TEACHERS' PERCEPTIONS OF CONSTRAINTS
ON IMPROVING STUDENT THINKING
IN HIGH SCHOOLS

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ABSTRACT

TEACHERS' PERCEPTIONS OF CONSTRAINTS

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IN HIGH SCHOOLS

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MSc., Department of Educational Sciences

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The aim of this study is to investigate teachers' perceptions of constraints on improving student thinking skills in schools, and to find out whether there are differences in teachers' perceptions of constraints in terms of subject area, educational background, teaching experience, gender, geographical area, and school location.

A survey design was used in this study. The questionnaire used in the study was developed by making use of the related literature, and it was administered to 522 teachers working in the public high schools in four different regions of Turkey during the fall semester of 2002-2003 academic year.

The data gathered are analysed through descriptive and inferential statistics (one-way ANOVA and t-test). There were four major constraints on improving student thinking, namely, teacher-related, student-related, curriculum-related, and external factors to classroom. The results indicated that the most agreed constraints were the student-related ones. The results also showed that there were no statistically significant differences in teachers' perceptions of the constraints on improving student thinking based on the background variables, i.e., subject area, educational background, teaching experience, gender, geographical region, and school location.

Keywords: Improving student thinking, Constraints on improving student thinking, Teachers' perceptions.

ÖZ

ÖĞRETMEN ALGILARINA GÖRE LİSELERDE ÖĞRENCİLERİN DÜŞÜNME BECERİLERİNİN GELİŞTİRİLMESİNE ENGEL OLAN FAKTÖRLER

AKAN, Şule Özkan

Yüksek Lisans, Eğitim Bilimleri Bölümü

Tez Yöneticisi: Prof. Dr. Ali Yıldırım

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Bu çalışmanın amacı Türkiye'deki devlet liselerinde görev yapmakta olan öğretmenlerin, öğrencilerin düşünme becerilerinin geliştirilmesine ve buna engel oluşturan faktörlere ilişkin algılarının belirlenmesi ve öğretmen algılarının branş, eğitim durumu, öğretmenlik deneyimi, cinsiyet, okulun bulunduğu coğrafi bölge ve yerleşim bölgesine göre değişiklik gösterip göstermediğini saptamaktır.

Bu çalışmada kullanılan anket, konu ile ilgili ulaşılmış literatür ışığında hazırlanmış ve Türkiye'nin dört farklı bölgesinde bulunan devlet liselerinde görev yapmakta olan 522 öğretmene 2002-2003 akademik yılı güz döneminde uygulanmıştır.

Elde edilen veriler üzerinde betimsel ve yordayıcı (ANOVA ve $\underline{t}$-test) analizler yapılmıştır. Veri analizi, öğrencilerin düşünme becerilerinin geliştirilmesine engel olan dört temel faktör olduğunu göstermiştir. Bunlar, öğretmenler ile ilgili, öğrenciler ile ilgili, program ile ilgili engeller ve sınıf dışından kaynaklanan engellerdir. Öğretmenler, öğrencilerden kaynaklanan faktörleri en önemli engel olarak görmektedirler. Buna ek olarak, öğretmen algılarının branş, eğitim durumu, öğretmenlik deneyimi, cinsiyet, okulun bulunduğu coğrafi bölge ve yerleşim bölgesi açısından farklılık göstermediği saptanmıştır.

Anahtar Sözcükler: Öğrencilerin düşünme becerilerinin geliştirilmesi, Öğrencilerin düşünme becerilerinin geliştirilmesine engel olan faktörler, Öğretmen algıları.

To My Daughter

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I hereby declare that all information in this document has been obtained and presented in accordance with academic rules and ethical conduct. I also declare that, as required by these rules and conduct, I have fully cited and referenced all material and results that are not original to this work.

Date: September 8, 2003   Signature:

TABLE OF CONTENTS

LIST OF TABLES

TABLE

ABBREVIATIONS

E.R.D.D.: Educational Research and Development Directorate of
M.O.N.E.

M.O.N.E.: Ministry of National Education

CHAPTER I

INTRODUCTION

1.1. Background to the Study

The interest in improving student thinking through education goes way back in educational history. Dewey (1933) recognized that people are born with the ability to think and stated that the educators' role is to train learners to think well. Piaget (1958) stated that the principal goal of education is to create men who are capable of doing new things, not simply repeating what other generations have done. The secondary goal of education, according to Piaget, is to form minds which can be critical, can verify, and not accept everything they are offered (Piaget, 1958, cited in Kurfiss, 1988). Therefore, in one sense, education and thinking are inseparable (Dewey, 1933, cited in Beyer, 1988).

During the last decades of the twentieth century, an intensified interest in the thinking skills of students emerged. One important reason for that is serious teaching of thinking skills brings benefits to students, teachers, and societies (Beyer, 1988). Helping students become effective thinkers is increasingly recognized as a primary goal of education (Costa, 1985). In 1985, the Gallup Poll asked teachers and the public to rate goals

of education as to their importance. Developing the ability to think creatively, objectively, and analytically was placed first in teacher ratings and almost at the top of public ratings. The survey conducted by Goodlad (1984) revealed that teachers, parents, and students rated the intellectual development of students as the most important goal of schooling. Recently, the United States Congress included improving college students' thinking skills as a goal in the Goals 2000: Educate America Act (Elam, 2001).

Similarly, improving students' thinking skills is an explicitly stated educational goal of the Turkish educational system. In the Basic Education Law, which was passed by the Parliament in 1973, the second item refers to the importance of improving students' independent and scientific thinking skills along with being constructive and creative in thinking. Most recently, in the National Educational Goals for 2002, the Ministry of National Education stressed the primary importance of thinking skills, and improving students' thinking, problem solving skills, productivity, creativity, and understanding of new ideas and different cultures.

