricular change. They argued that by doing so, they found it easier for the students to make connections and build upon their knowledge, which they conceived as one of the cognitive processes of critical thinking. Thus, the difficulty seemed to stem from the fact that breadth is more emphasized than depth of coverage. In such a case, spiraled curriculum did not work as students lacked prior knowledge.

Another field-specific theme was *unity*. Some social studies teachers pointed out that due to a lack of interrelations in the arrangement of the historical events, the students found it difficult to make connections between and among different historical events. Therefore, they tried to provide "unity" by providing students with clues or additional input especially with regard to the historical context that an event took place in. Furthermore, one of the social studies teachers who believed that a curriculum highlighting critical thinking needed to maintain *objectivity* in historical content said that the seventh grade curriculum was far from getting students to see both sides of an issue. Thus, she herself provided students with opportunities to consider both sides of issues. Langer (1997) is one of the researchers who is concerned with teachers presenting content 'mindfully.' Langer's view is that teachers should learn to teach multiple perspectives and focus on linkages and similarities of content. Parallel to this view, in the present study, some of the social studies teachers pointed out that maintenance of coherence, unity, and objectivity in dealing with history content allowed opportunities for students to think critically.

Both social studies teachers and science and technology teachers were concerned about the potential of *learning activities* to teach for critical thinking. It was revealed that for a learning activity to trigger critical thought, it needed to attract students' interest and curiosity, serve the purpose of concretizing a concept in the minds of the students, and address the level of the students – not too difficult nor too easy. It was observed that several teachers made adaptations to learning activities in the course book by replacing these with the ones which met the three qualities mentioned above.

Along with all these field-specific themes, *depth* of coverage was an element which teachers across all four disciplines attended to. On the other hand, they all pointed out that the programs they implemented lacked depth. To social studies teachers, this meant being unable to get students to view the historical issues within the larger context they took place in. In other words, the social studies curriculum failed to present historical events and issues with reference to the prevailing circumstances surrounding these events due to its emphasis on superficial coverage of too much content in isolation. Similarly, to mathematics teachers, lack of depth meant having to cover lots of concepts without giving students opportunities to digest and reinforce what they learned. It was noted that several social studies teachers and mathematics teachers tried to allow for in-depth understanding of some of the topics. Yet, they said they faced time restraints when they attempted to deal with the topics that they were required to cover in the curriculum, in depth. Finally, some Turkish teachers pointed out that the overload of learning activities in the course book prevented them from allowing sufficient thinking time for the students during the activities and giving all students in the class an equal chance to express their views, opinions and feelings. Therefore, several teachers preferred to skip some of the activities so as to be able to conduct *thoroughly* the ones they had chosen. Paul (1995), who distinguishes between didactic theory of learning and critical theory of learning, indicates that if a critical theory of learning is to be adopted, depth rather than breadth should be the focus of the program. That is, it is more important to cover a small amount of knowledge or information in depth (deeply probing its foundation) than to cover a great deal of knowledge superficially. However, it was showed that teachers across all four disciplines were concerned about having to cover too much content in implementing a curriculum where breadth was granted more importance than depth. The particular finding of the study is consistent with that of Onosko's (1991) which revealed that placing emphasis on breadth rather than depth prevented teachers from providing opportunities for their students to think critically.

As can be seen above, teachers' perceptions on the limitations of the programs in terms of their potential to teach for critical thinking and the

adjustments that they made to the programs to this end inform us about the qualities of a program focusing on critical thinking development and thus add to our understanding of what a "critical" thinking curriculum should be like from the practitioners' point of view.

5.4. Practices for the Integration of Critical Thinking into Instruction at Seventh Grade

The findings with regard to the practices of teachers in their effort to teach for critical thinking revealed that critical reading tasks, questioning, role-playing activities, tasks and questions for the purpose of considering issues from different angles, experiments, concept-mapping, games, keeping a diary, focus on process rather than product in problem solving, experiential learning and students' researching were some of the instructional strategies, activities or assignments that teachers made use of in their efforts to teach for critical thinking. It was noted that some of these strategies and activities were discipline-specific whereas others were the ones used across several academic disciplines.

Critical reading tasks that Turkish teachers conducted in the pre-, while-, and post-reading stages of the reading lessons constituted the main tools for the purpose of getting students to think critically on points of view, arguments and feelings stated in a variety of literary texts ranging from essays to poems. Besides, with the aim of getting students to develop the habit of reading books, students were required to read and review books and columns. It was noted that Turkish teachers gave students some guiding questions which encouraged them to question and evaluate the arguments and ideas stated in them and relate what they read to their own life experiences.

Russel (1956) suggests four conditions essential for critical thinking: (1) knowledge of the field in which the reading is being done, (2) an attitude of questioning and suspended judgment, (3) some application of the methods of logical analysis or scientific inquiry, (4) taking action in light of the analysis or reasoning. At this point, Smith (1991) points out that neither teachers nor students can meet all these conditions at all times. In other words, neither adults nor children can be equipped with background knowledge in every field in which they

must read. They indicate that it is necessary to equip students with an attitude of general awareness so that they can detect unsupported statements, sweeping generalizations and conclusions that have been drawn haphazardly. To them, as part of his training, a student should be taught to recognize his biases and deal with them as a factor in the way he reacts to the printed word. Teachers, thereby, need to foster an attitude of inquiry when they teach the techniques of critical thinking. The authors further suggest that getting students to interpret the writer's message – a process called reading between lines, in which students identify the main and support ideas in a text and evaluating or making judgments as to the worth of the message in the text are two main tasks for the purpose of getting students to acquire a habit of reading critically. It was observed that all the questions or tasks that the Turkish teachers asked their students or conducted in dealing with a text or book served the particular aim adequately.

Questioning was one of the instructional strategies that social studies and science and technology teachers used. Thus, they said during lessons, they frequently asked questions to their students for the purpose of getting them to refresh their memory about what they learned previously and build on it, state their own views on a topic, and make predictions. A number of studies have shown that children's comprehension improves when their teachers use an organized pattern of questions (Falkof and Moss, 1984). Moreover, Smith (1991), who is concerned with the merits of questioning method, say that when a teacher asks questions to determine a child's grasp of content, he not only gives the student a type of problem but also leads him to ask questions of his own.

Turkish and social studies teachers stated that *role-playing* activities followed by some discussions were powerful in setting the ground for students to think critically by giving some examples from their classroom practices. As Brookfield (1987) puts it, the role-playing technique focuses on a central element in critical thinking, that is, the ability to take on the perspectives of others. In role play, the intent is to help students to explore the perceptual filters and structures of interpretation of another person. To him, its high value for participants is in helping them integrate both the cognitive and affective dimensions of their learning. To exemplify, a person can read personal testimonies (journals, letters or

autobiographies) and get some awareness of the attitudes and outlooks of the people one is studying. This exercise is, however, static in his view, when compared to that of experiencing the emotions and feelings accompanying or integral to these attitudes. With regard to role-playing, Paul (1995) also states that from role-playing how people might react in typical situations, it is possible to gain a full appreciation of the particular mix of thought processes, attitudes, perceptions, and emotions informing their actions. Role-playing, therefore, is considered to be invaluable as a prompt to perspective taking.

Social studies teachers and Turkish teachers stated that they provided their students with *opportunities to look at issues from different angles*, regarded as an important skill of critical thinking. In classroom activities requiring students to consider issues from different angles, students practice seeing things from multiple or contrasting perspectives (Peace, 2010). Thus, the idea is to "put yourself in another's shoes." This, in turn, helped students to exercise fair-mindedness (Paul, 1995).

Science and technology teachers considered *experiments* an important means of critical thinking as students were required to make predictions and draw conclusions based on their observations during the experiments. Paul (1995) also suggests that getting students to conduct experiments where they observe a phenomenon, make predictions, share their predictions with their peers, and test their hypotheses could provide opportunities for students to think critically.

Moreover, some science and technology teachers got students to be involved in concept-mapping tasks for the purpose of developing students' conceptual understanding. Similarly, Turkish teachers also got students to be engaged in concept-mapping tasks especially in the pre-reading stage of their lesson, when they got students to activate their schemata as to what they had already known about the concept concerned. This corresponds to what is called in the literature semantic mapping, semantic webbing, or graphic organizer. Lim et al. (2003) indicate that semantic mapping helps to explore how we understand key concepts in a topic, to make meaningful pattern of our understanding and knowledge by linking ideas, and to plan a process by categorizing, linking and organizing the ideas, and it encourages active thinking by analyzing, categorizing,

synthesizing and reflecting on the key elements of what we already know or have done.

They also mentioned some games, which, they thought, maximized student interaction. As Smith (1991) points out, the opportunities to make decisions collaboratively through games, like the one described by one of the science and technology teachers are enhanced by the interconnections of all young minds.

Besides, several science and technology teachers also said they got their students to keep a science and technology diary in which students had a chance to reflect on their learning. One of the teachers also said keeping a diary, her students not only reflected on the things that they needed to improve on, but also came up with some critical questions which motivated students to go beyond what they learned. This is in line with what Smith (1991) said:

> If the primary agent in improved comprehension is an active learner, perhaps we could see greater growth by training the children to ask their own questions instead of having them to wait for the teacher to come up with some questions. From what we know about the value of participatory learning, we should spend more time in getting the learner to raise his own questions. That process not only will direct the learners' attention but will also act as a means of tying various ideas or concepts together" (p. 11).

Mathematics teachers said they got students to focus *on process rather than product in problem-solving*. This, they believed, let students concentrate on alternative methods of solving a problem on a collaborative manner and self-correct. The particular strategy seems to correspond to the problem-solving processes of engaging in collaboration to explore a problem, determining an appropriate course of action through negotiation and research, and testing solutions (Hung et al., 2003). Moreover, in this process of problem solving, teachers respond to mistakes and confusion by probing with questions, allowing students to correct themselves and each other (Paul, 1995). Opportunities for students to self-correct seems to be in line with Paul's conception of critical thinking as a self-directed, self-disciplined, self-monitored and self-corrective thinking.

Finally, teachers across all four disciplines pointed out that *research* tasks that the students undertook required them to gather information from several

sources, synthesize it and present it from their own perspectives. This is in line with the critical theory of learning "that progressively the student should be given increasing responsibility for his / her own learning" (Paul, 1995, p. 466). The rationale is that students need to come to see that only they can learn for themselves and that they will not do so unless they actively and willingly engage themselves in the learning process. It was discovered that students develop their critical thinking when they are encouraged to carry out research, to ask questions in class, and to discuss issues in class (Semerci, 2003).

5.5. Assessment of Students' Critical Thinking at Seventh Grade

Turkish teachers assessed their students' critical thinking through open-ended questions and composition writing in written exams and presentations and debates. It was revealed that the open-ended questions that teachers asked in the exam were parallel to their classroom practices. Among the criteria by which Turkish teachers judged their students critical thinking in written exams were divergent thinking, accurate use of language and relevance. They indicated that the performances were judged through self-evaluation, peer-evaluation and group evaluation by such criteria as consistency, clarity, adequacy, preparedness, expression of feelings, thoughts and experiences, effective communication, respect for different views, effective use of language, etc.

In addition to these teachers who attempted to assess their students' critical thinking, there were also those who said that they did not ask questions requiring critical thinking in the exam. One of the reasons behind that was the weak students. However, the note-worthy reason why some teachers did not assess students' critical thinking was that they did not know what criteria to take into account in marking the papers.

Multiple-choice questions assessing students' ability to read graphs and draw conclusions, and open-ended questions evaluating students' ability to apply knowledge to a given situation, discuss two sides of an issue and view issues within the scope of their historical context were the means of assessing students' critical thinking in social studies course. The criteria that social studies teachers used in the assessment were ability to combine their knowledge of the topic with

their own ways of looking at the issue – in other words – the originality of the responses, ability to consider the context within which a historical event took place, and accurate application of the knowledge to a given situation. Besides, teachers said they assessed students' performance in the presentation in light of the criteria, namely, unity, continuity, adequacy of knowledge, effective communication with peers.

Science and technology teachers used true-false, multiple-choice and open-ended exam questions mainly requiring students to apply knowledge to a given situation. Thus, as for criteria, they were concerned with accurate and logical application of knowledge to a given situation.

Finally, mathematics teachers asked some problem-solving questions requiring students to apply knowledge to a given situation and multiple-choice questions requiring students to read graphs. The criteria used in judging students' responses to these questions were suitable method to solve a problem and accurate results.

Consequently, when the teachers' efforts to assess students' critical thinking skills are considered, teachers from all four disciplines commonly asked questions requiring critical thinking at varying degrees. The common assessment techniques across all four disciplines included open-ended questions, multiple-choice tests, true-false in written exams besides the classroom presentations where student performance was assessed in light of some standards indicated in their course book. All these assessment techniques were the most common ones in the critical thinking literature (Baron, 1987; Costa, 1991; McEwen, 1994; Paul, 1995). It was noted that in general teachers' assessment of students' critical thinking was limited to few questions and tasks in written exams and performance assignments. What is more, teachers especially from Turkish and social studies indicated that they could not assess students' critical thinking because of the cognitive and affective characteristics of their students. Thus, teachers with low expectations of their students usually avoided asking questions requiring higher-order thinking skills. It was also noted that some Turkish teachers did not assess students' critical thinking as they were not knowledgeable about standards of critical thinking by which to judge their students' critical thinking, which once

again underlined the need for in-service training for teachers to orient towards implementing a curriculum highlighting thinking skills.

5.6. Factors that Inhibit Teachers' Ability to Focus on Critical Thinking

The themes that emerged with regard to teachers' perceptions on the obstacles that stood in the way of developing students' critical thinking yielded both discipline-specific categories and general categories.

With regard to cognitive entry characteristics of the students, mathematics teachers said students' lacking prerequisite knowledge and abilities in mathematics resulted in low participation and dissatisfactory performance in activities requiring critical thinking. Turkish and social studies teachers, on the other hand, were concerned about students' lacking some cognitive skills of critical thinking such as paraphrasing, summarizing and synthesizing. In relation to the affective characteristics of the students, disinterest towards learning, the subject matter and activities requiring critical thinking, lack of self-confidence and a lack of a sense of responsibility were the reasons why, teachers across all four disciplines thought, could not get what they expected. Besides, Turkish, social studies and science and technology teachers were concerned about students' tendency to accept everything they read or hear. Furthermore, students' equating discussions with quarrels was another reason behind the dissatisfactory performance in Turkish and social studies. Teachers across all four disciplines also said that as a result of their expecting their teachers to teach for central exams, students were reluctant to conduct any activities requiring critical thinking as they found such activities as a waste of time. Thus, they expected from their teachers didactic and exam-focused instruction in which they developed their test-taking strategies. All these findings are parallel with the findings of the research by Akan (2003), Alazzi (2008), Onosko (1991) and Shell (2000), who studied obstacles to the enhancement of students' critical thinking skills.

5.7. Factors that Foster Teachers' Ability to Focus on Critical Thinking

There were those teachers who seemed to have developed some strategies to overcome some of the problems with regard to cognitive and affective characteristics of the students. It was noted that there were both general and discipline-specific themes regarding these strategies that teachers employed and got good results from.

One of the general categories was attracting students' attention. Teachers across all four disciplines emphasized that taking into account students' interests was influential in achieving higher participation and better performance. At this point, relevance to real life was conceived to be an important factor in attracting student attention. A review of research on critical thinking shows that motivation is a key factor in getting students to think critically (Brookfield 1987; Paul, 1995; Pithers, 2000). To quote Resnick and Kolopfer (1989), "The thinking curriculum must attend not just to teaching skills and knowledge, but also to developing motivation for their use" (p. 65). Thus, it is argued that generating motivation for ensuring students' participation in tasks requiring higher order thinking is one of the challenges which teachers need to attend to. It was observed that it was some resourceful teachers across all four disciplines that were able to respond to the particular challenge, engaging in addressing students' background, level and interests by, for instance, providing students with some tasks where students were able to establish the relevance of what they learned or did to their life experiences. Bransford et al. (2000), who conducted research on learning and thinking, also found that students need to see and understand the relevance of information and view potential for transfer in various situations.

Second general thematic category was teacher guidance. Teachers across all four disciplines pointed out that the more they provided guidance to their students during activities requiring critical thinking, the better performance students displayed in these activities. Specifically, Turkish teachers were concerned about the importance of teacher guidance in the selection of the kind of books, which, in turn, would help students to develop reading habit.

Third, concretization of the concepts and subjects or allowing for more opportunities to learn by experiencing was considered to be another strategy that

worked well. Teachers across all four disciplines said that when they introduced the subject with demonstrations, pictures, maps, exemplifications or experiments, students did better in critical thinking activities that followed. The experiential learning cycle developed by Kolb (1984) illustrates the relationship between reflection and understanding. The four parts of his cycle include concrete experience where learners involve themselves fully and openly, reflective observation where learners are able to reflect on and observe experiences from many perspectives, abstract conceptualization where learners create concepts and integrate observation in logically sound theories and active experimentation where learners use theories to make decisions and solve problems.

Fourth, teachers from all four branches emphasized the importance of maintaining the parallelism between the classroom practices and assessment with regard to critical thinking development. This implied that once students were continually provided with opportunities to think critically in class and they got feedback with regard to their capability to think critically in a subject on a systematic basis, students were more likely to develop cognitive skills and dispositions required to think critically. The instructional models that have been developed for the purpose of enhancing students' critical thinking places great emphasis on systematic opportunities to get students to think critically both in classroom tasks and activities and assessment.

Along with these general thematic categories, teachers from different disciplines also mentioned some strategies that helped them in their efforts to involve their students in critical thinking activities.

First, Turkish and science and technology teachers said providing students with differing levels and backgrounds in a class with some alternatives to choose among led to higher student participation in tasks requiring critical thinking, which is regarded as one of the effective strategies to model thinking skills in the classroom (Sousa, 2006). Second, providing socio-economically deprived students with means and facilities to conduct their research and plan for their group presentations was a strategy employed by one science and technology teacher working in a school where students from low-income students attended. Third, teachers' praising students for the good work they had done helped to increase

their self-confidence, which, in turn, motivated them to participate more as one Turkish teacher pointed out. Helping students overcome their ego-centricity through raising their awareness as to self-reflection and self-criticism was perceived to be influential according to one mathematics teacher and one social studies teacher. Daloz (1986, cited in Brookfield, 1987) says that one of the important aspects of the mirror that students are encouraged to hold up to themselves is its capacity to extend their self-awareness.

When the 'discipline-specific categories' are closely examined, it is noted that they are, in fact, not peculiar to specific disciplines in nature. Rather, they are only some good practices of some resourceful teachers from different disciplines, who said they were able to achieve relatively higher participation and better performance from their students in their efforts to teach for critical thinking, for example, when one teacher provided her mixed-ability students with alternative tasks or assignments to choose among, or when another teacher provided her students from low socio-economic backgrounds with means or facilities to do their research and prepare for their group performances, or when another praised her students for the good performance they displayed in an attempt to increase their self-confidence, and when some others tried to get students to self-reflect or self-criticize in order to get them reflect on their own attitudes, rationalizations, and habitual ways of thinking and acting.