Although the above mentioned skills are highly valued, they are seldom explicitly taught to students. Cuban (1984) made a statement that each report and study sounded different but the results were still the same as students failed to acquire these skills since schools failed to teach

2

them. Despite the consensus on promotion of thinking skills, researchers have found little evidence that it takes place, and the growth displayed by students remains low (Keeley, 1992; Logan, 1976; Norris, 1985; Perkins, 1985, cited in Tsui, 1999, McKee, 1988).

It is widely accepted that improving student thinking is an important goal of education, however, there appears to be many problems in achieving this goal. Goodlad (1984), after studying a thousand classrooms, found that teacher lectures dominate the classroom activities. Though teachers know that improving thinking skills is an explicitly stated educational goal, there appears to be relatively little thinking in classrooms (Goodlad, 1984; Oxman & Barell, 1983). This is due to many factors. One factor is the methods used by teachers in classes. As Common (1985, cited in Yıldırım, 1993) said teachers are inclined to use the traditional methods such as lecturing since they feel more secure in this way. Another factor which is highly probable in Turkey as well is the 'sameness' of the textbooks. Goodlad (1984) also examined numerous books, classroom materials and quizzes and found out that they all require factual knowledge. The fact that students lack the skills of judgement and expression is also another factor constraining the improvement of thinking skills. Tama (1989, cited in Yıldırım, 1993) highlighted that some students resist mental effort that high level thinking skills activities require.

3

The role of contemporary education is perhaps one of the most controversial and debated dilemmas in our society. Many people have recognised that in order to compete and succeed in a rapidly changing global society, teachers must develop certain skills within learners such as improving their thinking skills. However, the bureaucratic structure in the educational system leaves few opportunities for both teachers and students to see the significance of what is being taught. Furthermore, the lack of relevancy and application of information to the outside world decreases student interest in classroom participation which would further retard any efforts toward improving student thinking (Paul, 1995).

The points raised above are probable to form constraints on improving thinking skills in high schools. According to Paul (1995), the perceptions, attitudes, and behaviours of teachers sometimes act as constraints on the improving of thinking skills. By recognising the importance of thinking skills and the deficiencies exhibited by the youth in thinking, there has been an increased attention to the improvement of thinking skills. In developed countries, there are numerous studies carried out on different aspects of thinking skills along with the constraints on it. However, up to now there has been little evidence indicating the extent to which teachers are actively engaged in improving students' thinking skills. In particular, there has been little research on practitioners' conceptions of the constraints on improving student thinking skills. In Turkey, there has been little research on the topic that could be reached. Therefore, the current

situation in Turkey needs to be studied in order to understand whether we have similar or different constraints in high schools in terms of improving thinking skills.

1.2. Purpose of the Study

The purpose of this study is to investigate teachers' perceptions of constraints on improving student thinking skills in schools, and to find out whether there are differences in teachers' perceptions of constraints in terms of subject area, educational background, teaching experience, gender, geographical area, and school location.

Therefore, specific research questions include the following:

1. How do teachers perceive thinking and improving thinking?

2. What teacher-related factors do teachers perceive as constraints on improving student thinking skills?

3. What student-related factors do teachers perceive as constraints on improving student thinking skills?

4. What curriculum-related factors do teachers perceive as constraints on improving student thinking skills?

5

5. What external factors to the classroom do teachers perceive as constraints on improving student thinking skills?

6. Are there differences in teachers' perceptions of improving student thinking skills in terms of background characteristics (subject area, educational background, teaching experience, gender, geographical area, and school location)?

1.3. Significance of the Study

In order to better understand how to promote thinking in the classroom, we need to learn more about the work of practitioners. Apparently, documented research in the past years has demonstrated that teachers' thoughts and beliefs play a crucial role in classroom practice. Consequently, it is important to study these in the context of improving thinking skills as well (Zohar et al., 2001).

This study is an attempt to find out the constraints on improving student thinking skills. Studying teachers' perceptions of constraints on improving student thinking skills is worthwhile from several perspectives. First of all, it may have implications for Ministry of National Education in terms of policy making related to curriculum decisions, and textbook selections. Secondly, it may provide some suggestions for in-service

training, inspection, and the like in terms of improving the quality of teaching and setting standards for it. Thirdly, the study may have implications for Higher Education Council in terms of pre-service education provided for the teachers and improvement of the quality of the courses. Furthermore, it may contribute to the limited literature on teachers' perceptions of the constraints on improving student thinking skills, and to future directions in research and practice in the field. In addition, this study may help curriculum designers, staff developers, supervisors, policy makers, teacher educators, and the like by providing insight into the issue of understanding teachers' perceptions of the constraints on thinking skills and their needs. It may also guide those authorities to take measures against the constraints faced by the teachers during their attempts to improve student thinking skills in high schools. Moreover, the results of this study may help teachers become aware of what a representative sample of teachers think in relation to improving student thinking and understand the current situation in schools in this respect. Finally, it may inspire researchers for further research by providing insight from a different context.

1.4. Definitions of Terms

Thinking: The process of applying, analysing, synthesising, and evaluating knowledge. Thinking is considered to be a complex skill or a collection of skills, which can be done poorly or well, efficiently or

inefficiently. In this study, thinking skills, i.e., higher order thinking skills, refer to the application, analysis, synthesis, and evaluation of the knowledge (based on Bloom's taxonomy of educational objectives).

Improving thinking skills: The effort to develop and expand students' thinking skills which may take place through a direct skills teaching approach or an indirect content teaching approach.

Constraints on improving thinking skills: The probable factors that inhibit the process of making use of and improving student thinking skills generally in classroom and in school.