5.8. Implications for Practice

The findings from the present research study imply the following for practice:

1. Teachers' definitions of critical thinking revealed that teachers across all four disciplines equated critical thinking with one or more cognitive skills or dispositions, which, they thought, were essential to critical thinking. It was observed that teachers were able to explicate their perceptions of the constituents of critical thinking - cognitive processes and affective dimensions of critical thinking - only with reference to some specific examples from their classroom practices. It was also noted that only few teachers were able to provide relatively more elaborate and lengthier definitions of critical thinking, whereas most of the

teachers were not. Keeping in mind one of the prerequisites for developing students' critical thinking, which involves the belief that teachers must have a sufficiently liberal definition of critical thinking and that they must know how they have come to understand critical thinking, it seems necessary to familiarize teachers with the concept of critical thinking throughout their university education and teaching career, which would enable them to gain a broad understanding of critical thinking and develop a critical thinking vocabulary, especially regarding the cognitive processes of critical thinking, to guide them in their efforts to teach for critical thinking.

2. Although the teachers interviewed did not have a broad conception of critical thinking, they appeared to have got more acquainted with the idea of developing students' critical thinking on a relatively more systematic manner especially since the introduction of the curriculum designed in line with constructivist principles. This shows that teachers believe constructivist principles of learning embedded in a curriculum pave the way for the enhancement of students' critical thinking.

3. As for the acquisition of critical thinking, teachers, on the one hand, thought that critical thinking could be developed over the course of one's life particularly with the influence of schooling and upbringing. On the other hand, the capacity to think critically was generally associated with intelligence and / or inheritance. What is more, several teachers also indicated that some people may never become critical thinkers due to their personality. It was observed that those teachers who associated critical thinking with intelligence, inheritance or personal traits were likely to have low expectations of their students whom, for example, they described as "unintelligent," or "reserved." All these misconceptions should be taken into account in developing an in-service training program on improving students' critical thinking.

4. As for the roles assumed by teachers in developing students' critical thinking, modeling was the one attended by the majority of the teachers. Thus, most teachers seemed to believe that the ways they posed themselves as models for their students were significant in fostering students' critical thinking. Besides, modeling, on the other hand, teachers from all four disciplines said they assumed

some roles in allowing for discovery learning as opposed to didactic teaching, assigning students to the task of researching so that they undertake responsibilities for their own learning, providing them with opportunities to consider issues from different angles and reading critically – the two skills that the teachers placed the greatest emphasis on. It should be noted that all these constitute the fundamentals of the curricula developed in line with constructivist learning principles. This, once again, shows that teachers across all four disciplines believe constructivist learning principles support the enhancement of critical thinking.

5. The teachers in general agreed that critical thinking should be incorporated into instruction systematically in all courses at all levels of elementary education in order to help students to acquire both the cognitive skills and dispositions of critical thinking. They also argued for a separate course on critical thinking to help students to learn the basics of critical thinking. They remarked that they needed in-service training on critical thinking and critical thinking development, which, in their view, could also ensure the cooperation of all teachers in the development of students' critical thinking.

6. Reasonable class size to conduct properly learning activities requiring critical thinking was conceived to be an important condition to enhance students' critical thinking. Yet, the findings revealed that in most of the schools, teachers had to teach crowded classrooms, as a result of which they found it so difficult to ensure the participation of all students. This further implies the need to improve the class size to implement a curriculum highlighting active involvement of students.

7. Most of the teachers from all four disciplines called for classrooms specially designed and well-equipped for their particular branches in order to implement a program containing such elements as experiential learning, discovery learning, researching, questioning, critical thinking and increased interaction among students.

8. The teachers across all four disciplines seemed to praise the recent curricula designed in line with constructivist principles of learning. They especially expressed satisfaction at the attempts in the programs to provide students with opportunities to look at issues from different angles, relate

knowledge to real life situations, make interdisciplinary relations, conduct research and learn inductively, which all contributed to the development of students' critical thinking in their mind. Yet, although they supported the design principles in general, teachers across all four disciplines expressed dissatisfaction at certain aspects of the programs they implemented, which prevented them from focusing on the enhancement of students' thinking skills. The limitations of the programs that they were concerned with constituted the rationale behind the alterations that some teachers made in the planning process. One of the crucial adjustments that some teachers across all four disciplines made was bridging the gap between their students and all the course materials. Thus, they were engaged in making some adaptations to the level, input and learning tasks in light of needs, interests, expectations and backgrounds of their students.

9. Some of the obstacles in the way of enhancing students' critical thinking concerned the curriculum. The aspect of the curriculum that seemed to prevent teachers across all four disciplines from fostering students' critical thinking was superficial coverage of too much content in the program. Superficial learning was believed to stand as an obstacle to deeper understanding, which is one of the fundamentals of any efforts to teach for critical thinking. It seemed that lack of depth was also responsible for the lack of prerequisite knowledge and abilities in mathematics. The teachers said that they tried to allow for depth in covering content, but then they faced time restraints in keeping up with the pacing. Thus, curriculum developers need to attend to the issue of depth of coverage by making it a curriculum design principle in order to get teachers to implement a learner-centered, constructivist curriculum in its real sense.

10. Along with the issue of superficial coverage of too much content brought up by most of the teachers from all four disciplines, there were also some discipline-specific issues perceived as obstacles in the way of teaching for critical thinking. It was observed that some, if not all, teachers attempted to compensate for these constraints by making certain adjustments. Some of the Turkish teachers chose to exploit some other texts, preferably narratives, with a potential to attract students' attention and interest - a condition viewed as a prerequisite for

motivating students to think critically - rather than the ones in their course book which addressed neither the interests nor the level of the students.

11. Social studies teachers believed that inclusions of "critical" historical events – the ones which had important consequences in history, provision of effective interrelations in the arrangement of the historical events, provision of input in relation to the context in which historical events took place, maintenance of objectivity in historical content and the potential of learning activities to both concretize concepts in the minds of the students for deeper understanding and attract students' curiosity – regarded as two prerequisites in motivating students to think critically were all essential in getting students to build cause-effect relationships, exercise fair-mindedness, question, and draw conclusions – conceived as cognitive processes of critical thinking. Thus, all these should be considered in developing a "critical thinking" social studies curriculum.

12. Most science and technology teachers were mainly concerned about the potential of learning activities to teach for critical thinking. The qualities of a good learning activity, in their mind, served the purpose of concretizing relatively difficult science concepts, attracting student attention and addressing the level of the students. Thus, some science and technology teachers made alterations to this end. What is more, some teachers who had relatively more crowded classrooms pointed out that they had a great difficulty in conducting the learning activities in the time allotted. They especially pointed out that the activities took longer than expected, which prevented students from understanding the meaning of the activity and reaching conclusions. Thus, the teachers' perceptions of a learning activity that served the aim of setting the stage for students to think critically should be considered in developing a "critical thinking" science and technology curriculum. Also, the physical conditions of schools and class sizes should be taken into account by the curriculum developers as the feasibility of the learning activities is an important issue that teachers consider in determining whether to conduct a learning activity given in their course book or not.

13. Most of the mathematics teachers expressed dissatisfaction at implementing a mathematics curriculum where the content is arranged spirally. Although the repetition of content with increasing complexity and sophistication

through a spiral curriculum aims at getting students to digest concepts over a longer period of time and achieving memorable learning, teachers argued that it did not yield intended results in their case. They said that they had to switch to another subject before they did sufficient exercise for high level understanding of the subjects, the kind of practice requiring students to make analyses and interpretation. They went on to say when they turned back to the subject to deal with a new dimension of the same topic, they realized that their students had forgotten all about what they had covered before. This further implies that in a curriculum where there is so much content to be covered, teachers find it much more difficult to implement a spiral curriculum as students lack the necessary knowledge to build on. Therefore, teachers felt compelled to combine all fragments of each mathematical subject scattered around different units in one unit and deal with it as a whole without any interruption. This, once more, underlines the need to provide depth of coverage.

14. It was revealed that while some teachers across all four disciplines tried to assess their students' critical thinking only through open-ended, multiple-choice and true-false questions in the exam, or presentations in class, the others had some reservations about assessing their students' critical thinking due to teachers' low expectations of their students and lack of knowledge on standards to judge their students' critical thinking by. All these imply that the teachers need to be trained on alternative assessment techniques and more importantly standards of critical thinking.

15. The findings showed that most Turkish, social studies, and science and technology teachers were concerned about their students' lacking some cognitive skills of critical thinking, namely, paraphrasing, summarizing, and synthesizing, which, in their view, were the most crucial prerequisite critical thinking skills students need to have acquired in order to be able to deal with tasks, assignments, and exam questions requiring critical thinking. According to these teachers, the reason behind that was students' not having developed a reading habit. They pointed out that reading hours arranged for the purpose of instilling in students a love of reading did not serve the purpose mainly because of a lack of a shared concern among all teachers in schools with regard to reading hours and lack of

teacher guidance in the selection of books. This further implies that the decision-makers should ensure the reading hours help achieve the intended result – getting students to develop a reading habit.

16. One of the obstacles which, teachers across all four disciplines thought, stood in the way of teaching thinking skills was central exams. As there was an incongruence between the programs containing such learner-centered elements as discovery learning, researching, critical thinking, and the requirements of an exam-focused system which required the development of multiple-choice test taking strategies, students were reported to be unwilling to fulfill the requirements of a learner-centered program. This further posed a dilemma for the teachers as to whether to concentrate all their efforts on teaching to the central exams or implement the program properly. This implies that decision-makers should take action to eliminate the inconsistency between curriculum and central exams at secondary school level.

17. It was found out that teacher guidance, providing students with differing levels and backgrounds in a class with some options to choose among, efforts to help students acquire the dispositions of self-reflection and self-criticism, concern with relevance of input to students' real life experiences, teachers' acting as a facilitator of research activities conducted by students, and maintenance of parallelism between classroom practices and assessment with regard to critical thinking development resulted in better performance and higher achievement in any tasks requiring critical thinking. This further has an implication on what fosters students' efforts to teach for critical thinking from the viewpoints of the practitioners.

18. It should finally be noted that although all teachers across all four disciplines mentioned various kinds of impediments to the development of students' critical thinking, it was only some teachers who showed initiative and got engaged in tackling these problems by making the necessary adaptations to the program, developing some materials that better suited their own students, and devising strategies to overcome some of the barriers to the enhancement of students' critical thinking. This has several implications for curriculum developers, teacher educators at universities, and teachers trainers offering in-

service training programs to teachers: First and the foremost, curriculum developers need to cooperate and collaborate more with teachers in developing the kind of course materials (input and tasks) that are most likely to address students. Also, both teacher education and in-service programs should aim at educating teachers to continually consider the appropriateness of course materials to their own students and take initiative to bridge any gap between them skillfully. In other words, the teachers should be provided with opportunities to develop a sense of resourcefulness both during their university education and throughout their teaching career.

5.9. Implications for Research

In this section, the implications of this research study for future research will be discussed mainly with the aim of providing guidance for researchers who intend to explore teachers' conceptions of critical thinking and practices for critical thinking development.

1. The present research study only aimed to shed light on teachers' conceptions of critical thinking and practices for critical thinking development at seventh grade level. On the other hand, students' conceptions of learning and of critical thinking are also likely to be an important influence on the impact of teachers' efforts to implement a critical thinking curriculum. Thus, further research is needed on students' conceptions of critical thinking.

2. The study revealed insight into teachers' practices for critical thinking development. Thus, it was noted that various tasks in the pre-reading, while-reading and post-reading stages of Turkish lessons, questioning method, role-playing, researching, experiments, concept-mapping, games, keeping a diary, experiential learning, were among the instructional strategies, classroom activities, or assignments, which were either designed by the teachers' themselves or provided in their course book were reported to contribute to the development of students' critical thinking. On the other hand, in order to see teachers' conceptions of critical thinking in practice, there is a need to observe teachers while they are conducting each of the aforementioned instructional strategies and activities with the aim of enhancing students' critical thinking. This way, it would be possible to

examine student-teacher interaction – the place where critical thinking could be most promoted or inhibited. What is more, observation in class could provide an opportunity to compare teachers' perceptions and teaching practices.

3. In the particular study, the potential of the seventh grade curricula to teach for critical thinking was studied from teachers' viewpoints through in-depth interviewing. Document analysis (analysis of plans, textbooks, curricula, and tests given) could also be an important source of data to shed light on the particular issue. Especially course books - the core of a program and the most visible representation of what happens in class - could be analyzed to explore obstacles to and opportunities for the development of students' critical thinking in these course books.

4. The findings revealed that one of the obstacles in the way of teaching for critical thinking was a lack of communication among colleagues, between teachers and parents, teachers and administrations in a specific school, and decision-makers and teachers. Further research on the causes of the lack of communication among all these parties can help develop some strategies to eliminate the problem.

5. In the present research, where teachers' conceptions of critical thinking and critical thinking development were illuminated from the perspectives of a total of 70 teachers representing different features in terms of their branch, gender, educational background, and year of experience in teaching from 14 schools located in districts with varying socio-economic status, a large number of themes, including both the general themes and discipline-specific ones, emerged. In other words, broad data were gathered with respect to the particular issue, which helped to portray multiple views of a number of cases on the issue from a variety of contexts. This, on the other hand, posed a lot of difficulties in both data collection and analysis processes as the research was undertaken by one researcher. Thus, researchers who intend to conduct a multi-site study should consider doing their research as a team.

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APPENDICES

APPENDIX A

FIRST COPY OF THE INTERVIEW FORM

GÖRÜŞME FORMU

Okul: _____
Görüşmeci:_____
Tarih ve Saat (başlangıç ve bitiş): _____

Giriş:

Merhaba, ben ODTÜ Eğitim Bilimleri doktora öğrencisi Figen Kanik. İlköğretim 7. sınıf düzeyinde, öğretmenlerin eleştirel düşünme ve eleştirel düşünmeyi geliştirmeye ilişkin bilgi, görüş ve uygulamaları üzerine bir araştırma yapıyorum ve sizinle bu konuda konuşmak istiyorum. Öğretmenlerle görüşme yapıyorum, çünkü öğretmenlerin düşünce ve inanışlarının öğretimle ilgili karar alma süreçlerinde ve sınıf içi uygulamalarında çok önemli bir rolü olduğuna inanıyorum. Bu araştırmada ortaya çıkacak sonuçların, öğretmenlerin eleştirel düşünme konusundaki algılarına ve eleştirel düşünmenin geliştirilmesine yönelik uygulamalarına ışık tutmasını ve de yeni MEB programlarının eleştirel düşünmenin geliştirilmesindeki etkililiğini belirlemesini ümit ediyorum.

- Bana görüşme sürecinde söyleyeceklerinizin tümü gizlidir. Bu bilgileri araştırmacıların dışında herhangi bir kimsenin görmesi mümkün değildir. Ayrıca, araştırma sonuçlarını yazarken, görüştüğüm bireylerin isimlerini kesinlikle rapora yansıtmayacağım.
- Başlamadan önce, bu söylediklerimle ilgili belirtmek istediğiniz bir düşünce ya da sormak istediğiniz bir soru var mı?
- Görüşmeyi izin verirseniz kaydetmek istiyorum. Bunun sizce bir sakıncası var mı?
- Bu görüşmenin yaklaşık bir saat süreceğini tahmin ediyorum. İzin verirseniz sorulara başlamak istiyorum.

GENEL BİLGİLER

Adı Soyadı:
Yaşı:
Cinsiyeti:
Eğitim Durumu (Lisans, Yüksek Lisans, Doktora):
Katıldığı mesleki gelişim programları, aldığı sertifikalar, vs.:

- Öğretim alanınız nedir?
- Ne kadar süredir öğretmenlik yapıyorsunuz?
- _____ İlköğretim Okulu'nda ne kadar süredir öğretmenlik yapıyorsunuz?
- Bu dönem kaçıncı sınıf(lar)a ders veriyorsunuz?
- Mesleğinizin en çok hangi yönlerini seviyorsunuz?
- Mesleğinizin sizi zorlayan yönleri nelerdir?

ÖĞRETMENLERİN ELEŞTİREL DÜŞÜNME VE ELEŞTİREL DÜŞÜNMEYİ GELİŞTİRMEYE DAİR DÜŞÜNCELERİ

- Eleştirel düşünme doğuştan sahip olunan bir beceri midir, yoksa sonradan geliştirilebilir mi?

- Sizin için öğrencilerin eleştirel düşünme becerilerini geliştirmek ne kadar önemlidir? Öğrencilerin eleştirel düşünme becerilerini geliştirmekteki rolünüzü nasıl görüyorsunuz?

- Eleştirel düşünebildiğine inandığınız öğrencilerinizi düşünün... Bu öğrencileri diğerlerinden farklı kılan özellikler nelerdir? Bu öğrenciler, derslerde (örneğin bir konuyu eleştirel olarak ele alıp düşüncelerini ifade etmelerini gerektiren bir sınıf içi etkinlik sırasında), hangi tutum ve davranışları sergiler?

- Öğrencilerinize, sınıfta eleştirel düşünmeyi öğretirken veya buna yönelik alıştırma yaparken, somut olarak hangi becerileri sergilemelerini amaçlıyor veya bekliyorsunuz? Sizce eleştirel düşünme becerileri nelerdir?

- Sizce eleştirel düşünme ile ilgili bazı ölçütler olmalı mı? Öğrencilerinizin eleştirel düşünme becerilerini nasıl kullandığını değerlendirmek için hangi ölçütleri veya standartları kullanıyorsunuz?

- Bütün alanların (matematik, fen, sosyal bilimler, vs.) eleştirel düşünmenin geliştirilmesine yönelik olarak uygun zemin sağladığına inanıyor musunuz? Neden? Nasıl ve hangi biçimlerde?

- Eleştirel düşünmenin geliştirilmesine yönelik olarak iki farklı görüş vardır. Birincisi, eleştirel düşünmenin ayrı bir ders kapsamında – genel bir beceri olarak öğretilmesidir. Diğeri ise, eleştirel düşünme becerilerinin

geliştirilmesinin, bütün derslerde amaçlanması gerekliliğidir. Bu konuda siz, hangi görüşe katılıyorsunuz? Neden?

- Bütün bu söylediklerinizden yola çıkarak eleştirel düşünme kavramını nasıl tanımlarsınız? Eleştirel düşünme becerilerine örnekler verir misiniz? Eleştirel düşünme ile ilgili hangi boyutlar olabilir? (bilişsel / tutum vb.)

ELEŞTİREL DÜŞÜNMENİN ÖĞRETİLMESİNE YÖNELİK UYGULAMALAR ÜZERİNE GÖRÜŞLER

- Eleştirel düşünmenin öğretilmesi / geliştirilmesi için nasıl bir sınıf ortamı gereklidir?
- Eleştirel düşünmenin öğretimi için nasıl bir planlama yapıyorsunuz?
- Bu becerilerin geliştirilmesine yönelik
  - hangi öğretim stratejilerini kullanıyorsunuz?
  - hangi sınıf içi etkinliklerini yapıyorsunuz?
  - ne çeşit ödevler veriyorsunuz?
- 7. sınıf düzeyinde, genelde hangi eleştirel düşünme becerilerine odaklanıyorsunuz? Nasıl?
- Öğrencilerinizin, bu derste geliştirmeyi amaçladığınız eleştirel düşünme becerilerini, diğer derslerde ve de gerçek hayatta kullanabileceğini düşünüyor musunuz? Neden? Nasıl?
- Öğrencilerinizin eleştirel düşünme becerilerini nasıl ölçüyorsunuz? Ne tür sınavlar veriyorsunuz? (Yazılı sınavların dışında), bu amaca yönelik diğer ölçme ve değerlendirme metotlarınız nelerdir?
- Yeni MEB programlarının eleştirel düşünmenin geliştirilmesindeki
  - rolü,
  - etkisi,
  - sınırlılığı nelerdir?

ELEŞTİREL DÜŞÜNMENİN GELİŞTİRİLMESİ SÜRECİNE OLUMLU VEYA OLUMSUZ ETKİ EDEN UNSURLAR

- Eleştirel düşünmenin öğretimi ve geliştirilmesini kolaylaştıran unsurlar nelerdir?
- Eleştirel düşünmenin öğretimi ve geliştirilmesi yolunda karşılaştığınız engeller nelerdir?
  - Bu engellerin üstesinden gelmek için neler yapıyorsunuz? Bu çabalarınızdan nasıl sonuçlar elde ediyorsunuz?

APPENDIX B

MODIFIED VERSION OF THE INTERVIEW FORM

GÖRÜŞME FORMU

Okul: _____
Görüşmeci:_____
Tarih ve Saat (başlangıç ve bitiş): _____

Giriş:

Merhaba, ben ODTÜ Eğitim Bilimleri doktora öğrencisi Figen Kanik. İlköğretim 7. sınıf düzeyinde, öğretmenlerin eleştirel düşünme ve eleştirel düşünmeyi geliştirmeye ilişkin bilgi, görüş ve uygulamaları üzerine bir araştırma yapıyorum ve sizinle bu konuda konuşmak istiyorum. Öğretmenlerle görüşme yapıyorum, çünkü öğretmenlerin düşünce ve inanışlarının öğretimle ilgili karar alma süreçlerinde ve sınıf içi uygulamalarında çok önemli bir rolü olduğuna inanıyorum. Bu araştırmada ortaya çıkacak sonuçların, öğretmenlerin eleştirel düşünme konusundaki algılarına ve eleştirel düşünmenin geliştirilmesine yönelik uygulamalarına ışık tutmasını ve de yeni MEB programlarının eleştirel düşünmenin geliştirilmesindeki etkililiğini belirlemesini ümit ediyorum.

- Bana görüşme sürecinde söyleyeceklerinizin tümü gizlidir. Bu bilgileri araştırmacıların dışında herhangi bir kimsenin görmesi mümkün değildir. Ayrıca, araştırma sonuçlarını yazarken, görüştüğüm bireylerin isimlerini kesinlikle rapora yansıtmayacağım.
- Başlamadan önce, bu söylediklerimle ilgili belirtmek istediğiniz bir düşünce ya da sormak istediğiniz bir soru var mı?
- Görüşmeyi izin verirseniz kaydetmek istiyorum. Bunun sizce bir sakıncası var mı?
- Bu görüşmenin yaklaşık bir saat süreceğini tahmin ediyorum. İzin verirseniz sorulara başlamak istiyorum.

GENEL BİLGİLER

Adı Soyadı:
Yaşı:
Cinsiyeti:
Eğitim Durumu (Lisans, Yüksek Lisans, Doktora):
Katıldığı mesleki gelişim programları, aldığı sertifikalar, vs.:

- Öğretim alanınız nedir?

- Ne kadar süredir öğretmenlik yapıyorsunuz?
- _____ İlköğretim Okulu'nda ne kadar süredir öğretmenlik yapıyorsunuz?
- Bu dönem kaçıncı sınıf(lar)a ders veriyorsunuz?
- Mesleğinizin en çok hangi yönlerini seviyorsunuz?
- Mesleğinizin sizi zorlayan yönleri nelerdir?

ÖĞRETMENLERİN ELEŞTİREL DÜŞÜNME VE ELEŞTİREL DÜŞÜNMEYİ GELİŞTİRMEYE DAİR GENEL DÜŞÜNCELERİ

- Eleştirel düşünme doğuştan sahip olunan bir beceri midir, yoksa sonradan geliştirilebilir mi? Neden? Nasıl?

- Sizin için öğrencilerin eleştirel düşünme becerilerini geliştirmek ne kadar önemlidir? Öğrencilerin eleştirel düşünme becerilerini geliştirmekteki **rolünüzü** nasıl görüyorsunuz?

- Eleştirel düşünebildiğine inandığınız öğrencilerinizi düşünün... Bu öğrencileri diğerlerinden farklı kılan özellikler nelerdir? Bu öğrenciler, derslerde (örneğin bir konuyu eleştirel olarak ele alıp düşüncelerini ifade etmelerini gerektiren bir sınıf içi etkinlik sırasında), hangi **tutum ve davranışları** sergiler?

- Öğrencilerinize, sınıfta eleştirel düşünmeyi öğretirken veya bu tarz düşünmenin gelişimine yönelik alıştırma yaparken, somut olarak **hangi becerileri sergilemelerini** amaçlıyor veya bekliyorsunuz? **Sizce eleştirel düşünme becerileri nelerdir?**

- Sizce eleştirel düşünme ile ilgili bazı **ölçütler** olmalı mı? Öğrencilerinizin eleştirel düşünme becerilerini nasıl kullandığını değerlendirmek için hangi **ölçütleri veya standartları** kullanıyorsunuz?
  Örneğin eleştirel düşünmeyi gerektiren bir sınıf içi etkinlik yapıyorsunuz. Öğrencilerinizin bu etkinlik sırasında verdikleri cevapları, vardıkları sonuçları, ortaya attıkları görüşleri HANGİ KRİTERLERE göre değerlendirirsiniz? (Ne tür cevaplar size öğrencinin eleştirel düşündüğü yargısına vardırır?)

- Bütün alanların (matematik, fen, sosyal bilimler, vs.) eleştirel düşünmenin geliştirilmesine yönelik olarak uygun zemin sağladığına inanıyor musunuz? Neden? **Nasıl ve hangi biçimlerde?**

- Eleştirel düşünmenin geliştirilmesine yönelik olarak **iki farklı görüş** vardır. Birincisi, eleştirel düşünmenin ayrı bir ders kapsamında – genel bir beceri olarak öğretilmesidir. Diğeri ise, eleştirel düşünme becerilerinin geliştirilmesinin, bütün derslerde amaçlanması gerekliliğidir. Bu konuda siz, hangi görüşe katılıyorsunuz? Neden?

- Bütün bu söylediklerinizden yola çıkarak eleştirel düşünme kavramını nasıl **tanımlarsınız?**

(Literatürde <u>eleştirel düşünme,</u> bilgi edinme sürecinde irdeleyebilmeyi, çok yönlü sorgulayabilmeyi gerektiren hem <u>zihinsel</u> hem de <u>duyuşsal</u> bir süreç olarak tanımlanmıştır. Buna bağlı olarak eleştirel düşünmeye dair 35 boyut tespit edilmiştir. <u>Zihinsel / bilişsel boyutlara örnekler:</u> derinlemesine analiz yapma, çözüm üretme ve değerlendirme, eleştirel okuma, farklı görüşleri karşılaştırma, disiplinler arası ilişki kurma, soru sorma/tartışma. <u>Duyuşsal boyutlara örnekler:</u> bağımsız ve tarafsız düşünme, sorgulama cesareti geliştirme, düşünme becerisine güven duyma, farklı görüşlere saygı, herşeyi bilmenin mümkün olamayacağına dair düşünce.)

- Yukardaki boyutları ile eleştirel düşünmenin öğretilmesi / geliştirilmesi için **nasıl bir sınıf ortamı** gereklidir?
-

ELEŞTİREL DÜŞÜNMENİN ÖĞRETİLMESİNE YÖNELİK OLARAK 7. SINIF DÜZEYİNDEKİ UYGULAMALAR ÜZERİNE GÖRÜŞLER

- 7. sınıfta yürütmekte olduğunuz programı, eleştirel düşünmenin geliştirilmesine yönelik olanaklar bakımından nasıl değerlendirisiniz?
- Eleştirel düşünmenin öğretimi için <u>7. sınıf düzeyinde</u> takip ettiğiniz program neler sunuyor? Ne gibi fırsatlar sağlıyor?
- <u>7. sınıf düzeyinde</u> takip ettiğiniz programın eleştirel düşünmenin geliştirilmesindeki sınırlılıkları nelerdir?

- Bu bahsettiğiniz fırsatları ve sınırlılıkları dikkate aldığınızda, siz bu programı uygularken öğrencilerin eleştirel düşünmelerini geliştirmeye yönelik olarak ne tür değişiklikler yapıyorsunuz / yapmak zorunda kalıyorsunuz? Eleştirel düşünmenin geliştirilmesi için, ne tür planlar yapıyorsunuz?

- Eleştirel düşünmenin geliştirilmesine yönelik
  - hangi **öğretim stratejilerini** kullanıyorsunuz?
  - hangi **sınıf içi etkinliklerini** yapıyorsunuz?
  - **ne çeşit ödevler** veriyorsunuz?

- Öğrencilerinizin, bu derste geliştirmeyi amaçladığınız eleştirel düşünme becerilerini, **diğer derslerde** ve de **gerçek hayatta** kullanabileceğini düşünüyor musunuz? Neden? Nasıl?

- <u>7. sınıf düzeyinde</u>, öğrencilerinizin eleştirel düşünme becerilerini nasıl değerlendiriyorsunuz / ölçüyorsunuz? Ne tür sınavlar veriyorsunuz? (Yazılı sınavların dışında), bu amaca yönelik diğer ölçme ve değerlendirme metotlarınız nelerdir?
  - Öğrencilerin eleştirel düşünmelerini gerektiren sorulara verdikleri yanıtları hangi ölçütler çerçevesinde değerlendiriyorsunuz?

- Bütün bu eleştirel düşünmenin geliştirilmesi adına yapılanların (sınıf içi etkinliklerin ve ödevlerin) öğrenciler üzerindeki
  - **kısa vadeli** etkileri nelerdir? (Yapıldığı esnada öğrencilerden nasıl bir tepki alıyorsunuz? (Öğrencilerin bu tür etkinliklere katılım düzeyi nasıl? Bu tür etkinliklerde nasıl bir performans sergiliyorlar?)
  - **uzun vadeli** etkileri nelerdir? (Sınavlarda eleştirel düşünmelerini gerektiren sorularda nasıl bir performans sergiliyorlar?)

ELEŞTİREL DÜŞÜNMENİN GELİŞTİRİLMESİ SÜRECİNE OLUMLU VEYA OLUMSUZ ETKİ EDEN UNSURLAR

- Eleştirel düşünmenin öğretimi ve geliştirilmesini **kolaylaştıran** unsurlar nelerdir?
- Eleştirel düşünmenin öğretimi ve geliştirilmesi yolunda karşılaştığınız **engeller** nelerdir?
  - Bu engellerin üstesinden gelmek için neler yapıyorsunuz? Bu çabalarınızdan nasıl sonuçlar elde ediyorsunuz?

APPENDIX C

SAMPLE CODED INTERVIEW

Okul: …… İlköğretim Okulu **Tarih ve Saat**: 4.03.2008, 13:30-14:30 **Adı Soyadı:** …….	**Teacher profile**
Branş: Sosyal Bilgiler	Branch
Yaş: 29	Age
Eğitim Durumu: Yüksek Lisans (Doktora Terk). Ankara Dil Tarih Coğrafya Mezunu (Lisans + Yüksek Lisans).	Educational background
Katıldığı mesleki gelişim programları, aldığı sertifikalar, vs: öğretim teknikleri, çoklu zeka kuramı, sınıf iklimi, rehberlik, ölçme ve değerlendirme, Tarih ile ilgili birçok seminer, Ermeni sorunu ile ilgili bir seminer, formatörlük ile ilgili programlar, ve son olarak yeni programlara adaptasyon seminerleri. Eleştirel düşünme ve eleştirel düşünmeyi geliştirmeye ilişkin hiçbir seminere katılmadım.	Professional development activities attended / no seminar attended on critical thinking
10 yıllık öğretmenim ve …….. İlköğretim Okulunda **3 yıldır** çalışıyorum. 6. ve 7. sınıflara ders veriyorum.	Years of experience in teaching / in the school & grades taught
Mesleğimin en çok sevdiğim yönü; ben öğrenciyi, çocukları çok seviyorum. Herhalde mesleğin en çok sevilen yönü çocuklar. Malzemenin çocuk olması mesleği en sevimli kılan şey. Onun dışında, çocukların ülke için iyi birşey yapabilecek düşünce yapısına sahip bireyler olarak yetişmesini sağlamak. Yani sadece bir meslek sahibi olmalarını değil hangi meslek sahibi olursa olsunlar, akıllı, mantıklı, sağlıklı, hem kendileri için hem de ülkeleri için de faydalı düşünme sistemini	**Areas of satisfaction** - Love of children - Developing in students the mentality to work for the good of their country / educating students as individuals who have the courage to question

oluşturabilmelerini sağlamak. Yani bu beceriyi kazandırabilmek en büyük amacımız. Küçük yaştan itibaren sorgulayan bireyler yetişmesi yönünde çalışmak ve bunun neticelerini görmek.	starting from early stages of their life
Mesleğimin beni zorlayan yönü; genel manada ekonomik boyut zorluyor. Öğretmenlerin almış olduğu ücret çok yetersiz.	**Areas of dissatisfaction** - Financial dissatisfaction
Ayrıca bu okula has şöyle bir zorlayıcı durum var. Veliler, okulla ilgili herşeye çok müdahale ediyor. Yapacağınız iş, konuyu anlatma tarzınız, anlatım şekliniz, yapacağınız etkinliğe varana kadar herşeye çok fazla müdahale ediyorlar. Bu da haliyle insanda tedirginliğe yol açıyor. Mesela ben böyle birşey yapacağım ama bir problem, sıkıntı olur mu, velinin bu konudaki dönütü ne olur, birşey derler mi, diye ciddi manada tedirgin ediyor. Mesela ben yakınlarda yaşadığım bir örnek sorunu anlatayım: İnkılap Tarihi dersi vardı. Her hafta bir dersin son 20 dakikasını test çözümüne ayırdık ve bir dönemde biz yaklaşık 600 soruya yakın test çözmüştük. Çocuklar sorular çözüyorlar. Sonra cevaplar üzerine konuşuyorduk neden, nasıl diyerek. Bir velimiz bunu bile şikayet konusu etti test çözüyorlar diye. Ne dediysem ikna edemedim. Şikayet konusu şu olsa anlayacağım: Yani konular yetişmiyor da test çözüyorlar deseler anlarım. Ama öyle de değil ben konuları bitirmişim. Zaten müfredata uygun şekilde anlatıyorum. E bir de zaten çocuklar OKS'ye girecek. Onlara bir faydamız olsun gayesi ile böyle birşey yaptırdım. Ama bu noktada bile şikayet aldıysanız siz o okulda her konuda şikayet alabilirsiniz. Bu da haliyle hem beni hem de arkadaşlarımı ciddi manada tedirgin ediyor. Özellikle bu okulda bu kronik bir sorun. Bilemiyorum belki bu okula has bir durumdur ama ben 6 yıl ……..'de bir lisede çalıştım. O okulda böyle birşey yoktu. Hani eti sizin, kemiği bizim mantığı da olmayacak elbette. Benim istediğim böyle birşey de değil. Ama eğitim noktasında öğretmeni kendi bildiği ile, kendi teknikleri ile, kendi doğrularıyla başbaşa bırakabilmeli veli.	- Parents' interference with teachers' teaching - Lack of understanding / cooperation / rapport between teachers and parents
Bir de, veliler yeni müfredata çok yabancı. Mesela proje veya performans ödevleri verdiğimiz zaman geleneksel Türk eğitim sistemi ile çok örtüşük	Parents' difficulties in providing students with the support they need with the

şeyler olmadığı için veli haliyle okula tedirgin bir şekilde geliyor. Böyle bir ödev vermişsiniz, ama nasıl hazırlanacak, nasıl yapılacak, çünkü bu tür ödevlerin ve projelerin hazırlanmasında çocuklar velilerin de desteğini ciddi manada alması lazım. Eğitimin aile boyutu da ortaya çıkarılmış yeni müfredatta. Onlar da bu mevcut eğitim sistemine alışık olmadıklarından bu noktada velilerle sıkıntı oluyor.	curricular change
Eleştirel düşünme doğuştan sahip olunan bir beceri midir, yoksa sonradan geliştirilebilir mi? Neden? Nasıl? Bence sonradan geliştirilebilir. Bir kere öğrencinin bunu geliştirmesi için bunu kavraması ve bunun modelini, nasıl olduğunu öğretmen kanalıyla görmesi şart. Öğretmen önce eleştirel düşünüp bunu öğrencilere göstermelidir ki öğrenci bir konu, olay veya durumu nasıl eleştirebileceği konusunda en azından fikir edinmiş olur. Tabi bir süre sonra kendi mantığı ve yaş düzeyine göre de bu gelişecektir.	**Acquisition of critical thinking** Critical thinking - Developmental **Teacher role** - modeling
Sizin için öğrencilerin eleştirel düşünme becerilerini geliştirmek ne kadar önemlidir? Öğrencilerin eleştirel düşünme becerilerini geliştirmekteki rolünüzü nasıl görüyorsunuz? Benim mesleğimde 10. yılım. Çok eski bir öğretmen değilim. Ama benim zaten çocuklara vermek istediğim temel şey eleştirel düşünmeyi yakalayabilsin, muhakemeler yapabilsin, eleştirsin, analizler yapabilmelerine olanaklar tanıyorum.	**Teacher role** - providing opportunities for students to analyze, reason, and criticize
Üç saatlik ders bizim için bu noktada hiç yeterli değil. Zaten benim bölümden bir arkadaş var. Onun anlattığına göre (kendisi Talim Terbiye'de programı hazırlayan arkadaşlardan biri) program 4 saate göre hazırlanmış. Fen bilgisi 3 saate göre hazırlanmış müfredatta. Fakat daha sonra sosyal bilgilere 3 saat, fen bilgisine 4 saat ayrılıyor. 3 saatte bu konuların tamamının verilmesi zaten asla mümkün değil. Bu program ilk uygulandığında, Ankara'daki pilot okulları denetlemeye gidiyorlardı arkadaşlar. Mesela 6'larda 8 konu başlığı vardı yanlış hatırlamıyorsam bunun sadece 5-6'sı bitirilebilmiş. 2 konu başlığı kalmış.	Inadequacy of time allocated to social sciences