Direct approach to teaching thinking: The approach in which thinking skills are considered as learned behaviour patterns, and are taught directly to students. Thinking is composed of a set of specific skills, such as comparing, ordering, classifying, and predicting, which are considered to have wide applicability and generalisability across all subject areas. Thus, this approach assumes that students will learn thinking skills better when they practise them independently from a specific subject matter content.

Indirect approach to improving thinking: The approach in which knowledge is viewed as the most critical foundation of thinking, hence, one's ability to think depends largely on a rich knowledge base. The contribution of knowledge to effective thinking is underlined. Thus, this

approach assumes that thinking skills are learned best when they are embedded in content of a course.

Teachers' perceptions: The beliefs or opinions held by the teachers on certain issues.

CHAPTER II

REVIEW OF LITERATURE

This chapter represents a literature review on the concepts of thinking and improving thinking, the necessity of improving thinking skills, approaches to improving thinking, research on constraints on improving student thinking, research on thinking skills in Turkey, and a summary of the literature review.

2.1. Concepts of Thinking and Improving Thinking

Thinking is usually viewed as a complex skill or collection of skills. According to this view, it is natural to consider thinking as something which may be done poorly or well, inefficiently or efficiently, and to assume that it is something which can be improved through instruction (Nickerson et al., 1985). Similarly, thinking is viewed as 're-interpretation' and should be thought of as a complex and high-level form of skill (Bartlett, 1958, cited in Paul, 1990).

In focusing on thinking skills, one should not deny the importance of acquiring knowledge. Indeed, skilful thinking can be defined as the ability to apply knowledge effectively (Nickerson et al., 1985). According to Bloom (1956), complex understanding is thought to occur only with the

10

accumulation of basic, pre-requisite learning. ''Recall is not knowledge'' (p. 421). Paul (1990) also stated that learning through rote memorisation, association and drill is lower order learning, which takes place in a variety of forms in schools and lacks logic. On the other hand, higher order learning is accomplished through exploring the foundations, justifications, implications and setting value on a fact, principle, skill or concept. These two terms of learning are used to provide a general distinction between more complex, i.e., higher order thinking, and more simplistic, i.e., lower order modes of thinking (Onosko, 1988). Briefly, information obtained through memorisation and conclusions formed on the basis of belief, authority or emotion, without any supporting evidence, is not higher order thinking (Eggen et al., 1996).

Ennis (1987) stated that the upper levels of Bloom's taxonomy, i.e. analysis, synthesis, and evaluation are one possible conceptualisation of higher order thinking skills. Although there may be objections to using Bloom's taxonomy, it is important to remember that Bloom offered it as a set of types of objectives, not as a list of educational objectives. Nevertheless, Bloom's is one of the most widely used taxonomies throughout the world to define thinking skills (Benson, 1999). In that case, higher order thinking objectives specify student performance that requires application, analysis, synthesis, and evaluation of information.

Broadly, different writers have used different terminology to define thinking skills. Paul (1990) used the term critical thinking as disciplined, self-directed thinking which exemplifies thinking appropriate to a particular domain of thinking. Ennis (1987) used the term critical thinking to include thinking skills in general, and reflective thinking for deciding what to do or believe. It should be noted that these definitions do not exclude creative thinking (Sternberg, 1986). Critical thinking includes most of the directly practical higher order thinking skills. According to Ennis (1987), these skills remind us that there is ''much more cognitive material to be acquired in schools than banks of memorised facts'' (p. 102).

According to Smith (1991), teachers have to choose their own definition of thinking skills and then make a commitment to implement it in their classrooms. Therefore, it is reasonable to consider thinking as a form of skilled behavior (Nickerson et al., 1985). As a consequence, thinking skills is the umbrella term in this study, including higher order thinking skills, i.e., applying, analysing, synthesizing, and evaluating knowledge.

2.2. Necessity of Improving Thinking Skills

Almost 100 years ago, in 1910, Dewey stated the that the aim of education is to teach young people to think. Piaget (1958) stated that the

principal goal of education is to create men who are capable of doing new things, not simply repeating what other generations have done. The secondary goal of education, according to Piaget, is to form minds which can be critical, can verify, and not accept everything they are offered (Piaget, 1958, cited in Kurfiss, 1988). Edward de Bono, in the 1970s (cited in Tebbs, 2000) also considered the underlying purpose of education as teaching young people to think.

A growing appreciation of the need to improve student thinking, particularly in academic domains, started in 1980s, and increased interest in more challenging and effective teaching environments (National Commission on Excellence in Education, 1983). The use of critical thinking, creative thinking, decision making, and problem solving was proposed by many leading educators. In the mid 1980s, educators considered ''evaluation and analysis skills, critical thinking, problem solving strategies, organisation and reference skills, synthesis, application, creativity, decision-making, and communication through a variety of modes'' as the skills which are fundamental to the future (Education Commission of the States, 1982).

Many studies, beginning with the one by the U.S. Department of Education in 1981, reflect the lack of critical thinking and problem solving skills of students. Therefore, many respected and professional organisations support improving thinking skills, like the National Council

of Teachers of English, the Presidential Commission on Excellence in Education, the College Board, the Carnegie Foundation for the Advancement of Teaching, the American Federation of Teachers, the Association of American Colleges, the National Institute of Education, the U.S. Department of Education, the Association for Supervision and Curriculum Development, and the University/Urban Schools National Task Force. Thus, numerous colleges and universities require students to complete courses in thinking (Ruggiero, 1995).

The origin of emphasis on higher order thinking skills lies in the realisation that in the modern world it is not the mere accumulation of facts and concepts but rather the ability to solve problems which will enable young people to contribute to society (Vockell et al., 1989). Subsequently, curriculum design has reflected the growing belief in the importance of developing thinking skills in recent years.

Thinking skills have been given prominence by educational policy makers. This importance is demonstrated by the learners' developing their thinking skills throughout school programs, as a tool for maximizing the potential in individuals. One important reason for that is serious teaching of thinking skills brings benefit to students, teachers, and societies (Beyer, 1988).

Helping students become effective thinkers is increasingly recognised as a primary goal of education. Costa (1985) underlined the need for basic education to provide higher-order problem solving, communication, and the general development of students' capacities in all areas of learning. This need emerges from the concern about proper preparation of students with respect to skills that would enable them to be systematic thinkers and continuous learners in the future.

Therefore, this skill is to be learned in classes and transferred from one discipline to another regardless of the subject matter (McKendree et al., 2002). There are various contributions of thinking skills to the classroom environment. As McBride and Gabbard (1990) showed teaching thinking skills promotes classroom discourse and improves the level of learning, going beyond such typical learning methods as memorisation, drill, and repetition. Similarly, Beyer (1988) expressed that teaching thinking skills can also improve the excitement and attraction of classroom teaching and learning.

Recently, the United States Congress included improving college students' thinking skills as a goal in the Goals 2000: Educate America Act (Elam, 2001). Similarly, improving students' thinking skills is an explicitly stated educational goal of the Turkish educational system. In the Basic Education Law, which was passed by the Parliament in 1973, the second item refers to the importance of improving students' independent

15

and scientific thinking skills along with being constructive and creative in thinking. Most recently, in the National Educational Goals for 2002, the Ministry of National Education stressed the primary importance of thinking skills, and improving students' thinking, problem solving skills, productivity, creativity, and understanding of new ideas and different cultures.

Improving thinking skills is an educational ideal, yet not widespread. If thinking critically were only a matter of acquiring skills and knowledge, teaching students to do it would be relatively less problematic (Kurfiss, 1988). However, teachers need a broad and deep understanding of subject matter and pedagogical strategies in order to develop critical thinking skills (Grant, 1988).

In his survey study, Tebbs (2000) underlined the fact that despite major initiatives designed to enhance students' cognitive skills, young people are not competent thinkers. He stated that there is a relationship between self-efficacy, performance, and student achievement. Therefore, he surveyed 432 K-12 teachers and revealed that teachers are least self-efficacious towards teaching higher order thinking skills and transfer of thinking. Self-efficacy differs significantly over subject matter, nature of training, degree to which training satisfies needs in terms of teaching thinking skills, and thinking strength or combination of thinking strengths possessed.

2.3. Approaches to Improving Thinking

Improving students' thinking skills is accepted as an important goal of education. Despite this consensus, how this should be achieved is an area of controversy among educators. The controversy results from basically two theoretical views about the nature of thinking. One view focuses on the content of thinking whereas the other emphasizes the skills and strategies involved in thinking (Yıldırım, 1993).

The two major theoretical views about thinking offer different classroom practice, roles and responsibilities for the teachers. The content-oriented view underlines the importance of teaching subject matter while creating an environment for students in order to encourage them to explore and exchange ideas. Teaching a particular content will help students acquire the skill together with the content (Glaser, 1984, cited in Yıldırım, 1993). It attempts to develop student thinking within the context of existing academic disciplines without dealing with specific thinking skills explicitly. According to this view, it may not be possible to teach someone directly, but it is possible to improve the way someone thinks since it is considered that proficiency in thinking ability is a result of rich and well-structured knowledge bases. This approach suggests deep and thoughtful subject matter instruction where students are encouraged to think reflectively. That gives greater responsibility to classroom teachers

17

in terms of redesigning the curriculum, exploring topics in greater depth, and promoting discussion among students. One disadvantage of this view is related to time. Teachers are responsible for covering a certain amount of subject matter, therefore, are left with too little time for exploration of ideas in class (Yıldırım, 1993).

On the other hand, the skill-oriented view highlights the cognitive processes while teaching thinking skills directly and explicitly (Yıldırım, 1993). It offers practices specifically designed to teach thinking skills with little or no emphasis on specific content. According to this view, the amount or type of knowledge does not affect the proficiency in thinking. This approach suggests seperate courses or instructional units in courses, where thinking skills are practised specifically and principles of good thinking are made explicit, in order to train students in those specific thinking skills. Some of the popular programs designed to teach thinking skills directly include CoRT (Cognitive Research Trust), Creative Problem Solving (CPS), Critical Analysis and Thinking Skills (CATS), Critical Thinking, Future Problem Solving, Higher Order Thinking Skills (HOTS), Instrumental Enrichment, Odyssey, Olympics of the Mind, Philosophy for Children, Project Impact, Strategic Reasoning, Structure of the Intellect (SOI), and Talents Unlimited (Beyer, 1988). Some of these programs were strongly influenced by theories of cognitive development while others emphasized teacher training; some relied on the adequacy of materials, some were developed by consortia of researchers or educators, and some

others were individual efforts (Nickerson et al., 1985). These programs may differ in scope, age level of the targeted student population, type and duration of instruction, theoretical orientations, and in other ways.

In the controversy about teaching of thinking, Nickerson stated that direct teaching of thinking is necessary as students do not acquire higher level thinking skills easily on their own or through ordinary instruction. However, Perkins proposed a method for teaching thinking through particular content bases (Sternberg, 1986).

There is widespread agreement that teachers must be actively involved in the development and support of activities which encourage the improvement of thinking. In a survey carried out by Marlow and Inman (1992) with 100 K-12 teachers from urban and rural elementary, middle, and high schools, teachers' understanding of the nature of higher order thinking skills instruction and their confidence in their performance, ability, and preparedness to teach these skills increased as they agreed on the importance of providing opportunities for students, after attending a workshop. This could be due to a better understanding of the nature of higher order thinking skills, i.e., it is important to raise the awareness level of teachers in term of improving student thinking skills. Therefore, the factors perceived as constraints on this issue should be found out in order to take the necessary measures.