Ben ne yapıyorum? Bende biraz dersanecilik tecrübesi de olduğu için neyin ne kadar önemli olduğu noktasında bilgi sahibiyim. Ben mutlaka olayın siyasi konjoktürünü de vermeye çalışıyorum çocuklara. Yani tarih konusunda, neden, nasıl, niye olmuş, neden olması gerektiği konusunda, yeterli olmuş mu, olmamış mı, olmadıysa neden veya daha başka neler yapılabilirdi. Bu düşünceye göre çocukların fikirlerini aldıktan sonra toparlıyorum. Neden toparlıyorum? Çünkü kitaplar öğrencinin tek başına çalışabilmesi noktasında yeterli değil. Hikayelerle, konuşmalarla dialoglar ile verilmiş. Ama bir de konunun esas öz kısmı var çocuğun hakim olması gereken. Ama bu verilmemiş kitapta. Ben onu mutlaka çocuklara defterlerine not aldırıyorum. Ancak bu notları aldırdıktan sonra kitaptaki etkinlikler bir anlam kazanıyor. Çocuklar o etkinlikleri daha bilinçli bir şekilde yapıyorlar.	The importance of studying the circumstances surrounding certain historical events to understand why and how they occurred
Eleştirel düşünebildiğine inandığınız öğrencilerinizi düşünün... Bu öğrencileri diğerlerinden farklı kılan özellikler nelerdir? Bu öğrenciler, derslerde (örneğin bir konuyu eleştirel olarak ele alıp düşüncelerini ifade etmelerini gerektiren bir sınıf içi etkinlik sırasında, a) hangi becerileri, b) tutum ve davranışları sergiler?	**Critical thinkers**
Derste çocuk tırnağına kadar dersi dinliyor. Herşeyden birşey almaya çalışıyor. Ve konuyu sadece dinlemekten ziyade algılamaya çalışıyor. Mantığını kavramaya çalışıyor.	− Are active listeners − Try to understand the logic behind…
Ve daha önceki konularla hemen birleştiriyor çocuk konuyu. Yani en güzel tarafları da bu. “Hocam bu daha önce şurda da çıkmıştı. Bakın aynı konu / sorun burda da bizim karşımıza çıktı” diye beraberce bütünleştirip bir sonuca ulaşabiliyorlar. Yani hatta benim ders sonunda yapabileceğim yorumların çoğunu bu çocuklar ders boyunca kendi yapıyor. Örneğin bu hafta ıslahatlar konusunu işliyorduk. Gerileme devri ıslahatlarını anlatırken “Batı ilk kez örnek alınmıştır” bilgisini verdim öğrencilere. Daha önceki konularda da batının gerek kurumlarında gerekse hukuki alanlarda yaptığı reformlarıyla nasıl örnek teşkil ettiğinden bahsetmiştik ve bu konuda epey konuşmuştuk. Bu konulardaki kaydettiği ilerlemeler neticesinde nasıl üstün hale geldiğini tartışmıştık. Çocuğun bir tanesi	− Have the ability to relate what they learn to previously learned knowledge

"artık batının kurumlarını Osmanlı örnek alır hale geldiyse demek ki batının üstünlüğünü kabul etmiştir diyebilir miyiz hocam" dedi. Benim de zaten ulaşmalarını istediğim sonuç oydu. "Lafı ağzımdan aldın" dedim. Yani bu çocuklar parçaları birleştirip, çok güzel çıkarımlarda bulunuyor.	– Draw inferences / conclusions
Bu öğrenciler kesinlikle çok okuyorlar. Yani, okuma alışkanlığı kazanmış öğrenciler. Bu yüzden de, sorgulama eğilimleri var. Ayrıca, bir araştırma ödevi yapacak olsalar, bu tür okuma alışkanlığı kazanmış çocuklar kendi yorumlarını da işin içine katabilen öğrenciler. "Bence" diyorlar.	– Have reading habit
Sorgulama cesaretleri var. Yüksek sesle eleştirilerini dile getirebilen öğrenciler. Ama bazı öğrenciler eleştirdikleri halde bunu hemen ifade edemiyorlar. İlla bizim zorlamamız gerekiyor. Benim mesela daha önce başıma geldi. Çocukların idare ile iligili sıkıntıları olduğunda dilekçe yazıp dilek kutusuna atın, eleştirilerinizi ve görüşlerinizi yazın dedim. Veya dersle ilgili beklentilerinizi yazın diyorum hep. Ama bu söylediklerimi yapmaya cesareti olan öğrenci çok azdır. Tutum ve davranış boyutunda en önemli şeylerden biri iletişim becerileri. Benimle olsun, diğer arkadaşları ile olsun etrafında birtakım olayları sorgulayıp bunun nedenlerini araştırmaya meyilli öğrenciler.	– Have courage to question
Sizce eleştirel düşünme ile ilgili bazı ölçütler olmalı mı? Öğrencilerinizin eleştirel düşünme becerilerini nasıl kullandığını değerlendirmek için hangi ölçütleri veya standartları kullanıyorsunuz?	**Criteria**
Bizim derste konular birbirinden bağımsız, kopuk değildir. Birbirine bağlı konular, benim yorum noktasında çocuklara dönüt vermek istediğim birşey varsa eğer, o mutlaka daha önceki konularla ilintili konulardır. Yani önceki konularla bağlayabilmesi benim hoşuma gider.	– Ability to make connections / relate what s/he learns to previously covered material
Bir de kitabi bilgiler değil de kendinden birşeyler katabilmesini isterim. A kaynağından, B kaynağından, C kaynağından ordaki bilgiyi moto-mot verdiği zaman çok da sırıtıyor, belli oluyor. Ama çocuk kendi bildiği kadar, kendi cümleleriyle kendi mevcut donanımıyla bildiğini ifade ederse daha güzel oluyor, daha şık oluyor, benim dersim	– With his/her own sentences – Originality of views

adına. Kendine has, özgün fikirler ve özgün cümlelerle ifade edebilmeleri çok önemli. Ve öğrencinin, bilindik klasik çerçeve dışından bir yorum getirebilmesi çok olumlu.	− Outside the classical framework
Ayrıca, bu düşünce çerçevesinde, özellikle tarihi konuları işlerken öğrencilerin, tarihi olayları yaşandığı dönemin koşullarını dikkate alarak değerlendirmesini beklerim. Örneğin ben 13. yüzyılda gerçekleşmiş bir olayı 2008 yılındaki bir bakış açısıyla değerlendirecek olursam yanlış sonuçlara varırım. O zamanın olaylarını inceleyebilmek için o zamanın dünya görüşünün ne olduğunu, yaşam koşullarının neler olduğunu bilmezsem, doğru bir değerlendirme yapamam. Dolayısıyla, bu aslında tarihi bir olaya ilişkin yapılacak her değerlendirmenin bir ölçütü olması gerekir.	− Ability to consider historical issues within the scope of their historical context
Eleştirel düşünmenin geliştirilmesine yönelik olarak iki farklı görüş vardır. Birincisi, eleştirel düşünmenin ayrı bir ders kapsamında – genel bir beceri olarak öğretilmesidir. Diğeri ise, eleştirel düşünme becerilerinin geliştirilmesinin, bütün derslerde amaçlanması gerekliliğidir. Bu konuda siz, hangi görüşe katılıyorsunuz? Neden?	**Approach to teaching critical thinking**
Tek bir derse sıkıştırmak ne kadar doğru, tartışılır. Ama bütün dersler içersinde buna eğilirsek ve bu iş dersi veren arkadaşlar tarafından da hakkı ile yapılırsa daha iyi olur. Eleştirel düşünme dersi şeklinde olursa haftada sadece bir iki saat ayrılır ve bu asla bu becerinin gerçek anlamda yaşam boyu kullanabilecekleri bir beceriye dönüşemez. Ama bütün derslerde hem eleştirel düşünceye dair zihinsel boyutlar hem de sosyal yönü verilirse daha iyi yerleşir. Eleştirel düşünmenin ortaya çıkarılmasında insanların yaşamış oldukları ortam, kültür etkilidir, eğitim etkilidir. Düşüncenin oluşumundan başlayarak düşüncenin çok yönlülüğü üzerine bir eğitim verilebilir eğer ayrıca bir ders kapsamında da verilecekse. Çünkü bizim toplumumuzda malesef en büyük eksiklik bu. Düşünceye, farklılığa tahammül edememeye. Herkes bizim gibi düşünsün, bizim gibi konuşsun, bizim gibi yaşasın düşüncesi var. Düşüncenin de bir zenginlik olduğu üzerine bir ders inşa edilebilir.	A combination of − Content-oriented view & − Skill oriented view

Bütün bu söylediklerinizden yola çıkarak eleştirel düşünme kavramını nasıl tanımlarsınız? Eleştirel düşünce insanın karşısına çıkan bir obje veya olaya o bilindik klasik çerçeve dışından yorumlamasıdır. O çerçeve sınırından çıkıp farklı bir perspektiften bakabilmesidir.	**Definition** Critical thinking is the ability to interpret things / events from different perspectives / interpreting isues outside the classical framework
Bu sözünü ettiğiniz boyutları ile eleştirel düşünmenin öğretilmesi / geliştirilmesi için nasıl bir sınıf ortamı gereklidir? Bir kere şu anki sınıf mevcutları eleştirel düşünmenin geliştirilebilmesi noktasında asla uygun değil. 40 kişinin olduğu sınıflarda bakıyorsunuz ki belli çocuklar bayrağı ele geçirmiş durumda. Sosyalde, matematikte bütün derslerde o çocuğun adı var. Böyle olunca diğer geride kalan öğrenciler kendilerini çekiyorlar. 40 kişilik sınıf mevcudu ile eleştirel düşüncenin sağlıklı bir şekilde yürütülebilmesi ya da bunu çocuklara kazanım olarak verilebilmesi çok mümkün değil. Sınıf mevcutlarının azaltılması lazım.	**Necessary conditions** - Reasonable class size
Derse giren öğretmenin de ciddi manada donanımlı olması lazım. Öğretmenin de eleştirel düşünmeyi bilmesi lazım, eleştirel düşünebilmesi lazım. Bizim eğitim sistemimizde bakıyorsunuz ki, 35 yıllık öğretmen, tarih öğretmeni, ama en son okuduğu kitap üniversite döneminde kalan kitaplardır. Akademik eğitimi bitirdikten sonra belki sayfa açmamış kitap okumamış öğretmenler eleştirel düşünceyi ne kadar öğrenciye verebilir? Ya da eleştirel düşünmeye ne kadar açık olabilir? Yani öğretmenin de kendini eleştirmesi lazım.	- Teachers' ability to think critically & teach for critical thinking
Yanlış yaptığı zaman ya arkadaşlar ben yanlış yaptım, yanlış anlatmışım, bu noktada kendisini eleştirmesi lazım. Ben bir kere mesela derste oldu. Benim söylediğim birşeyle dersane öğretmenlerinin söylediği birşey örtüşmemiş. Çocuklara o öğretmenin ne anlattığını sormadan direk şunu söyledim: Çocuklar dedim olabilir ben de yanlış yapabilirim. Ben de yanlış verebilirim, deyince çocuklar şaşırdılar. Çünkü ilk defa görmüşler kendisini eleştiren bir öğretmeni. Yani kendi ile dalga bile geçebilmeli öğretmen.	- Teachers' self-criticims / posing a model for students
Çocukların kendilerini sınıfta rahatça ifade	

edebilmeleri noktasında o rahatlığı hissedebilmeli öğretmenin yanında. Birşey söyleyeceğim ama öğretmenin bakış açısı ile örtüşmezse, onun istediği gibi bir cevap olmazsa bana ne der, ne söyler noktasında eğer çocuk tedirgin bir şekilde derse giriyorsa eleştirel düşünme de olmaz.	− rapport with the students
Yani dönüp dolaşıp mesele hep öğretmene geliyor. 30 yıllık öğretmen arkadaşlar var bizim okulda kendi branşımda. Hala eski programlara göre işliyorlar. Yani eski programdaki kabuk hala kırılmadı. Sadece bizim okulda da değil, bütün okullarda da durum bu. O kabuk aşılabilmiş değil. Gereksiz, lüzumsuz görüyorlar. Eski müfredatla örtüşen yönler çok az olduğu için, belki ben de olsam ben de aynı şeyi düşünürdüm. Yani 20-25 yıl aynı sistemi ile ders verip de öğretmenliğimin son deminde müfredat değişikliği olsa haliyle bocalardım. Belki biz yaş olarak ya da akademik eğitimi bitirdiğimiz süre içinde çok fazla bir zaman geçmedi. Hem yaşın, hem de akademik eğitimin vermiş olduğu donanım da bilgi de biz de vardır. Bizi çok etkilemiyordur ama şu yeni müfredat sistemi içinde artık öğretmen herşeyin içinde olmak zorundadır. Yani çok aktif olması lazım ve daha da zenginleştirebilmesi lazım. Nasıl anlatırım, nasıl daha zenginleştirebilirim, nasıl dersi çekici hale getirilebilir, nasıl oyunlaştırılabilir, özellikle de 6. sınıflarda mutlaka oyunlaştırmak lazım. Öğretmenin bunları düşünmesi lazım. Çünkü çok soyut konular var. Enlem, boylam, matematik konum, coğrafi konum. Çocuğun bunu algılayabilmesi için onun düzeyine ciddi manada indirilmesi lazım. Oyunlaştırdığınız zaman da çocuk daha iyi kavrıyor ve bu da eleştirel düşünmeyi tetikleyen bir durum.	Resistance to the recent curricular change by senior teachers Requirements of the new curriculum Concretization and critical thinking
7. sınıfta yürütmekte olduğunuz programı, eleştirel düşünmenin geliştirilmesine yönelik olanaklar bakımından nasıl değerlendirisiniz? Ben kendi dersim adına konuştuğumda bu yeni müfredatın eleştirel düşünceyi çocuklara çok fazla verebildiğine ihtimal vermiyorum. Yani mutlaka birşeyler katıyordur ama... <u>Örneğin ne anlamda yetersiz kalıyor?</u> Bir defa konular birbirinden çok kopuk. Mesela 7. sınıflardan örnek verecek olursak 7. sınıfta Islahatlar konusu var. Osmanlı duraklama, gerileme ve dağılma dönemindeki ıslahatlar.	**Program at 7th grade Limitations** − Lack of unity − The need to provide input related to the historical contexts in which events

Çocuğun eleştirel düşünceyi en çok alabileceği bir konu başlığı bu. Hani neler yapılmış, yapılma süreçleri neler, hangi olaylar sonucu bunun yapılması zorunlu hale geldiği anlaşılmış, çocuğun bu dönemde, o dönem şartlarına eleştirel bir gözle bakabilmesi için siyasi tabloyu da az çok bilmesi lazım. Çünkü ıslahat programları siyasi olaylardan çok kopuk, çok lokal olaylar değil. Siyasi olayların beraberinde getirmiş olduğu gelişmeler. Hiç siyasi olayları vermeden doğrudan ıslahata geçiyor. Ama çocuğun ıslahatın gerekliliğini anlayabilmesi için ya da bu konunun ne olduğunu anlayabilmesi için öncelikle o dönemin siyasi yapısına hakim olması gerekir ki bu noktada eleştirel düşünmeyi getirebilsin. Yani bu sorun 6. sınıf müfredatında da görülüyor. 7. sınıf müfredatında da var. Bu anlamda, eleştirel düşünmeyi çok kazandırabildiğini düşünmüyorum.	occurred Teacher belief: "Events are meaningless outside their historical context."
Bununla beraber, bazı konular çok basite indirgenmiş. Hiç alakası olmayan konular var. Kazanımlar çok geniş tutulmuş. Örneğin, Türk tarihinde yolculuk ünitesini verelim. 1071den alıyorsunuz. 1914e kadar getiriyorsunuz. Örneğin Osmanlının kuruluşundan bir anda gerileme dönemindeki Sinop veya Çeşme baskınına geliyorsunuz.	Superficial coverage of too much content / No depth
.....Örneğin bazı arkadaşlardan bildiğimiz kadarıyla bir araştırıyoruz mesleğimiz gereği İngiltere'de örneğin 30 yüzyıl savaşlarını kitaplarda vermişler. Ama 30 yüzyıl savaşlarını okuturken Lord Byron'un bir şiirini de o üniteye koymuşlar. Sayfanın bir tarafında 30 yüzyıl savaşları varken, diğer tarafında da o şiir verilmiş. Lord Byron o savaşa da katılmış bir şair. Şimdi ister istemez edebiyat, sosyal bilgiler, tarih bunlar hepsi birbiriyle ilişkili. Sanırım onların bu yaptıkları çok doğru. Bizde ünitelerin sonunda bazı okuma parçaları oluyor. O parçada öğrencilerin hepsi parmak kaldırıyor, ben okuyabilirmiyim diye. Yani konuların içinde yeni müfredatta bu tür okuma parçaları var. Bu yönü çok güzel. Ama o da sanki sırf okuma parçası verilmiş olması için konulmuş oraya. Tam can alıcı parçalar değil. Sırf vermiş olmak için verilmiş parçalar. İlişkilendirmeler çok yetersiz. ... Tarih çok geniş bir konu olduğu için konunun içinde küçük bir başlık olarak örneğin	Need for establishing interdisciplinary relations in presenting the topics Lack of effective interrelations among the topics dealt with