2.4. Research on Constraints on Improving Student Thinking

There are many circumstances that are perceived as obstacles to improving students' thinking skills by teachers. Generally speaking, the research studies reached indicated that teachers do not consider many of the obstacles related to themselves. The perceived obstacles are especially related to the students, the school environment, the curriculum, or items mentioned in relation to other obstacles.

Yıldırım (1993) studied 285 teachers' perceptions through a survey questionnaire, and found that teachers feel responsible for improving student thinking in their classrooms, and are interested in learning more about teaching thinking. According to his study, some teachers do not perceive any teacher-related barriers in teaching thinking, instead they pointed to certain barriers on the students' part such as their concern about passing tests and lack of confidence in their ideas. Furthermore, some teachers detect a preference for a structured way of learning and lack of eagerness in students to explore new perspectives.

In another survey study done by Andrews (2000) with 179 teachers, it is found that all teachers believed it was important to include the teaching of critical thinking skills, and most of them were confident in their abilities to teach these skills. This finding is, in fact, contrary to Tebb's (2000) finding that teachers are least self-efficacious towards teaching

thinking. Andrews also stated teachers responded that too little planning time and pressure to improve scores on standardised tests were obstacles to teaching thinking.

Interestingly, teachers' beliefs may become a self-fulfilling prophecy. Since the beliefs of teachers' make them expose only high-achieving students to tasks requiring higher order thinking skills, the gap between low and high achieving students will grow wider (Zohar et al., 2001). Zohar et al. (2001) found that 45% of the teachers believe that higher order thinking is inappropriate for low-achieving students through an interview made with 40 teachers from two different schools.

Goodlad (1984) argued that curriculum is too often determined by textbook publishers who depend on the tried and true. Therefore, teachers have not been encouraged to think critically and they sometimes do not feel competent to do so. Sarason (1982) mentioned that 'pragmatic regularities' and the culture of the school limit the abilities of teachers to consider the range of alternatives to what they have always done. Liebermann and Miller (1979) pictured a teacher as one who is limited by the day-to-day realities of the classroom. These realities are such that innovation does not come easily.

Browne (1987) argued that thinking is a process, not a body of knowledge that can be mastered. This sounds like Browne is for the

21

improvement of thinking skills through content-oriented view. Hence, thinking skills and attitudes can be encouraged by the conscious, systematic efforts of teachers. Moreover, high level thinking skills need to be improved by training as it cannot be assumed that such skills would emerge automatically by maturation (Crutchfield, 1969 cited in Nickerson et al., 1985). Furthermore, most teachers are under intense pressure to follow prescribed instructional procedures, regulated and supervised by state and federal authorities rather than by local school boards, and parent-teacher associations (Smith, 1987).

Different researchers raised different points as constraints on improving student thinking skills. In Sadler's (1987) view, the most significant obstacle is that faculties do not have the requisite training and support to improve thinking skills. In Oxman and Barell's (1983) study with 160 teachers who responded to the reflective thinking survey questionnaire, it was found that teachers mainly attribute the lack of reflective thinking in schools to the curriculum, including the ethos and expectations of the school, and to its students. In addition, teachers tend to stress the aspects of curriculum which deal with the acquisition of specific facts, where students themselves expect to engage in activities, assignments, and tests requiring simple factual answers. In Onosko's study with two different groups of teachers (1988), teachers highlighted large class size and total student load as the most inhibiting barriers to the instruction of thinking.

22

Raths et al. (1966) identified many learner behaviour types, teacher behaviour types, and the school programmes as deficits in good thinking (Raths, 1966 cited in Pithers, 2000). According to Barell (1985), for improving complex thinking in classrooms, teachers need to plan for several factors: students' difficulties in complex thinking, teachers' own difficulties in challenging students to think, supervisors' routines and organisational constraints, community expectations and pressures. The solutions are, respectively, teachers need to create an environment for thinking and to spend time focusing students' attention on the preconditions of higher order thinking skills, having knowledge of the nature of thinking, having professional skills and behaviours required to challenge students for thinking and problem solving; supervisors should encourage teachers, give day-by-day assistance to them, and observe them in order to improve instruction and evaluation; parents should be actively involved in the process and support teachers who are involved in teaching thinking skills. That is, all elements of the school should be involved.

According to Sternberg (1986), there are eight constraints on teaching critical thinking, as: (1) teacher being the teacher and student being the student; (2) thinking being only the students' job; (3) deciding on the correct program; (4) program preceded by a complex set of binary choices; (5) just the right answer counting; (6) class discussion being a primary means to an end; (7) mastery learning being possible to be

23

applied to critical thinking like anything else; (8) teaching thinking in a course on thinking. In fact, Sternberg is an advocate of skill-oriented view of teaching thinking skills in schools. Still further, Sternberg (1986) designed a programme called Applied Intelligence for high school and college students in order to improve their thinking skills.

As research indicates, improving student thinking skills in any way can be problematic for teachers. McKee (1988) defined three major areas in which teaching thinking showed ambiguity and presented a risk to the teachers: (1) Relations with students: Teachers believed that most of the students were unwilling or unable to think critically. They were busineess-like, i.e., taught all students alike and maintained formal relations with students. They taught a consensus view as subject-matter experts, and viewed knowledge as content-dependent. Both teachers and students appeared to prefer highly structured activities. (2) Relations with employers: There was ambiguity in what teachers' employers expected from them. (3) Relations with colleagues: The ambiguity carried on. It is clear that the traditional education does not promote thinking skills, and this is familiar for teachers, moreover, supported by the educational administration, therefore more commonly practised.

Wassermann (1984) thought there are important impediments to teaching thinking and that our means are incompatible with our ends. There are discrepancies in classroom materials, in addition to the teacher-

student discrepancies, the pupil outcome discrepancies and professional discrepancies. Becoming aware of these five conditions that inhibit the teaching and learning of thinking, Beyer (1988) listed inappropriate teaching methods, testing procedures used, skill overload by the school curricula, diversity in thinking skills, and confusion over skill meanings. The constraints on teaching higher level thinking skills, according to Sparapani (1998), are the schedule of the school which determines the daily functions of the school, student attitudes that they do not want to spend more energy, the teacher attitudes that it is quicker and easier to provide answers directly, time and energy needed to prepare the learning activities, the variety of resources needed and that should be immediately accessible, the atmosphere which teachers have the responsibility to provide for thinking process, and the realisation that state or school guidelines often inhibit the use of alternative assessment.

2.5. Research on Thinking Skills in Turkey

There are different terms used interchangeably for higher order thinking skills, as mentioned earlier. However, these terms, which include critical thinking, reflective thinking, reasoning, logical thinking, scientific thinking, and problem solving all refer to higher order thinking skills, need to be improved for the coming Turkish generations. Although this researcher has not encountered any research on the specific issue of

constraints on improving student thinking skills in Turkey, she has been able to access studies on thinking skills.

Serdar (1999) carried out a study with 130 teachers from different areas of specialisation in high schools in Ankara-Polatlı through a questionnaire developed by herself. According to her study, teachers believe that thinking skills can be improved through active learning and practice within classroom. The thoughts of the teachers are closer to the content-based approach. She found that teachers are excessively dependent on the programme and pacing, not likely to spend time on thinking skills, or not competent enough in methodology or techniques to improve thinking in classes. In addition, mere knowledge is always tested, comments are not valued. The subject matter makes a difference as science and maths courses are thought to be more appropriate to improving thinking skills than social sciences courses. However, gender, educational background, or experience in teaching do not seem to make a difference.

Interestingly, Gelen (1999) concluded that teachers find themselves competent in improving thinking skills, but observation carried out proved the opposite to be true. He did a research among 97 teachers by applying a questionnaire in 30 different primary schools in Antakya. Afterwards, he observed 24 teachers who were randomly selected. He found out that, being parallel to Serdar's (1999) findings, different factors such as

gender, educational background, experience in teaching, or the subject area do not make a difference in teachers' perceptions. He suggested that the main reasons for the inconsistency in what teachers do and tell are teacher education, the lack of such courses to improve thinking, teacher-centredness, and lack of motivation of teachers to develop themselves professionally.

Kaya (1997) conducted a study to find out the students' level of critical thinking skills and the factors affecting it. She included 244 students who were randomly selected in Istanbul University in the Faculties of Science, Medicine, Social Sciences, and Engineering. The level of the students was found to be medium, and that this level might change as socio-economic status increased, which is consistent with Serdar's (1999) findings. Also, curiosity characteristics lead to higher levels of critical thinking in students. In addition, according to this study, students from certain departments are better at critical thinking, such as Departments of Engineering and Medicine.

Öner (1999) carried out a study in a primary school in Adana- Seyhan with 108 fifth-grade students by grouping them as the experimental and control groups. By this study, he revealed that co-operative learning in primary school, among 5th grade students caused critical thinking skills and academic success to increase. In another study, Munzur (1999) examined four coursebooks used in high schools in Turkish Language and

Literature courses. She stated that the literature books studied in high schools do not lead students to develop creativity, problem solving and critical thinking skills while Uysal (1998) found in his study that the discussion method used in educational settings lets students develop critical thinking skills. He reached this conclusion after conducting a study on the students in İnönü University, Faculty of Education, Department of History by using a Critical Thinking Test and grouping students as the experimental and control groups.

Finally, in a similar study, Özçınar (1996) carried out a study on practising the use of critical thinking strategies such as problem solving, decision-making, reasoning, and creativity through language learning. She made an experiment to learn about students' performance after a training period of eight weeks. An experimental and a control group of 24 students participated in that study. She found out that when adequate practice is given to students, an improvement can be seen in the students' thinking abilities while dealing with reading texts.

2.6. Summary

It is for sure that improving thinking skills has become increasingly important in this information age, especially in the developed countries. Improving student thinking skills is an explicitly stated educational goal of the Turkish educational system as well.

Many respected and professional organisations support improving thinking skills. Improving student thinking skills is an educational ideal, but it is not widespread. However, research indicates that these skills are seldom improved within classrooms. This is due to many constraints on it as found through research.

The interest in improving student thinking through education goes way back in educational history. In the beginning of the twentieth century, it was recognized that people are born with the ability to think and stated that the educators' role is to train learners to think well. In the beginning of the second half of the same century, it was stated that the principal goal of education is to create men who are capable of doing new things, not simply repeating what other generations have done. During the last decades of the twentieth century, an intensified interest in the thinking skills of students emerged. One important reason for that is serious teaching of thinking skills brings benefits to students, teachers, and societies. Therefore, helping students become effective thinkers is increasingly recognized as a primary goal of education.

Recently, the United States Congress included improving college students' thinking skills as a goal in the Goals 2000: Educate America Act. Similarly, improving students' thinking skills is an explicitly stated educational goal of the Turkish educational system. In the Basic

Education Law, which was passed by the Parliament in 1973, the second item refers to the importance of improving students' independent and scientific thinking skills along with being constructive and creative in thinking. Most recently, in the National Educational Goals for 2002, the Ministry of National Education stressed the primary importance of thinking skills, and improving students' thinking, problem solving skills, productivity, creativity, and understanding of new ideas and different cultures.