kervansaraylar konusu veriliyor. Onu anlatırken onunla ilgili bağlantılar verilmeye çalışılmış. Örneğin İpek Yolu, Baharat Yolu ticaretin önemi falan verilmiş. Ama tarihsel olaylar iyi seçilmemiş. O okuma parçası ile işlenen tarihsel olaylar çok iyi ilişkilendirilmemiş. Şimdi siz örneğin öğrenciye kervan kültürünü vermeden kervansaraydan giriş yaptığınızda olmuyor. Tabi biz onu tamamlamaya çalışıyoruz.	
Siz bu programı uygularken ne tür değişiklikler yapıyorsunuz? Benim daha önceki senelerde hazırlamış olduğum asetat kağıtlar üzerine çektirmiş olduğum haritalar, sorular, grafikler, yorumlar var. Bu konuda bilgi boyutu ile ilgili kitapta ciddi manada eksiklikler var. Konular çok yüzeysel olarak işleniyor. Özellikle de tarih konularında daha önce bahsettiğim olayların *siyasi konjoktürünün* verilmesi konusunda ek materyaller hazırlıyorum veya öğrencilere araştırma görevleri veriyorum. Gerekli olan zamanlarda bu ek materyalleri öğrencilerin ellerine de veriyorum.	**Adaptations** - Teacher trying to allow for depth while dealing with a certain subject - Supplementary materials and research assignments for the purpose of studying the prevailing circumstances surrounding historical events
Tarih konularına geçtiğimizde özellikle grafikler ve şeritler hazırlıyorum ve onlara da hazırlatıyorum. Harita çizdirme, harita okuma en büyük eksiklikleri bu. 6. sınıfa gelmiş olan bir çocuğun yön kavramını bilip haritayı da okuyabilmesi lazım. 6. sınıfa gelmiş öğrencilerimiz var ki bunların çoğu haritada kuzey neresi, güney neresi, doğu, batı neresi, Asya kıtası nerdedir, Avrupa kıtası neresi, bunları gösteremeyen öğrenciler var. Harita okumaya ağırlık verip çocuklara harita çizdiriyorum. Yani 6. sınıfta bizde İpek Yolu'nda Türkler diye bir konu başlığı var. Oldukça uzun bir ünite başlığı. Mesela çocuklara İpek Yolu haritasını çizdirdim. İpek Yolu nerden başlıyor, nerde bitiyor, Anadolu coğrafyasının neresinden geçiyor. Çocuk önce görüyor, sonra gördüğü şeyi çiziyor. Çizdiği şey üzerinde İpek Yolunu gösteriyor. Ancak ondan sonra, kafalarında İpek Yolu'na dair somut bir temel bilgi oluşturduktan sonra, onlardan İpek Yolu ile ilgili, İpek Yolu'nun Türkleri nasıl etkilediği ile ilgili, Türklerin İpek Yolu ile ilgili nasıl mücadeleler içine girdikleri ile ilgili, Türklerin siyasi yaşantısını İpek Yolu'nun nasıl şekillendirdiği ile ilgili, çocuklardan araştırma	**Adaptations at 6th grade** - Opportunities to concretize issues and concepts in the minds of the students, to set the stage for the students to think critically, and enable students to build on their knowledge A sample classroom activity at 6th grade to concretize a subject prior to research

yapmalarını bekliyorum. Çocuk ilk başta harita üzerinde çizerek İpek Yolu'nun ne olup olmadığını somut olarak gördüğü için, daha sonra hem kendi araştırmaları sırasında, hem de ben sınıfta o konu ile ilgili bilgi verdiğimde, o mevcut bilgileri üzerine konuyu inşa etmek daha kolay oluyor.	
Aynı şeyi 7. sınıflarda da yapıyorum. Örneğin, 7. sınıflarda Islahatlar konusunu işliyoruz. Duraklama, gerileme ve dağılma diye bir tek bölüm halinde vermiş. Yani bunları birbirinden ayırmamış. Ben grafik çizdim çocuklara. Defterlerine çizdirdim. İşte şu dönem duraklama, şu dönem gerileme, şu dönem dağılma. Öncelikle devlet politikalarını verdim. Yani devlet politikasında nasıl değişmeler olmuş bir dönemden diğer döneme geçişte. Önce yeni topraklar fethetme, sonra kaybedilenleri geri alma, sonra mevcut toprağı koruma, mevcut toprağı koruyamayacağını anlayınca batılı devletlerin desteğini alma. Dedim ki bakın devlet zayıfladıkça devletin politikaları sürekli değişti. Devletin politikası ile güç arasında olumlu ya da olumsuz bir ilişki var. Devlet politikası değişiyorsa o zaman devletin yenilik çalışmaları da değişecek. Yani şurda fetihleriyle kendisine başka devletler örnek almasına hiç gerek yok. Tam tersine batıyı etkilemiş. Çünkü askeri, mali, sosyal, eğitim yapısı iyi. Ama duraklama döneminde işler eskisi gibi iyi değil. O zaman yenilik yapmak lazım. Yani batıya karşı sürekli kaybedilen savaşlar varsa demek ki batı belli alanlarda bizden daha iyi. Onları örnek almak lazım. Yani böyle grafikle, şekille, şemayla haritayla somutlaştırarak verdiğimiz zaman daka iyi anlaşılıyor ve o çok daha kalıcı oluyor. Konuyu somutlaştırıp, detaylandırıp sonra eleştirel düşünmelerine yönelik bazı etkinliklere geçiyoruz.	**Adaptations at 7th grade** Opportunities for concretization − To set the stage for students to think critically (concretization serving the purpose of grasping the issue / concept under concern)
Ama bazı konular var ki çok önemli konular. O konular üzerinde çok fazla durulmamış. Bana göre gereksiz konular çok ayrıntılı bir şekilde işlenmiş, anlatılmış. Müfredatta olduğu için mutlaka anlatmak zorunda hissediyorum.	**Perception on the coverage** − The teacher perceives the content as trivial, not worthy but feels compelled to cover it
Belli konu başlıkları var ki tek bir konu başlığı altında onları vermek mümkün değil. Türk tarihine geçtiğimiz zaman çocuklara şunu söyledim: Türklerin geleneksel üç özelliği vardır. Savaşçı bir	The teacher's efforts to allow for depth of coverage and interrelations, and a sort

millet, teşkilatlanma alanında iyidir ve hoşgörülü bir millettir. Ve anlatmış olduğum tüm Türk siyasi tarihlerde o devletlerin hoşgörüsünden örnekler deliller sunmalarını istedim. Türk devletlerinde hoşgörü diye tek bir konu başlığı sıkıştırmak çok doğru değil yani, benim bakış açıma göre. Tek bir başlığa sıkıştırdığınız zaman onu 40 dakika anlatıp geçmeniz gerekir. Ama belli başlı özellikler tüm konularda anlatılıp örneklendirilebilecek somutlaştırılabilecek şekilde işlenirse çok daha anlamlı olur. Bence konuların 1-2 sayfada anlatılması hiç anlamlı değil. O kitapta hoşgörü ile ilgili bölüme ben birkaç dakika ayırdım geçtim. Çünkü ben zaten bu konuya tüm ünitelerde yeri geldikçe değiniyorum. Hatta çocukların kendilerinin, Türklerin bu özelliklerine örnekler bulmalarını istiyorum.	of coherence, among topics
<u>7. sınıf düzeyinde</u>, eleştirel düşünme becerilerinin geliştirilmesine yönelik hangi öğretim stratejilerini kullanıyorsunuz? Hangi sınıf içi etkinliklerini yapıyorsunuz? Ne çeşit ödevler veriyorsunuz? Drama çalışmaları yapıyoruz. Çünkü bazı konular drama ile doğrudan kullanılabilecek konular. Örneğin iletişim konusu. İletişim kazası, empati konusu. Çocuklar drama hazırlıyorlar. Önce çocuklar kendi çalışmalarını gruplar halinde hazırlıyorlar. Birbirlerini veya grup içindeki performansları eleştiriyorlar. Sonra grup dışında kalan sınıftaki diğer arkadaşlar çocukları eleştiriyor. En sonra da ben eleştirilerimi ifade ediyorum. Önce çok sorunlar çıktı. Çünkü çocuklar ne eleştirmeye ne de eleştirilmeye alışık. Bir de kendi sınıf içindeki bir akranı tarafından eleştirilmek noktasında sıkıntı çıktı. Arkadaşlık ilişkileri de bu işin içine giriyor. Bu sorun hala tam aşılmadı. Yaşları itibarı ile tam anlamıyla da aşılması beklenemez. Ama eleştiriye tahammül edebilme, olayın farklı yönlerini görebilme, meseleyi farklı bir yerden yakalayabilme gibi özellikleri bu tarz etkinliklerin kazandırdığını düşünüyorum.	**Practices** − Drama − Peer / group evaluation Such evaluations help students to acquire the dispositions of tolerating criticism and seeing issues from different angles
Dramanın dışında power-point sunumları hazırlatıyorum çocuklara. Özellikle benim bitirmiş olduğum konu ile ilgili olmasına özen gösteriyorum. Yani ben hiç anlatmadığım bir konu	− Presentations on students' own conclusions about what the teacher

ile ilgili çocuklara power-point sunum hazırlayın dediğim zaman çok verimli birşey olmaz. Çocuk da zaten ne yapacağını bilmez. Sunum bittiği zaman (öğretmenin sunumu) üç kişilik beş kişilik gruplar halinde power-point hazırlıyorlar. Ve diyorum ki kendi gördükleriniz ve kendi yorumlarınızla bu power-point sunumlarını hazırlayın diyorum. Yine kendi birbirlerini eleştiriyorlar. Çalışmalarını eleştiriyorlar. Sınıftaki diğer öğrenciler de aynı şekilde eleştirilerini ifade ediyorlar. Şu da güzel birşey: Kimse yoğurdum ekşi demez, kendi yaptığı şeyle ilgili de eleştirecek birşey buluyorsa, bu da ciddi bir kazanımdır.	introduced Peer evaluations in this process
Bunların dışında ben sınavlarda çıkan soruları asetata çektiriyorum. Daha önce OKS'de çıkmış olan soruların. Onları da beraberce çözüyoruz. Sonra bu anlama, yorumlama, muhakeme gücünü geliştirme üzerine kurulmuş olan soru kökleri var. Onları da beraberce çözdüğümüz zaman çocuklar evet biz bunu düşünmüştük, biz bunu söylemiştik, konuşmuştuk bak yapabiliyoruz diyorlar. Yani birşeyler yapabildiklerini görüyorlar.	− Exam-focused practices Aiming for developing understanding, reasoning and interpreting
Sunum, drama, soru-cevap dışında bir de harita çizme etkinliğimiz var. Mesela 7. sınıfta Osmanlı tarihi ile ilgili iki konu var. Biri Baharat Yolu diğeri İpek Yolu. Örneğin ben Baharat ve İpek Yolunun haritasını çizdiriyorum. Nerden başlıyor., nereye kadar gidiyor, hangi devletlerin sınırları içinden geçiyor. Çocuk onu görüyor biliyor. Baharat Yolu'nu ve İpek Yolu'nu öğreniyor. Sonra ben bu harita üzerinden diyorum ki bakın yeni bir yol buldum. Coğrafi keşifleri de daha önceden işlemiş oluyoruz. Peki diyorum hangisi daha kolay, batılılar açısından baktığımızda, şu kolay. Peki neden, çünkü daha çok para kazanırlar, ceplerine daha çok para girer. Neden çünkü şu ülkenin sınırları içinden geçiyor. Neden, çünkü... Ayrıca konuya işadamı gözüyle bakıp hangi ülkelerin daha karlı çıkacağını soruyoruö. Aynı şekilde bir politikacı gözüyle bakıldığında, hangi ülkeleri stratejik bir öneme sahip olacağını soruyorum. hem bir devlet adamı gözü ile bakıyor hem de ticaret adamı gözü ile bakıyor. Müslüman bir ülke gözüyle değerlendiriyor. Yani harita çizimi derken şu ülkenin haritasını çiz getir değil.	A sample activity for the purpose of considering issues from different angles

Bütün bu yapılanların (sınıf içi etkinliklerin ve ödevlerin) öğrenciler üzerindeki kısa vadeli etkileri nelerdir? (Yapıldığı esnada öğrencilerden nasıl bir tepki alıyorsunuz?) Bana göre tüm branşlarda çocuğun derse hazırlıklı gelmesi, gayret göstermesi, dersin hoca tarafından sevimli, ilgi çekici hale getirilmesi de çok önemli. Yani çocuğu konunun işlenilmesi sürecinde işin içine kattığımızda dersler daha verimli hale geliyor. Derse karşı önyargılı olsa bile belki dersi sevimli hale getirme çalışmaları ya da bize olan sevgisinden dolayı daha çok katılıyor özellikle eleştirel düşünmelerini gerektiren etkinliklerde.	**Factors that help foster critical thinking** - Students' coming to class prepared - The teacher's attracting students' attention - Rapport between the teacher and students
<u>7. sınıf düzeyinde</u>, öğrencilerinizin eleştirel düşünme becerilerini nasıl ölçüyorsunuz? 7'lerde klasik sorularda, boşluk doldurmalarda, performans ödevlerinin bazı sorularında eleştirel düşünmelerini bekliyorum.	Assessing students' critical thinking in "fill-in-the blanks" and questions asked in performance assignments
Yorum gerektiren sorular soruyorum. Mesela şöyle bir sorum vardı: Kervanla ilgili şöyle bir soru sordum: Sen kervan sahibi olsan Uygur döneminde yaşayan bir kervancı olsan kervanında neler bulunmasını isterdin? Neler olurdu? Şimdi çocuk geçmişe dönüp düşündüğü zaman bugünün eşyalarını yanında istiyor. Ama kendisini geçmişte farzedip ona göre bir mantık yürütüp de yapanlar da var. Altına da ben yazmışım mesela. İşte elektrik lambası, el feneri bunlar olumsuz. Orda çocuk neyin çıkarımını yaptı. İşte ben Uygurlar döneminde yaşayan bir kervancıyım – bu tür aletler benim yanımda olamaz.	Open-ended questions to get students to consider historical events within their context, according to the conditions of that period of time
Zaten bizim en büyük hatamız da o. Toplum olarak da hatamız o. Geçmişteki olayları yargılarken, sorgularken bugünün kafasıyla düşünüp geçmişi o şekilde yargılıyoruz. İşte Fatih Sultan Mehmet diyor ki kardeş katli vaciptir. İşte şu anda bunu çocuklara anlatınca hepsinin tüyleri diken diken oluyor. Beşikteki kardeşini boğdurarak öldürdü dediğim zaman hepsi iğrendi. Bu muydu Fatih Sultan Mehmet diye. Ama geçmişe dönüp eleştirel düşünmeyle, o zamanın şartlarını dikkate almalarını isteyerek durumu değerlendirdiklerinde gördüler ki merkezi yönetimi güçlendirmek adına böyle birşeyin yapılması çok gerekliydi. Ya da o zaman	The need to develop the skill of "judging a past event taking into account the prevailing circumstances leading to it"

bu böyleydi. Hiç kimseye karşı hesap vermek zorunda değildi. F. S. Mehmet padişahın ağzından çıkan kanundu dediğin zaman tamam dediler. Eğer çocukların bu beceriyi (geçmişi o zamanın koşulları ile değerlendirme) kazanmalarına fırsat verirsek – örneğin Atatürk'ün yapmış olduğu birtakım inkılapları bugün şimdi de bu şartlara göre düşünüldüğünde – ki şu anda bu devrimleri şu anki koşullara göre yargılayanlar var – deniyor ki işte şapka kanunu çıkarılmış – ne kadar gereksiz diyor. Böyle düşünen insanlar var toplumda. Şu anda bakıyorsunuz, bunu uygulayan insan var mı, (şapka kanunu) yok. O zamanın şartlarında o gerekiyordu. O yapıldı. Bu devrimle ilgili olarak sordum örneğin çocuklara sınavda. Aynı şeyi biz 2. Mahmut için de diyebilirdik o zaman. 2. Mahmut da fes giyme zorunluluğunu getirdi. Kılık kıyafet düzenlemesini sadece Atatürk getirmedi. O zaman da 2. Mahmut'a gavur padişah demişlerdi. İşte onu diyenler zaten, bu beceriye sahip bir toplum yetiştirmediğiniz zaman, ya da yetiştirmediğiniz kadar, işte ister istemez geçmişini yargılayan, geçmişine yalan yanlış birtakım duyumlarla iftiralar atan bir toplum ortaya çıkıyor.	The need to develop the skill of "judging a past event taking into account the prevailing circumstances leading to it"
Uzun vadeli etkileri (sınavlarda) neler nelerdir? Öğrenciler bu tür soruları (yoruma dayalı soruları) cevaplandırabiliyorlar. Bunu da şuna bağlıyorum: Konunun derste işlenilmesi sırasında zaten hep bu düzey sorular üzerinde düşünüyorlar. Sürekli konular arası bağlantı kurmalarını gerektiren tarzda sorulara cevaplar arıyorlar zaten. Bu anlamda sınıf içi uygulamalar ile sınav soruları arasında tutarlılık olması da başarıyı olumlu anlamda etkiliyor. Dolayısıyla genel olarak öğrencilerden amaçladığım başarıyı elde ediyorum. **Eleştirel düşünmenin öğretimi ve geliştirilmesini yolunda karşılaştığınız engeller nelerdir?** Aslında eleştirel düşünmenin geliştirilmesi ve de müfredatın gerektiği gibi uygulanması için sınıf mevcudunun makul olması lazım. Şu anki 40 kişilik sınıflarda bunların istenilen düzeyde uygulanması mümkün değil. Sadece 5-10 öğrenci kendini gösterebiliyor. Diğerleri de kaybolup gidiyor. Bütün bu öğrencileri bir şekilde derse dahil	Satisfactory student performance due to questions requiring critical thinking Consistency between exam questions and classroom practices **Obstacle in the way of teaching for critical thinking** - Crowded classrooms

etmek hepsini aktif kılmak için sınıf mevcutlarının daha az olması lazım. Aynı zamanda teknolojik ve görsel materyaller yönünden şartların daha da iyileştirilmesi lazım. Her branşın kendi sınıfı olması gerekir. Bu programın etkili bir şekilde uygulanması için öğrenci sınıf sınıf dolaşması lazım. Diyelim ki sosyal bilgiler dersine girecekse, sosyal bilgiler sınıfı olacak, oraya girecek. Fense fen, matematikse matematik sınıfına girecek. Her türlü araç ve gerecin olduğu donanımlı sınıflar olmalı. Daha önce bahsettiğim veli faktörü bir başka engel. Olaya çok müdahale etmeleri. Özellikle de bilmediği anlamadığı konularda müdahale etmesi bizim için engel teşkil ediyor. **Eleştirel düşünmenin öğretimi ve geliştirilmesini kolaylaştıran unsurlar nelerdir?** Neyseki okul idaremiz daima bizleri bu konuda destekliyor. Mesela ben şu sınıfımda şu etkinlikleri yapmak istiyorum, desem beni destekliyorlar. **Öneriler:** Nasıl ki Atatürk ilkeleri bütün branşların öğretiminde temel hedef olarak algılanmış ve kabul edilmişse eleştirel düşüncenin öğretimi ve geliştirilmesi de bütün programlarda gerçek anlamda hedeflenmeli. Bütün alanlarda konular eleştirel düşünme mantığı çerçevesinde verilmelidir. Yani biz öğretmenler sadece öğrencilere bilgi sunmak ve birtakım bilgileri kuru kuruya öğrenmelerini sağlamak yerine kendini bir başkasının yerine koyabilme, olaya farklı bir boyuttan bakabilme öğretilmeli ve bu beceri geliştirilmelidir. Bu bütün derslerde, bütün branşlarda sağlanabilir diye düşünüyorum. Çocuğa eleştirel düşünme becerisi kazandırmanın ilk şartı bana göre okuma alışkanlığı kazandırmak. Okuduğundan birtakım fikirler, düşünceler çıkarması gerekir. Burda da özellikle şu çıkıyor karşımıza: Çocuk 1'den 5. sınıfa kadar tek bir öğretmenle. Tek bir öğretmende olduğu için herşey o öğretmene endeksli. 6'ya geldiği zaman 13 farklı öğretmen girdiği zaman çocuk bocalıyor. Bunun 1'den 5'e kadarki süreçte verilmesi lazım. Çocuğun	**Factors that help foster critical thinking** - Call for thematically designed classrooms - Parents' interfering in teachers' ways of teaching **Opportunity**: supportive administration **Suggestion** - Adopting and implementing a content oriented approach to teaching critical thinking - Getting students to acquire the habit of reading