Although the above mentioned skills are highly valued, they are seldom explicitly taught to students. The results of research indicate still the same as students failed to acquire these skills since schools failed to teach them. Despite the consensus on promotion of thinking skills, researchers have found little evidence that it takes place, and the growth displayed by students remains low.

According to the literature, the constraints on improving student thinking skills are due to many varying factors. These constraints can be summarised as follows. First of all, teachers feel more secure with conventional methods such as lecturing in class, which also makes classroom management easier. Besides, traditional classroom procedures do not allow thinking skills to be improved. On the side of the students, improving thinking skills is challenging, and they hesitate in expressing their ideas in classroom. Another factor is the bureaucratic structure in the

educational system. Still another factor is the 'sameness of the coursebooks'. In brief, those factors can be grouped as teacher-related, student-related, curriculum-related, and external factors to classroom as constraints on improving student thinking skills in schools.

Taking these trends and outcomes in the literature into consideration, it becomes important to look at what the situation is in Turkish high schools in terms of improving student thinking. More specifically, understanding the constraints on improving student thinking through teachers' perceptions will help us establish a bridge between what the situation is in Turkish schools and what the literature presents to us on this issue.

CHAPTER III

METHOD

This chapter describes the overall design of the study, population and sample selection, development of data collection instrument, data collection, and data analysis procedures.

3.1. Overall Design of the Study

The purpose of this study is to investigate teachers' perceptions of the constraints on improving student thinking skills in schools, and to find out whether there are differences in teachers' perceptions of the constraints in terms of subject area, educational background, teaching experience, gender, geographical area, and school location.

A survey design was used in this study. The researcher developed a questionnaire on teachers' perceptions of improving student thinking skills and the constraints on it, and it was distributed to high schools in the fall semester of 2002-2003 academic year (see Appendix A).

The major themes in the questionnaire included the background information, the overall views on thinking skills, the constraints related to

various factors as teacher-related, student-related, curriculum-related factors along with the external factors to the classroom. Descriptive and inferential statistical analyses were conducted in order to gain a deeper insight into the responses in the questionnaire.

3.2. Population and Sample Selection

This study covered all the public high school teachers in Turkey. The number of teachers included in this study, which is actually the total amount of high school teachers all across Turkey, is 133,359. There are 30,913 teachers in the Marmara Region, 21,143 in Aegean Region, 17,979 in Mediterranean Region, 27,868 in Central Anatolia Region, 18,870 in Black Sea Region, 8,193 in East Anatolia Region, 8,393 in South East Anatolia Region. (M.E.B., 2001-2002). Four geographical regions out of seven, three cities from each region, and three schools from each city were selected randomly by the researcher. Since the researcher did not choose the subjects but the schools, cluster random sampling was used for this procedure. As a result, a total of 36 schools served as cluster sample for this study. All the vocational high schools were excluded in the sample.

For sample selection, the researcher applied to State Planning Organisation (S.P.O./D.P.T.), the General Directorate of Regional Development and Structural Adjustment. This directorate provided the researcher with two booklets, Various Indicators Related to Provinces and

Regions, and The Census Results of the year 2000 in Provinces and Regions. These two booklets were used by the researcher for the sample selection. Eventually, the researcher had a list of the seven regions in the country, the cities in those regions, and their districts. First, the names of the regions were randomly drawn out of seven regions. Second, the names of the cities in the selected geographical regions were drawn randomly. Third, the names of the districts in those selected cities were randomly drawn by the researcher. Since the researcher did not have the complete list of schools, it was agreed that E.R.D.D. would choose the first two schools from the city centre and the first school from the rural area according to the alphabetical list of schools in the region. As a result, a total of 522 teachers in 36 different schools, who completed the questionnaires fully, served as the sample for this study.

Table 1 presents the geographical regions, cities, and their districts in this study. The geographical regions selected randomly represented the south, west, north, and east parts of Turkey. The cities had differing characteristics related to various indicators.

Table 1. Geographical regions, cities and districts included in the sample

Mediterranean Region,	Adana and Ceyhan
	Hatay and İskenderun
	Isparta and Sütçüler
The Marmara Region,	Balıkesir and Gönen
	Bursa and İnegöl
	Edirne and Keşan
Black Sea Region,	Amasya and Suluova
	Ordu and Gölköy
	Zonguldak and Gökçebey
East Anatolia Region,	Ağrı and Patnos
	Erzurum and Tekman
	Tunceli and Ovacık

3.3.   Development of Data Collection Instrument

This study employed a questionnaire in high schools in order to collect data on teachers' perceptions of improving student thinking skills and the constraints on it. This questionnaire was inspired from the study of Oxman and Barell (1983), and it was designed by the researcher in order to collect data from the teachers. All the questions included in the questionnaire were developed in the light of the related literature review.

The questionnaire is mainly composed of three sections. The first section aims at gathering information on background characteristics as area of specialisation, educational background, teaching experience, gender, and school location. In the second section, items on the significance of thinking skills, and the constraints on thinking skills in terms of teachers, students, curriculum and materials, and external factors to classroom are included. The first two sections were composed of closed-ended questions, for which a five-point Likert scale, where 4 stands for 'totally agree', 3 for 'agree', 2 for 'not agree', 1 for 'not agree at all', 0 for 'undecided' was used. In the third section, an open-ended question is also included in order to let teachers write their further comments, ideas, and suggestions on improving thinking skills and the constraints on it.

The data collection instrument, i.e., the questionnaire, was introduced to the teachers with a brief information about higher-order thinking skills and the probable constraints on developing these skills.