çok yönlü olarak okuduğunu sorgulaması, eleştirel bir gözle okuması lazım. Örneğin şimdi okuma saatleri var. Bu etkinlikten ben çok fazla olumlu netice aldıklarını düşünmüyorum. Çünkü malesef o da amacından saptı. Öğrenciler pek fazla ciddiye almıyor. 40 dakikalık okuma etkinlikleri var. Ama bu sürede bazı çocuklar okuyor, bazıları okumuyor. Örneğin özetin de çıkarılması gerekiyor. Anafikrin bulunması lazım. Ama bir de bakıyorsunuz ki çocuk 3 günde 1000 sayfalık bir kitabı ben okudum diyor. Yani ilginç tarafları da var. Amacına tam anlamıyla ulaşamıyor bu okuma etkinlikleri. O yüzden bu okuma saatlerinin amaca uygun bir şekilde yapılması için gerekli önlemler alınmalı.	Reading hours not serving the purpose of getting students to teach for critical thinking
Japonya'da atom bombasının atıldığı bir bölgeye trenle bir seyahat düzenliyorlarmış ilköğretim çağındaki çocuklar için. O yıkıntıların arasından şöyle bir tur atıp geçtikten sonra bir Japon çocuğu için 2. Dünya Savaşı konusu orda bitmiştir. Yani onu birebir görme imkanına sahip olduktan sonra. Tabi biz de film, gösteri, slight ile birşeyler yapmaya çalışıyoruz. Ama hep iş imkanda bitiyor. Bugün Osmanlı diyoruz Topkapı Sarayı diyoruz, anlatıyoruz, padişahların yaşadığı ortamları, hayallerinde canlandırmalarını istiyoruz. Hep hikayelerle bunları vermeye çalışıyoruz. Ama anlatmak yetmiyor. Göz görmeyince gönül katlanmaz deniyor ya illa ki çocuklara oraya gidip o havayı teneffüs etmeleri, görmeleri lazım. Bir Çanakkale'yi görmeleri lazım. Biz okul temsilcisi olarak bir öğrenciyi gönderebildik Çanakkale'ye. İmkanlar olmayınca olmuyor. Halbuki o imkanlar çok fazla çocukları eleştirel düşünmeye sevkedebilir.	− Field trips as an opportunity to think critically

APPENDIX D

PROFILE OF TEACHERS

In an attempt to provide a thick description of the participants and the contexts that they were teaching at (Bogdan and Biklen, 1998), the participants were also asked to state the aspects of the teaching profession that they liked the most, and the difficulties that they encountered in doing their jobs. In responding to these two questions, they were particularly requested to consider the context that they were currently teaching at.

The perceived aspects of the teaching profession that teachers liked the most revealed a list of areas of satisfaction, which will be presented under the following headings: Love of teaching, the missions that the teachers assumed as a teacher, positive changes in students. Besides, there were those aspects that only few cited, namely, teaching students with desirable qualities, recent curricular change, reasonable class size, sufficient educational aids and facilities, effective communication.

Love of Teaching: To begin with, all teachers seemed to be happy about teaching children. They said that the thing that made this job appealing to them was the children and their different points of views. Several teachers mentioned children's love for the teacher. Others were proud of the idea of teaching the scientists, lawyers, sportsmen, presidents of the future. Furthermore, the majority of the teachers interviewed indicated that love of the teaching profession and their keen interest in teaching the particular disciplines were also the things they liked the most about their job. The science and technology teachers, for instance, pointed out the joy that they got from doing experiments with students in a science laboratory, which two teachers viewed as their home. A group of mathematics teachers, however, expressed satisfaction at teaching a subject that both activated the brain and contributed to the development of thinking skills.

Furthermore, a social studies teacher explained, "the only reason why I still continue my teaching career even after 30 years in this profession is that I love teaching the particular branch and particularly teaching our history and geography to a generation totally ignorant of their past and their country." In addition, most Turkish teachers interviewed stated that they were contented with teaching a course where they had the freedom to talk about anything about life and contribute to the personal development of the students. Also, the participating teachers from all four branches seemed to enjoy such opportunities as learning while teaching and keeping a track of the innovations and changes regularly. Finally, some teachers were particularly happy about the dynamism that the teaching profession involved. One teacher commented as such: "Not a monotonous job. Each year, you meet different students and experience different things in each class although you do the same things."

Missions that Teachers Assume as a Teacher: The teachers seemed to take pride in undertaking certain missions as a teacher as follows: getting students appreciate literature, having students to explore their creativity, teaching them how to tackle problems in their daily life, helping them to develop their world view, expanding their horizons, instilling in students love of reading books and watching theatre, helping students to develop an awareness and sensitivity to world-related issues, developing students' self-confidence, instilling in students a sense of responsibility for their learning, developing active listening skills, educating children to love their country and work for the good of their country – raising awareness as to how we gained our independence in history, needed to maintain it, teaching children the virtues as well as the particular branches and seeing that they apply what they learned in their own life, educating the children to get the courage to question starting from early stages of their lives, getting students to think rationally both for themselves and their country, helping children to acquire social skills, and instilling in students a spirit of enterprise. At this point, it is worthy of note that teachers were commonly concerned about working on affective development of their students in the first place.

Positive Changes in Students: As one of the teachers pointed out, "teaching is the profession through which you can change the human behavior for the better." At this point, most teachers expressed the joy they got from seeing the positive changes and improvements in their students as a result of their endeavors. In an interview, one teacher explained her willingness to hear from students their gains out of the lesson as follows: "When a teacher sees or feels that his / her students learn and apply what they learn to their real life, s/he feels so happy. For example, having them to read a text on 'helping' recently, I told them to help someone around themselves, helping their mothers to prepare dinner, giving money someone in need of financial help, etc. A few days later, I asked them to share their feelings in class. I was so amazed to hear some students saying, 'We actually help ourselves when we help someone else since we feel very happy when we help someone out'." Most of the participating teachers in fact expressed the satisfaction at getting the fruits of their efforts to teach their students some important virtues. Besides, majority of the teachers particularly liked meeting their former students who had achieved success.

Effective Communication: Pointing out the importance of establishing effective communication at all levels of school organization, some teachers were happy to have set up such an effective communication: One teacher suggested, "Having several colleagues teaching the same branch in a school and maintaining good relations with these colleagues are especially beneficial in exchanging teaching ideas." Another teacher pointed out the importance of maintaining cooperation and collaboration between guidance and counseling teachers and the other branch teachers in the school. She indicated that such collaboration in the school that she was currently teaching at existed to a great extent, which, in her opinion, helped to provide workable solutions to especially student-related problems.

Besides the positive aspects, the teachers also stated the difficulties that they encountered in doing their jobs. The difficulties that they voiced concerned students, curriculum, assessment system, central examinations, discipline, educational aids and facilities in the schools and physical conditions of the

schools, class size, communication, practices for professional development, workload, and level of financial satisfaction.

Student-related Problems: The teachers complained about the "changing" profile of students that they were currently teaching. For instance, most teachers from schools located in districts where people with high socio-economic status resided expressed dissatisfaction at having "spoilt, insensitive, materialistic, ego-centric, fiercely competitive, and over-self-confident students who show no respect for their peers." It was noticed that parents were commonly blamed for this. One of the teachers explained, "Children today are allowed too much freedom by their parents who were pressurized by their own parents when they were young. The parents intend to instill self-confidence in their children by doing so, but actually they instill exaggerated self-confidence. And their children are thoroughly spoilt as a result of their too permissive parents."

Also, the teachers from schools which students with middle or low socio-economic backgrounds attended voiced certain student-related problems: First, they complained about student apathy which resulted from a lack of parental support and guidance. One of the participants said, "In such schools, [where students with low socio-economic status are taught] there is a problem with the level of student interest, not with their level of perceptiveness - as most teachers claim. Due to a lack of student interest, you cannot transmit information, beliefs or values to the children. In your efforts to address this problem, you cannot cooperate or collaborate with the parents because they are indifferent to their children's needs, wants and expectations." Some teachers also pointed out that these students did not have any aims or future plans. Another common source of student apathy, as most teachers from schools where students with middle and low socio-economic status attended raised, was a lack of prerequisite knowledge and skills especially in mathematics courses and inability to build on as a result of this situation. One mathematics teacher stated, "Learning mathematics is like construction work. You need to have a strong base in the first place. For example, a student at the sixth grade should at least know addition, subtraction, multiplication and division to be able to learn the topics introduced in the seventh

grade. But in each of my class [at the seventh grade], around 10 students cannot do multiplication and division. If I get students to review the previously covered topics, I face time restraints in covering the new topics. That's a real dilemma: You either keep up with the pace of the program at the expense of ignoring weak students, or you do reviews and recycling considering these weak students at the expense of leaving behind the pacing." This implies that the students who have not acquired the prerequisite knowledge and skills in the first cycle of elementary education are likely to get lost in the second cycle. And since they find the subjects that are dealt with in the second cycle difficult, they lose interest in mathematics as some mathematics teachers argued. Most teachers from schools where students from middle and low socio-economic status were taught also indicated that most of their students lacked sources and facilities such as internet, books, local libraries, etc. to conduct research, which was viewed as an essential component in the new curricula designed in line with a learner-centered approach. As one of the teachers pointed out, the students need to make preparations for the lesson ahead. However, to make these preparations, they need to have access to computers, internet or libraries, which they do not, due to financial difficulties. Finally, it was observed that teachers expressed dissatisfaction at having students' being accustomed to harsh punishment in their family environment and their expecting such punishment from the teacher to behave themselves in class, or even to fulfill their responsibilities like doing homework. One of the teachers explained, "There is only one language that the students in this school understand: Strict discipline. If you politely warn them about their misbehaviors, they get the impression that the teacher does not get angry with them, and thus, they do the same thing the next day. For example, there is a group of students who never do homework. When I ask the reason for that, they say that 'you do not beat us.' " Therefore, most teachers argued that the attitudes of the students towards school and their communication with their teachers and peers were actually a reflection of the way they were brought up in their families.

Besides, there were also some student-related issues that teachers from all schools, irrespective of socio-economic status of their location, raised: students' coming from broken families which was considered to be responsible for student

apathy and disruptive behaviors in the classroom, lack of student interest in a particular discipline, students' being only extrinsically motivated to learn – just being concerned about getting high marks, students tendency to abuse democratic and flexible classroom environment, dealing with students making transition from childhood, being with a generation with no love of reading and writing, difficulty in getting students to develop a sense of responsibility and interest in issues concerning Turkey to name but a few of these problems that most teachers were unhappy with.

Curriculum-related Problems: First of all, some teachers complained about the frequent curricular changes introduced by the Ministry of Education. One of the teachers put her point of view on this issue as follows: "I've been teaching for 18 years and 4-5 curricular changes have been introduced so far. It takes quite a long time for teachers to adapt to a curricular change and implement it properly. However, by the time we adapt to a new curricular change, a new curriculum change is introduced. Take the last curricular change: It is actually a very good one. But it will take some time for the teachers to adapt to it. So we need to spend time developing it further. Otherwise, it may yield to some unfavorable results, which will, in turn, lead to some other curricular changes."

Moreover, almost all teachers stated that they were discontented with the recent curricular change for several reasons. To begin with, the participants from all four branches argued that there was too much content to be covered in a limited period of time, which, in their view, did not yield to memorable learning. This implies that in the curriculum, depth was ignored at the expense of breadth. In relation to the problem of overload of content included in the curriculum, one mathematics teacher also stated the inability to reach or address weak students due to time restraints. One the one hand, she believed that each student can solve a math problem provided that s/he was given the opportunity in class. On the other hand, she pointed out that she could not translate that belief into her teaching practices due to the time limitations. She went on to say that if she had had more time, she would have provided students with more opportunities to digest what

was introduced, and given students more opportunities to take turns during the lesson developing their self-confidence.

Also, most teachers interviewed pointed out the challenge to implement the new curriculum which required students to take more responsibility for their learning. As students were not accustomed to learner-centered ways, the teachers had hard times in implementing the curriculum properly. It was noticed that the teachers themselves did not appear to be oriented towards the principles underlying constructivist methods of learning. As a result of this situation, for instance, some teachers found "peer-evaluation" and "self-evaluation" to be a waste of time and they particularly complained about too much paperwork that such evaluation involved.

Problems with Assessment System: Another difficulty stemmed from the current assessment system which teachers found too flexible. One teacher explained, "The students start a new academic year with the belief that they will certainly pass the class, even if they do not study. This, however, decreases students' willingness and motivation to study and learn. As a result, whatever the teacher does, they do not bother themselves studying. The students abuse the flexibility in the assessment system." This implies that although through such a system, the pressure of failing and repeating a class is intended to eliminate, it has had some undesirable consequences according to the teachers.

Lack of Sufficient Educational Aids and Physical Conditions: Some teachers pointed out the lack of educational aids and facilities such as computers, science laboratories, conference halls, libraries, and self-study rooms for teachers in the school. For this reason, most teachers felt restrained in their efforts to implement a curriculum with innovative methods of teaching. At this point, teachers from schools which students from low socio-economic backgrounds attended also said that they had limited budget to meet these demands due to the insufficiency of the financial support provided by the Ministry of Education and the students' families. It was also noted that almost all teachers interviewed called for classrooms specially designed and equipped for the particular branches they

were teaching. It was observed that the call for such thematically designed classrooms was voiced by teachers from all four branches.

Lack of Communication: Another area of dissatisfaction was a lack of effective communication at all levels of school organization. To begin with, most teachers pointed out that there was a lack of rapport between teachers and students' parents. They particularly raised the problem of too much parental interference in teachers' ways of teaching and testing and such interference, according to the teachers, put a lot of pressure on them. One teacher stated, "The parents often interfere in what and how you teach, which causes a lot of tension on the part of the teacher. Last semester, for example, through the end of the term, I allocated the last 20 minutes of the lesson for answering some test questions (which were asked in central exams in previous years). In answering each question, we were discussing the why's and how's with students. And the students were given a lot of opportunities to think critically while answering these multiple-choice tests. I received severe criticism from the parents on this. There was no way I could persuade them of the benefit of what I was trying to do. Unfortunately, many teachers in this school complain about this." Moreover, some teachers, especially the experienced ones, were blamed, by the parents, for imposing tough discipline although they "did not intend to". It was realized that on the one hand, some teachers, with their disciplined approach, "meant to develop a sense of responsibility in their students", which, they believed, their students lacked due to their "too permissive parents." On the other hand, the parents were reported to be discontented with the way these teachers treated their children as well as the difficulty level of the questions they asked in the exams. At this point, it should be noted that the teachers complained about the lack of administrational support in dealing with such communication gaps between teachers and parents.

Also, some teachers stated that there was a lack of communication among the teachers in a school. One teacher explained, "I find it so difficult to work with colleagues with different perceptions of the teaching profession. There are teachers who give the impression that they are forced to be in the teaching

profession. They are teaching just to meet their financial needs. Besides, there are teachers who are more concerned about teaching students the virtues of discipline and self-control despite many challenges than earning from it." She went on to say that it was so difficult for her to get students to acquire certain skills and desirable attitudes and behaviors due to a lack of shared ground among teachers in the same school in relation to a number of issues ranging from classroom practices to classroom management.

Moreover, emphasizing the importance of effective communication between the decision-makers and the teachers, most teachers complained about the fact that they were viewed as passive implementers of the curricula by the decision-makers. One teacher said, "At the end of each academic year, we write reports on areas to be improved in the curriculum. But they never respond to our criticisms. I have never received any feedback from the reports that I have written for 27 years. That is the worst thing about the teaching profession. The views of the implementers of the curriculum are ignored in the process of decision-making. The implementers and decision-makers never cooperate." It was also noted that the teachers wished they had been appreciated by the decision-makers when they achieved success.

Overload of Work: Most of the teachers indicated that their job required a lot of patience due to the overload of work it involved. They were especially discontented with the false belief that teaching was a part-time job. They argued that they had many other responsibilities like talking to the parents, preparing exams, marking exam papers to name but a few, besides their teaching hours. In addition, the recent curriculum change, in their opinion, also increased the amount of their workload. Furthermore, many teachers stated that due to crowded classes, they did not feel they could perform satisfactorily.

Some other areas of dissatisfaction that most teachers expressed concerned poor discipline, financial dissatisfaction, crowded classrooms and central exams. First, some teachers were unhappy about the lack of effective sanctions to deal with discipline problems. Such flexibility, in their mind, led to failure at school. Also, several teachers expressed dissatisfaction at earning very little. They argued

that for the teachers to be able to keep up with the developments in science and technology and develop themselves both as teachers and individuals, they needed to be well-off. Furthermore, a great majority of teachers were unhappy about having to teach crowded classes, which, in their opinion, prevented them from giving each student the necessary support s/he needed. They suggested that the maximum number of students in each class should be 25. Finally, the central exams that students had to take throughout their secondary education were considered to have some negative influences. Most teachers argued that the particular programs that they implemented in their classes were not in line with the requirements of the central exams, and that students demanded more exam-focused instruction in which they expected the teachers to teach rather didactically and develop test-taking strategies.

APPENDIX E

TURKISH SUMMARY

Eğitimin hedeflerinden biri olan eleştirel düşünmenin önemi eğitimciler tarafından yaygın olarak kabul edilegelmiştir. Piaget'e (1958, akt. Fischer, 2001) göre, eğitimin esas hedefi, önceki nesillerin yaptıklarını tekrar eden değil, yeni şeyler üreten, kendine sunulan bilgiyi pasif olarak kabul eden değil, bilginin doğruluğunu sorgulayan ve eleştirel düşünen insan modelini yaratmaktır. Dahası, Cotton (1991) günümüz bilgi çağında, dikkatli ve yansıtmacı düşünebilme yeteneğini, demokratik bir toplumda sorumluluk sahibi vatandaşlık için bir gereklilik ve son zamanlarda giderek çeşitlenen iş sahalarında çalışabilmek için sahip olunması gereken bir beceri olarak tanımlamış ve yansıtmacı düşünebilme kabiliyetinin, eğitim görmüş bir insanın sahip olması gereken temel özelliklerden biri olduğunu ifade etmiştir. Benzer bir şekilde, Robinson (1987, akt. Cotton, 1991), öğrencilerin, giderek değişen bir dünyada bilgiyi kazanmak ve kullanmak için, yaşam boyu öğrenme düsturu ile birlikte eleştirel düşünme becerilerini edinmiş olmak zorunda olduğunu ifade etmiştir. Beyth-Marom ve arkadaşlarına (1987) göre ise, "hızlı değişim," "birçok alternatif eylem," "sayısız bireysel ve ortaklaşa seçimler ve kararların" söz konusu olduğu bir toplumda, eleştirel düşünme, sahip olunması gereken önemli bir yetenektir. Ayrıca, Freire (1985, akt. Raymond 2000), inceleme, soru yöneltme ve insan hayatını şekillendiren sosyo-politik, ekonomik ve kültürel gerçekleri etkileme becerilerini kapsayan eleştirel bilincin eleştirel pedagoji ile kazandırılmasının esas olduğunu savunur. Freire'e göre, öğrencilerde eleştirel bakış açısı geliştirme, kurumların, ideolojilerin, geleneklerin ve ilişkilerin dönüşümüne hizmet edebilecektir.

Yukarıda bahsedilen sebeplerden ötürü, bugün, öğrencilerin eleştirel düşünmelerini geliştirmeleri konusunda çok yoğun bir ilgi vardır. Bilim adamları, eleştirel düşünme kavramını tanımlamak, eleştirel düşünmenin bileşenleri hakkında kuramlar geliştirmek, eleştirel düşünmenin gelişimine katkı sağlayacak

unsurları araştırmak, öğrencilerin eleştirel düşünmelerini pekiştirecek öğretim modelleri geliştirmek ve eleştirel düşünmenin değerlendirilmesi için araçlar tasarlamak suretiyle, eleştirel düşünebilen öğrenciler yetiştirme konusunda artan talebe cevap vermişlerdir.

Ancak eleştirel düşünme kavramına çerçeve oluşturabilecek düzeyde yapılmış bunca araştırmaya rağmen, eleştirel düşünmeye ilişkin üzerinde uzlaşılmış bir tanım yoktur. Filozoflar, psikologlar ve eğitimcilerin eleştirel düşünmeye bakış ve yaklaşımlarındaki çeşitlilik ve farklılıklar eleştirel düşünmeye ilişkin tanımlara da yansımıştır (Ennis, 1992; Facione, 1984; Halpern, 1993; Johnson, 1996; Lipman, 1988; McPeck, 1981; Paul, 1995; Resnick, 1987; Tishman ve arkadaşları, 1993). Fakat eleştirel düşünme ve eleştirel düşünmenin bileşenlerine dair yapılmış sayısız tanım göstermiştir ki, bazı farklılıkların yanısıra, eleştirel düşünmeye atfedilmiş bazı ortak özellikler de mevcuttur. İlk olarak, alan yazında en çok kabul görmüş ve atıfta bulunulmuş tanımlara göre, eleştirel düşünme, akılcı, yansıtmacı, kendi kendini düzelten, sorumlu ve beceri gerektiren, ölçütlere dayalı bir üst düzey düşünme becerisidir (Dewey, 1933; Ennis, 1987; Facione, 1990; McPeck, 1981; Paul, 1995). Bu tanımlarda ortak olarak kabul edilen bir diğer nokta ise, eleştirel düşünmenin birtakım bilişsel becerilerin yanısıra, bu bilişsel becerilerin yaşamın her alanında kullanılabilmesi için gerekli bir tür isteklilik veya hazır bulunuşluk anlamına gelen eğilimi de gerektirdiğidir. Başka bir deyişle, eleştirel düşünme hem bilişsel hem de duyuşsal bir süreç olarak tanımlanmıştır. Eleştirel düşünmenin bileşenlerine ilişkin olarak, analiz yapma, sentez yapma, bir savı, konuyu veya alternatif bir bakış açısını geçerli ölçütler çerçevesinde değerlendirme, geçerli çıkarımlar yapma, güvenilir bilgiye dayalı olarak akılcı sonuçlara varma, disiplinlerarası bağlantılar kurma, içgörüleri yeni ortamlara aktarma ve bir kişinin kendi düşünme süreçlerini izlemesi, eleştirel düşünmenin yaygın olarak kabul edilmiş bilişsel boyutlarıdır. Bunun yanısıra, 1990'da 46 uzmanın, eleştirel düşünen bir insanın tanımına dair varmış olduğu uzlaşıya göre, eleştirel düşünen bir kişi soru soran, bilgili, muhakeme kabiliyetine güvenilir, açık görüşlü, esnek, değerlendirmelerinde adil, kendi önyargıları ile dürüstçe yüzleşebilen, yargılamalarında sağduyulu, yeniden gözden geçirme konusunda istekli, herhangi bir konuyla ilgili olarak açık ve

anlaşılır görüşler sergileyen, ilgili bilgiyi araştırma konusunda gayretli, ölçütlerin seçiminde akılcı, araştırmada dikkatli ve sonuçlara ulaşma konusunda ısrarlıdır (APA, 1990).

Eleştirel düşünmeye dair yapılmış tanımlar çerçevesinde, eleştirel düşünme kavramının eğitim alanındaki kullanımına yönelik olarak çeşitli sınıflandırmalar yapılagelmiştir (Bailin ve arkadaşları, 1999; Ennis, 1987; Facione, 1990; Jones ve arkadaşları, 1995; Paul, 1995). Eleştirel düşünmenin hem bilişsel hem de duyuşsal boyutlarını içeren bu sınıflandırmalar, bu tarz düşünmenin her seviyede öğretimi ve değerlendirilmesi için etkili yollar bulunması konusundaki çabalara da rehberlik etmiştir.

Eleştirel düşünmenin gelişimi üzerine yapılan araştırmalar eleştirel düşünmenin öğretim yoluyla kazandırılabileceğini göstermiştir (Kennedy ve arkadaşları, 1991, akt. Dam ve Volman, 2004). Bu bağlamda, bir disiplinin öğretimine eleştirel düşünmenin entegrasyonunun, öğrencilerin eleştirel düşünme becerileri ve eğilimleri üzerinde önemli bir etkisi olduğu sonucuna varılmıştır (Akınoğlu, 2001; Halpern, 1998; Paul, 1995; Reed ve arkadaşları, 2001; Sezer, 2008; Şahinel, 2001; Yücel, 2008). Ayrıca, anlamlı ve öğrencilerin, daha önceki bilgileri üzerine yeni bilgileri inşa edebilmelerine olanak sağlandığı bir öğretimin, eleştirel düşünmelerini geliştirmeleri için gerekli bir adım olduğu bulunmuştur (Resnick, 1997). Öğretmenlerin öğrencilerine bu tarz düşünme yapısını kazandırmalarında etkili olduğu yapılan araştırmalar neticesinde görülmüş başlıca öğretim stratejileri şunlardır: Eleştirel düşünme için beklentileri açıkça ifade etme ve bu amaca yönelik olarak planlamalar yapma (Halpern, 1998), üst düzey düşünme soruları sorma (Cotton, 1991), öğrencilere düşünmeleri için yeterli zaman tanıma (Bransford ve arkadaşları, 2000; Cotton, 1991), yüksek beklenti, yüreklendirme, samimiyet ve hoş bir öğrenme ortamının hakim olduğu pozitif sınıf ortamı sağlama (Cotton, 1991; Harris, 2004), düşünme konusunda öğrencilere örnek olma ve eleştirel düşünme kültürünü yaratma (Tishman ve arkadaşları, 1993), öğrencilerin arkadaşları ile birlikte karmaşık problemlere farklı çözümler aradığı olanaklar sağlama (Halpern, 1998), yapılandırmacı yaklaşım (Öner, 1999), sorgulama temelli öğrenme (Mecit, 2006), aktif öğrenme (Dam ve Volman, 2004; Smith, 1991), motivasyonu artırmak için gerçek hayattaki

problemlerin kullanılması (Dam ve Volman, 2004), öğrencilere sunum yapmalarına yönelik olanaklar tanıma (Tsui, 1998; Underwood ve Wald, 1995, akt. Seidman, 2004), eleştirel okuma etkinlikleri (Carr, 1990), eleştirel yazma etkinlikleri (Tsui, 1998; McCallister, 2004), öğrencilere, biribirlerinin bilgileri üzerine yeni bilgiler inşa etme ve çeşitli bakış açılarını mütalaa etme şanslarının verildiği tartışmalar, münazaralar, durum çalışmaları, simulasyonlar, projeler, oyunlar, rol oynama ve akran değerlendirme gibi etkinlikler (Anderson, 2002; Carr, 1990; Cooper, 1995, akt. Seidman, 2004; McEven, 1994; Paul, 1995; Tsui, 1998; Uysal, 1998), sorgulama metodu (Villaverde, 2004; Potts, 1994; Cruickshank, Bainer ve Metcalf, 1995), anlam haritaları (Lim ve arkadaşları, 2003), disiplinlerarası bağlantılar kurma (Tsui, 1998) ve öz değerlendirme ve yansıtmayı teşvik etme (Pithers ve Soden, 2000). Ayrıca, yapılan bazı araştırmalara göre, öğrenciler tarafından yazılmış yazıların öğretmenler tarafından eleştirel analizinin yapılması ve çoktan seçmeli sınavlar yerine komposizyon yazmayı gerektiren sınavlar verme (Tsui, 1999), öğrencilere düşünmelerini değerlendirmeleri için ölçütler verme (Paul, 1995) gibi stratejiler, eleştirel düşünmenin gelişimine olumlu katkı sağlamaktadır.

Öte yandan, öğrencilerin eleştirel düşünen bireyler olarak yetişmelerine verilen öneme ve eleştirel düşünmenin nasıl öğretileceğini ortaya koyan bunca araştırmaya rağmen, eğitimciler, hala metinleri okuyabilen fakat bu metinlerden çıkarımlarda bulunamayan, hesap yapabilen fakat muhakeme yapamayan, bilimsel formülleri ezberleyebilen fakat esas konuları kavrayamayan öğrencilerle karşı karşıyadır (Applebee, 1991). Üst düzey düşünme becerilerini gerektiren etkinliklerde öğrencilerin beklenen performansı gösteremediğini ortaya koyan sayısız araştırma çalışması, rapor ve panel vardır (Schoenfeld, 1982; Paul, 1995; Voss ve , 1991; Paul ve Binker, 1995; Nickerson, 1988). Battista'ya (1999) göre, bu araştırma bulguları, öğrencilerin kavramsal bilgilerinin çok yetersiz olduğunu, öğrencilerin esnek olmayan, statik bir düşünce yapısına sahip olduğunu ve de problem çözme becerileri kazanmamış olduğunu göstermektedir.

Merkezi sınavlardan elde edilen sonuçlara göre (OKS ve SBS) Türkiye'de de durum farklı değildir. Öğrenciler bu sınavlarda, Türkçe, sosyal bilgiler, fen ve matematik alanlarında düşünme ve muhakeme etme konusunda son derece

yetersizdir (MEB, 2007; MEB, 2009). Dikkate değer diğer bir konu, üniversite giriş sınav sonuçlarına göre, öğrencilerin matematik ve fen okur-yazarlığının giderek düşüş eğilimi göstermesidir (Yarımağan, 2009). Türkiye'de yapılan bu merkezi sınavların yanısıra, uluslararası standart sınavlarda da Türk öğrencilerinin eleştirel düşünme becerileri konusunda göstermiş olduğu performans, diğer ülkelerin gerisinde kaldığını göstermiştir. Örneğin, Ekonomik Kalkınma ve İşbirliği Teşkilatı (OECD) tarafından uygulanan Uluslararası Öğrenci Değerlendirme Programı (PISA) çerçevesinde üye ülkelerinin zorunlu eğitimi tamamlamış 15 yaş grubu öğrencileri arasında yapılan değerlendirmede Türkiye 30 üye ülke arasında okuma becerileri ve fen ve matematik okuryazarlığında 29. sırada yer almıştır (OECD, 2006). Bunların yanısıra, PISA 2006 matematik, fen ve okuma ölçeklerinde tanımlanan altı yeterlik düzeyine göre (6. seviye analiz, muhakeme ve etkili iletişimdeki en üst düzey yeterliliği ifade eder), diğer OECD ülkelerinin öğrencileri 3. seviyede iken, Türk öğrencileri okuma, fen ve matematik alanlarında ikinci seviyede yer almaktadır.

Paul'a (1995) göre, eleştirel düşünme becerilerinin ulaşılamayan bir hedef olarak kalmasının en önemli nedeni, müfredatlardaki ders konularının derinlemesine işlenmemesi ve disiplinlerarası bağlantıların olmamasıdır. Buna ilaveten, sorunun kaynağında yatan diğer bir neden didaktik öğretim yaklaşımına olan güvendir ki bu tarz öğretim yaklaşımının dayandığı savlar eleştirel düşünmenin geliştirilmesine engel teşkil etmektedir (Paul, 1995). O yüzden, Paul (1995) didaktik yaklaşımdan üst düzey düşünme becerilerinin esas alındığı eleştirel pedagojiye dönüşümün gerekliliğini vurgular. Sözkonusu paradigmatik dönüşümün dayandığı savları ise şöyle sıralamaktadır: (a) Kişi ancak düşünme yoluyla bilgiyi kazanır, (b) Öğrenme süreci her bir öğrencinin kendisinin bilgiyi topladığı, analiz ettiği, sentezle birleştirdiği, uyguladığı ve değerlendirdiği bir süreçtir, (c) Birçok öğrencinin derslerde söz hakkı aldığı sınıflar öğrenmenin iyi bir göstergesidir, (d) Öğrenciler, bilgiyi, ancak değerli gördükleri zaman, kazanır, (e) Bilgi, öğrenciler için anlaşılır olabilmesi için, onların kendi bakış açılarından ve yaşam tecrübelerinden yola çıkılarak sunulmalı, (f) Yüzeysel öğrenme derinlemesine anlamanın önünde engel teşkil eder, (g) Çok sayıda konu işlemektense az sayıda derinlemesine konu işlemek daha önemlidir, (h) Öğrenciler

sorulara doğru yanıtlar verebilir, tanımlar yapabilir ve formülleri uygulayabilir. Ancak bu, öğrencilerin, verdikleri yanıtların, yaptıkları tanımların ve uyguladıkları formüllerin anlamını bildikleri anlamına gelmez, (i) Öğrenciler en iyi, ikili ve gruplar halinde çalışıp, bilgi alışverişinde bulunduklarında öğrenir.

Türkiye'de de "hür ve bilimsel düşünme gücüne sahip, yapıcı, yaratıcı ve verimli bireyler yetiştirme" hedefine ulaşmak amacıyla didaktik bir yaklaşımdan üst düzey öğrenmenin temel alındığı bir öğrenim yaklaşımına dönüşüm gerçekleşmektedir (Milli Eğitim Temel Kanunu, 1973). Bu çerçevede, ilköğretim müfredatları, öğrencilerin üst düzey düşünme becerilerini geliştirdiği yapılan çalışmalarda ıspatlanmış olan oluşturmacı öğrenme yaklaşımı ışığında, yeniden geliştirilmiştir (MOE, 2005). Bu programların en önemli ortak unsurları aktif katılım, sorgulama, yansıtmacı düşünme, problem çözme ve etkileşimdir. Bu programlarla geliştirilmesi hedeflenen beceriler eleştirel düşünme becerileri, yaratıcı düşünme becerileri, iletişim becerileri, araştırma becerileri, problem çözme becerileri, bilgi teknolojilerini kullanma becerileri, girişimcilik becerileri, ve dili doğru ve etkili kullanma becerileridir. Oluşturmacı öğrenme yaklaşımına göre şekillendirilen bu programlarda, öğrenme sürecinde öğrenciye sorumluluklar yüklenmiştir. Öğretmenler ise, bilgiyi öğrencilere nakleden olmaktan ziyade, öğrencileri karşılaştıkları her fikri sorgulamaları, kendi bakış açılarını, fikirlerini geliştirmeleri ve kendi sonuçlarına varmaları yönünde teşvik eden bir rehber, kolaylaştırıcı ve bilgiyi öğrencilerle birlikte araştıran ve keşfedendir. Programlarda benimsenen önemli bir ilke öğrencilerin bakış açılarına yer verme ve onların fikirlerine değer vermedir. Bu çerçevede, öğretmenlerden öğrencilerinin fikirlerini ifade etmelerine, farklı fikirleri dikkate almalarına ve değerlendirmelerine yönelik olarak onlara fırsatlar tanıması beklenir. Bu yeni programlarda öğrencilerin değerlendirilmesi de öğretimle içiçedir. Bu sebeple, yazılı sınavlara ek olarak, öğretmenler gözlem, görüşme, öğrenci günlükleri, performans ödevleri, öz değerlendirme, akran değerlendirme, grup değerlendirme, ve portfolyo gibi alternatif değerlendirme yöntemlerine başvururlar. Yeni ilköğretim müfredatlarının temelini oluşturan bütün bu ilkeler gösteriyor ki eleştirel düşünmenin gerektirdiği beceriler ve eğilimlerin öğrencilere

kazandırılması 2005'den bu yana uygulanmakta olan bu programların önemli amaçlarından birini oluşturmaktadır.

Öte yandan, eleştirel düşünmeye ilişkin alan yazın, öğrencilerin eleştirel düşünmelerini geliştirmenin sadece bu amaca yönelik, öğrencilere sistemli bir şekilde fırsatlar sağlayan programlar geliştirmeye değil, aynı zamanda öğrencilerin eleştirel düşünmelerini geliştirmeyi hedefleyen bu programları layıkıyla uygulayacak öğretmenlere de bağlıdır (Browne, 2000; Demirel, 1999; Ennis, 1985; Gruberman, 2005; Kazancı, 1979; Onosko, 1990; Raths ve arkadaşları,1966, akt. Pithers ve Soden, 2000). Eleştirel düşünme temelli bir öğretimi hayata geçirebilmesi için de, öğretmenlerin, uygulamalarına yön veren bir eleştirel düşünme kavramlarının olması gerekmektedir. Bu konuda yapılmış araştırmalar da göstermiştir ki düşünmeyi kavramsallaştırmış, düşünmeye dair kavramlarını açıkça ifade edebilen, öğrencilerin eleştirel düşünmelerini geliştirme konusunda istekli ve becerikli hocalar öğretimlerinde sistemli bir şekilde eleştirel düşünmeye yer vermektedirler (Newmann, 1991).

Bütün bunlarla birlikte, Türkiye'de bu konuda yapılmış çok az çalışmanın olduğu da göz önünde bulundurularak, bu çalışmada öğretmenlerin eleştirel düşünme ile ilgili anlayışları ve 7. sınıf düzeyinde Türkçe, sosyal bilgiler, fen ve teknoloji ve matematik derslerinde eleştirel düşünmeyi geliştirmeye ilişkin uygulamaları üzerine bir değerlendirme yapılması amaçlanmıştır.

Bu amaca yönelik olarak araştırma şu yedi soruya yanıt aramayı hedeflemiştir:

1. Öğretmenlerin, eleştirel düşünmeyle ilgili beceri, eğilim ve ölçütler bakımından eleştirel düşünmeye ilişkin anlayışları nelerdir?
2. Öğretmenlerin, eleştirel düşünmenin kazanımı, eleştirel düşünmeyi öğretme yaklaşımları, öğretmenlerin rolleri ve eleştirel düşünmenin gelişimi için gerekli şartlar bakımından eleştirel düşünmeyi geliştirme süreci ile ilgili görüşleri nelerdir?
3. Öğretmenler, derslerinde eleştirel düşünmeye yer vermek amacıyla ne tür planlamalar yaparlar?
4. Öğretmenler, eleştirel düşünmeyi geliştirmeye yönelik ne tür öğretim stratejilerine, sınıf-içi etkinliklere ve ödevlere yer verirler?

5. Öğretmenler, öğrencilerinin eleştirel düşünme becerilerini nasıl değerlendirirler?
6. Hangi unsurlar öğretmenlerin sınıflarında eleştirel düşünmeye odaklanmalarını kolaylaştırır?
7. Hangi unsurlar öğretmenlerin sınıflarında eleştirel düşünmeye odaklanmalarını zorlaştırır?

Bu araştırmada, nitel araştırma deseni kullanılmıştır. Buna bağlı olarak, görüşme yöntemi kullanılarak ilgili konudaki öğretmen anlayışları ve görüşlerinin "gerçekçi ve bütüncül bir biçimde ortaya konmasına yönelik nitel bir süreç" izlenmiştir (Marshall ve Rossman, 1999). Araştırma deseni olarak da olgubilim deseni kullanılmıştır. Böylece, araştırma konusu ile ilgili çeşitli algılar ve anlamlar temsil edilmiştir.

Araştırma, Ankara ili içinden maksimum çeşitlilik örnekleme yöntemlerine göre seçilen 14 ilköğretim okulunda 2007-2008 öğretim yılı boyunca yürütülmüştür. Okulların seçiminde sosyoekonomik çeşitlilik temel alınmıştır ve buna bağlı olarak bulundukları mahalle itibarı ile düşük, orta ve yüksek sosyoekonomik seviyelerden okullar seçilmiştir. Mahallelerin sosyoekonomik düzeyleri Türkiye İstatistik Kurumunun 2000 yılı binalar cetvelinde yer alan gelişmişlik kodlarına göre belirlenmiştir.

Öğretmenlerin seçiminde de maksimum çeşitliliğe dayalı bir örneklem oluşturulmuştur. Disiplin, cinsiyet, eğitim geçmişi, öğretmenlikteki deneyim, sözkonusu okuldaki deneyim ve ders verilen düzey öğretmenlerin seçiminde kullanılan ölçütlerdir. Toplam 70 öğretmenle yüz yüze görüşmeler yapılmıştır. Bu öğretmenlerden 20'si Türkçe öğretmeni, 16'sı sosyal bilgiler öğretmeni, 17'si fen ve teknoloji öğretmeni, 17'si ise matematik öğretmenidir.

Araştırmadan elde edilen sonuçlar, araştırma sorularını yanıtlamaya yönelik olarak, öğretmenlerin eleştirel düşünme anlayışları, eleştirel düşünmeyi geliştirmeye ilişkin görüşleri, bu amaca yönelik planlamaları, uygulamaları, öğrencilerinin eleştirel düşünmelerini değerlendirmeleri, ve söz konusu beceriler üzerinde durmalarını zorlaştıran ve kolaylaştıran etmenler başlıkları altında düzenlenmiştir.

Öğretmenlerin eleştirel düşünmeye ilişkin anlayışları ile ilgili sonuçlar, öğretmenlerin eleştirel düşünmeyle ilgili gördükleri bilişsel becerileri, eğilimleri ve ölçütleri ortaya koymuştur. Türkçe, sosyal bilgiler, fen ve teknoloji ve matematik olmak üzere dört branştan öğretmenlerle yapılan görüşmelere göre, bu bilişsel beceriler olaylara farklı açılardan bakma, daha önce edinilmiş bilgi ile yeni bilgiler arasında bağlantılar kurma, iyi dinleme, bilgi ve gözleme dayalı olarak sonuçlar çıkarma, analiz etme, sentez yapma, bilgiyi farklı durumlara uygulama ve benzerlikleri ve farklılıkları bulmadır. Buna ek olarak, Türkçe öğretmenleri arasında eleştirel okumanın eleştirel düşünmeye has önemli bir bilişsel beceri olduğu konusunda yaygın bir görüş olduğu ortaya çıkmıştır. Bu bilişsel becerilerin yanısıra, dört branştan öğretmenlerin eleştirel düşünmeyle ilgili gördükleri eğilimler şunlardır: Sorgulama cesareti, duygu ve düşüncelerini rahat ve kolaylıkla ifade edebilme, kendine güven, öğrenme merakı, çevresinde, ülkesinde ve dünyadaki olaylara karşı duyarlılık, diğer insanlara ve diğer fikirlere saygı, etkili iletişim, sorumluluk duygusu, okuma alışkanlığı. Öte yandan, eleştirel düşünmenin ölçütleri ile ilgili olarak, üzerinde eleştirel düşünülen konunun öncelikle iyi kavranması, ortaya atılan bir fikrin veya görüşün özgün olması, dayanaklarının olması, doğru olması, açık ve net bir şekilde ortaya konması ve mantıklı olması dört branştan öğretmenlerin üzerinde en çok durduğu altı ölçüttür. Bununla birlikte, Türkçe öğretmenlerine göre, eleştirinin, sırf eleştiri yapmış olmak adına yapılmamış olması, eleştirinin gerçek oluşu, eleştirel düşünmeye has önemli bir ölçüttür. Sosyal bilgiler öğretmenleri ise, tarihi olayları, yaşandığı dönemin koşulları çerçevesinde değerlendirebilmeyi eleştirel düşünmenin önemli bir ölçütü olarak kabul etmişlerdir. Öğretmenlerin eleştirel düşünme tanımlarına göre, eleştirel düşünme, olayların açık ve yeterli bir şekilde anlaşılması, gerçeği öğrenme, karar verme ve problem çözme gibi amaçlara hizmet eden bir düşünme tarzıdır ve dile hakimiyet, ilgili konu ile ilgili bilgi ve tecrübe, eleştirel düşünme eğilimi ve zekayı gerektirir. Çalışmanın öğretmenlerin eleştirel düşünme anlayışlarına ilişkin bulguları iki önemli sorunu da ortaya koymuştur. Birincisi, görüşmeler sırasında, az sayıda öğretmen, sınıf-içi uygulamalarından da örnekler vererek yukarıda bahsedilen eleştirel düşünme boyutlarına ayrıntılı olarak değinebilmişlerdir. Öte yandan, diğerlerinin eleştirel düşünmeye dair kavramsal

bilgilerinin ve algılarının son derece yüzeysel ve sınırlı olduğu gözlenmiştir. İkincisi, yapılan görüşmelerde, öğretmenler arasında eleştirel düşünebilme yeteneği ile zeka arasında ilişki olduğuna dair yaygın bir inanış olduğu ortaya çıkmıştır.

Öğretmenlerin eleştirel düşünmeyi geliştirmeye ilişkin algıları çerçevesinde, sonuçlar öğretmenlerin eleştirel düşünme becerilerini geliştirme sürecinde üstlendikleri rollere, eleştirel düşünmenin gelişimine yönelik benimsedikleri öğretim yaklaşımlarına ve eleştirel düşünmenin gelişimine yönelik gerekli gördükleri koşullara da ışık tutmuştur. Eleştirel düşünmenin kazanımına yönelik olarak, öğretmenlerin eleştirel düşünmeyi sadece doğuştan sahip olunan bir beceri olarak görmediği ortaya çıkmıştır. Öğretmenler eleştirel düşünmeyi doğuştan sahip olunan ve yetiştirme tarzı, okul, sosyal çevre, medya, ve toplumun etkisi ile sonradan geliştirilebilen bir yetenek olarak tanımlamışlardır. Ancak bunlarla birlikte, öğretmenler arasında zekanın – öğretmenler zekayı çabuk ve kolay anlayabilme yetisi olarak tanımlamışlardır – ve kalıtım yoluyla geçtiği düşünülen birtakım kişisel özelliklerin de, kişilerin eleştirel düşünebilmesinin önünde engel veya fırsat teşkil edeceğine dair de bir inanış olduğu çalışmanın dikkate değer sonuçları arasındadır. Bu bağlamda, zeki olmayışın ve kalıtımsal olarak sahip olunduğu düşünülen içekapanıklık gibi kişisel özelliklerin, bu özelliklere sahip öğrencilerle ilgili olarak düşük öğretmen beklentilerine yol açtığı gözlenmiştir. Öte yandan, öğretmenler, öğrencilerin eleştirel düşünmelerini geliştirmeye yönelik olarak birtakım roller üstlendiklerini ifade etmişlerdir. En çok atıfta bulunulan roller, öğretmenin öğrencilere eleştirel düşünme konusunda örnek olması, öğrencilere keşfederek öğrenme, araştırma ve olaylara farklı açılardan bakabilme fırsatları vermesidir. Ayrıca, Türkçe öğretmenlerinin, öğrencilere eleştirel okuma becerilerini geliştirmelerine yönelik imkanlar verilmesi konusunda önemli bir rol üstlendiği görülmüştür. Öte yandan öğretmenler eleştirel düşünmeye sadece ayrı bir ders kapsamında yer verilmesinin fayda getirmeyeceğine inanmaktadır. Çalışmanın sonuçlarına göre, eleştirel düşünmenin geliştirilmesinin bütün derslerde amaçlanması gerektiği yaygın olarak benimsenen görüştür. Ancak bütün derslerde amaçlanması koşuluyla, eleştirel düşünmenin ayrı bir ders kapsamında da öğretilmesi konusunda fikir

birliği ortaya çıkmıştır. Öte yandan, öğretmenlerin eleştirel düşünmenin gelişimine yönelik gerekli gördükleri koşulların başında, sınıflarda makul öğrenci sayısı gelmektedir. Bununla birlikte açık fikirliliği teşvik eden bir öğretmen, demokratik bir ortam, uyum, farklı görüşlere saygı, nezaket ve samimi iletişimin hakim olduğu bir sınıf iklimi de eleştirel düşünmenin gelişimine yönelik önemli bir koşul olarak görülmektedir. Ayrıca öğretmenler, branşlara özel olarak tasarlanmış ve donatılmış dersliklerin ve öğretmenler arasında eleştirel düşünmenin gelişimi ile ilgili görüş birliğinin ve işbirliğinin de bu amaca yönelik çabalarına önemli ölçüde katkıda bulunacağına inanmaktadırlar.

Çalışmanın sonuçları, aynı zamanda, *öğretmenlerin derslerinde eleştirel düşünmeye yer vermek amacıyla yaptıkları planlama etkinliklerine* de ışık tutmuştur. Bu çerçevede, ders kitaplarındaki okuma parçalarının öğrencilerin ilgilerine ve düzeylerine hitap etmediği gerekçesiyle – ki ilgi çekicilik ve düzeye uygunluk öğrencileri eleştirel düşünmeye sevk etmek için önemli koşullar olarak görülmektedir – Türkçe öğretmenleri bu koşulları sağladığına inandıkları farklı metinler, özellikle hikayeler, kullandıklarını ifade etmişlerdir. Öte yandan, uygulamakta oldukları 7. sınıf programının bütünlük ve tarafsızlık gibi eleştirel düşünmenin öğretimi için gerekli görülen ilkelerden yoksun olduğunu düşünen sosyal bilgiler öğretmenlerinin eleştirel düşünmeye yer vermek amacıyla yaptıkları planlamalarda buna yönelik değişiklikler yaptıkları gözlenmiştir. Ayrıca öğrencileri eleştirel düşünmeye sevk edebilmesi için öğrenme etkinliklerinin öğrencilerin ilgilerine hitap etmesi, kavramları öğrencilerin zihninde somut hale getirmesi ve öğrencilerin düzeylerine uygun olması gerektiğini vurgulayan sosyal bilgiler ve fen ve teknoloji öğretmenleri ders kitaplarındaki öğrenme etkinliklerinin bu özelliklerden yoksun olduğunu ve eleştirel düşünmeye sevk etmek maksadıyla bu özelliklere sahip etkinliklere yer vermeye çalıştıklarını uygulamalarından verdikleri örneklerle ifade etmişlerdir. Öte yandan, eleştirel düşünmeyi amaçlayan bir programın daha az konunun daha derinlemesine işlenmesi yönünde fırsatlar vermesi gerektiğini yani içeriğinin derin olması gerektiğini vurgulayan dört branştan öğretmenler, uygulamakta oldukları 7. sınıf programının bu ilkeden yoksun olduğunu belirtmişlerdir. Öğretmenlerin,

programda yer verilen konuları daha derinlemesine işlemek için gösterdiği çabaları ise, zamanla ilgili daha ciddi problemler yaşamalarına neden olmaktadır.

Çalışmanın sonuçları, eleştirel düşünmenin geliştirilmesine yönelik olarak öğretmenlerin kullandıkları öğretim stratejilerine, sınıf içi etkinliklerine ve verdikleri ödevlere kısacası bu amaca yönelik *uygulamalarına* da ışık tutmuştur. Bu çerçevede, Türkçe öğretmenlerinin okuma öncesi, okuma sırası ve okuma sonrası yaptıkları etkinliklerin, konuşma etkinliklerinin, yazma etkinliklerinin, araştırma ve kitap inceleme ödevlerinin, öğrencilerin eleştirel düşünmelerine fırsat sağlayıcı nitelikte olduğu saptanmıştır. Sosyal bilgiler öğretmenleri ise, bu amaca yönelik olarak derslerinde sorgulama, yorum getirme, drama, olaylara başka açılardan bakmaya sevk edici etkinlikler ve araştırma ödevlerine yer verdiklerini uygulamalarından verdikleri örneklerle belirtmişlerdir. Fen ve teknoloji öğretmenleri, deney, gözlem, sorgulama, kavram haritaları, oyun, araştırma ödevleri ve fen ve teknoloji günlüğü vasıtasıyla öğrencileri eleştirel düşünmeye sevk ettiklerini ifade etmişlerdir. Matematik öğretmenleri eleştirel düşünmeyi sağladığını düşündükleri üç önemli stratejiden bahsetmişlerdir: Sonuca değil sürece odaklı problem çözme, öğrencilerin yaşayarak öğrenmelerine olanak tanıma ve öğrencilerin kendi hatalarını kendilerinin bulmaları ve kendilerini düzeltmeleri yönünde fırsatlar verme.

Öğretmenlerin, öğrencilerin eleştirel düşünmelerini değerlendirmelerine ilişkin algılarına göre, dört branştan öğretmenler, öğrencilerin eleştirel düşünme becerilerini sınavlarda sınırlı sayıda açık uçlu, çoktan seçmeli, doğru-yanlış gibi soru tipleri ile ve öğrencilerin performanslarının belirli ölçütler ışığında değerlendirildiği sunumlarda değerlendirmektedir. Çalışmanın bu konuya ilişkin bulguları, aynı zamanda, öğrencilerin eleştirel düşünme becerilerini ölçme ve değerlendirme konusundaki öğretmenlerin dile getirdikleri bazı çekinceleri de ortaya koymuştur. Örneğin bazı Türkçe ve sosyal bilgiler öğretmenleri öğrencilerinin bilişsel ve duyuşsal özelliklerini dikkate alarak sınavlarında eleştirel düşünmeyi gerektiren sorulara yer vermediklerini ifade etmişlerdir. Ayrıca, bazı Türkçe öğretmenleri de eleştirel düşünmenin ölçütleri konusunda yeterli bilgi sahibi olmadıkları ve değerlendirmelerinde tarafsız olamayacakları

endişesiyle, öğrencilerin eleştirel düşünmelerini değerlendirmediklerini bildirmişlerdir.

Çalışmanın sonuçları, *öğretmenlerin derslerinde eleştirel düşünmeye odaklanmalarını zorlaştıran etmenleri* de ortaya koymuştur. Bu etmenler arasında matematik derslerinde öğrencilerin daha önce edinmiş olmaları gereken bilgi ve becerilere sahip olmayışları, sosyal bilgiler ve Türkçe derslerinde öğrencilerin eleştirel düşünmeye has olduğu düşünülen özetleme, farklı kelimelerle izah etme ve sentez yapma gibi bilişsel becerileri henüz kazanamamış olması, sosyal bilgiler ve Türkçe derslerinde öğrencilerin tartışmayı kavga ile eş tutması ve Türkçe, sosyal bilgiler ve fen ve teknoloji derslerinde okudukları ve duydukları herşeyi doğru kabul etme eğilimleri yer almaktadır. Öte yandan, öğrencilerin öğrenmeye, konuya ve eleştirel düşünme gerektiren etkinliklere karşı ilgisizliği, kendilerine güven duymamaları ve sorumluluk duygularının gelişmemiş olması da dört branştan öğretmenin derslerinde eleştirel düşünmeye odaklanmalarını zorlaştıran etmenlerdir. Bununla birlikte, öğrencilerin öğretmenlerinden merkezi sınavlara yönelik olarak ders işlemeleri yönündeki beklentileri de öğretmenlerin üzerinde durduğu bir başka olumsuz etmendir.

Bu çalışma aynı zamanda, öğretmenlerin bakış açısından *eleştirel düşünmenin geliştirilmesi sürecine olumlu etki eden unsurlara* da ışık tutmuştur. Bu unsurlar şunlardır: Öğrencinin ilgisini çekme, öğretmenin eleştirel düşünme gerektiren etkinliklerde rehber olması, işlenen konunun veya kavramın öğrenci zihninde somutlaştırılmasına yönelik fırsatlar verme, eleştirel düşünmenin geliştirilmesine yönelik sınıf içi uygulamalar ve değerlendirme arasında tutarlık sağlama, farklı seviye ve altyapıda öğrencilerin bulunduğu sınıflarda öğrencilere seçenekler sunma, öğretmenin iyi bir performans sergileyen öğrenciyi taltif etmesi, öğrencilere, aynayı kendilerine tutmaları ve kendilerini eleştirmeleri yönünde birtakım davranışlar kazandırma.

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