A pilot testing was carried out with eight high school teachers in T.C. Ankara Ayrancı High School in October 2002. The teachers were asked to fill in the questionnaire, respond to the statements, and make comments on them. In addition, the questionnaire was assessed by three experts, who are academic instructors at Middle East Technical University, Faculty of Education, Department of Educational Sciences. Both parties were asked

36

to evaluate the questionnaire critically in terms of its layout, wording of the items, and the relevancy of the items included. This was done for the validity of the questionnaire. While taking the questionnaires back, an informal talk took place in order to have a common understanding. On the basis of the feedback received, the necessary modifications were made by the researcher. For instance, wording of some of the items was corrected, the tense used was changed, and last but not the least the instruction given in the questionnaire form was rewritten. Both the results of the pilot study and the expert opinions proved the questionnaire to be consistent with the research questions, and the questions to be clear. Moreover, reliability analysis was carried out and the Cronbach Alpha was 0,899. Eventually, the questionnaire was found to be valid and reliable.

3.4.   Data Collection Procedures

For data collection, the researcher applied to Ministry of National Education, Educational Research and Development Directorate (E.R.D.D./E.A.R.G.E.D.) for support. This department provided the researcher with aid while conducting the questionnaire in the schools selected from different geographical regions of Turkey by distributing them across the country.

The questionnaires in Turkish (see Appendix B) were mailed to selected schools in the sample through provincial directorates by

Educational Research and Development Directorate along with a letter indicating that all teachers in the schools should fill out the questionnaires. It took the schools one to one-and-a-half months to return the questionnaires to E.R.D.D.. As a result, a total of 548 questionnaires were received by the researcher. On the whole, there were 19 questionnaires which lacked answers to more than one-fourth of the items, i.e., more than 10 missing items. There were 4 questionnaires which were not filled in at all, and 3 more problematic questionnaires. In the three problematic questionnaires, the five-point grading scale used for the closed-ended questions was misunderstood by the respondents, i.e., those respondents did not circle the grading scale but circled some of the questions; this could not be interpreted by the researcher. Therefore, 522 out of 548 questionnaires were evaluated, and the remaining 26 were disregarded.

3.5.   Data Analysis Procedures

The data collected through the questionnaires were analysed using descriptive and inferential statistics. All responses to close-ended items were entered into SPSS for statistical analysis. Data collected through open-ended questions were categorised and presented along with the responses to close-ended questions.

Statistical analysis of the data were done according to the research questions. First, the frequency, mean, and standard deviation for each item were calculated. Second, the items in the questionniare were examined through ANOVAs or $\underline{t}$-tests in order to determine whether or not the differences among teachers' perceptions of the constraints on improving student thinking skills according to background factors were significant. Finally, the open-ended data were summarised on a table together with their interpretations.

3.6. Timeline of the Study

The researcher has completed the construction of the questionnaire in September. In October, it was piloted among high school teachers and evaluated by experts. During November and December, the questionnaires were copied and sent out to different regions of Turkey by E.R.D.D.. The researcher got them back in January and started to enter data into SPSS. This was followed by the statistical analyses of the data in February and March. The researcher started writing her report in April, and completed the write-up at the end of June. Table 2 shows the activities undertaken in relation to this study.

Table 2. Timeline of the Study

ACTIVITIES	MONTHS									
	Sept. 2002	Oct. 2002	Nov. 2002	Dec. 2002	Jan. 2003	Feb. 2003	Mar. 2003	April 2003	May 2003	June 2003
Writing Literature Review	✓	✓								
Questionnaire Construction	✓	✓								
Piloting the Questionnaire		✓								
Applying the Questionnaire			✓	✓						
Receiving the Questionnaires Back					✓					
Analysing the Data						✓	✓			
Report Writing								✓	✓	
Revision										✓

3.7. Limitations of the Study

The scope of this study is limited to the data collected from Turkish public high school teachers who are included in the sample of the study. Vocational and private high school teachers were not surveyed. There is also a limitation due to lack of the chance to interview the subjects.

Another limitation is related to the methods of data collection and analyses used in this study. In terms of the survey questionnaire, two

40

limitations need to be mentioned. Firstly, since the participation in this study was on a voluntary basis, the instrument was subject to uncontrolled biases of the participants. Secondly, since the conditions under which the questionnaires were completed by the respondents could not be controlled, environmental biases may have been present in the data.

Still another limitation is that the themes used in this study are limited to constraints as teacher-related, student-related, curriculum-related, and external factors to classroom. However, there might be other factors affecting teachers' perceptions of improving student thinking and the constraints on it, directly or indirectly.

CHAPTER IV

RESULTS

The purpose of this study is to investigate teachers' perceptions of the constraints on improving student thinking skills. This chapter presents the findings of the study from the teacher questionnaires. The findings of the study are presented in eight sections. The first section describes the background characteristics of the sample. The second section discusses teachers' perceptions of thinking and improving thinking. The third section examines teachers' perceptions of teacher-related constraints on improving thinking skills. The fourth section discusses teachers' perceptions of student-related constraints on improving thinking skills. The fifth section explores teachers' perceptions of curriculum-related constraints on improving thinking skills. The sixth section presents teachers' perceptions of external factors to the classroom as constraints on improving thinking skills. The seventh section examines the differences in teachers' perceptions of constraints on improving thinking skills. Finally, the eighth section addresses teachers' comments on open-ended question,

which was asked to the teachers in order to learn about their additional comments on improving thinking skills and the constraints on it.

4.1. Background Characteristics of the Sample

In the questionnaire, teachers were first asked to give some background information about themselves in terms of their area of specialisation, educational background, teaching experience, gender, and location of their schools. As Table 3 displays, among the 522 teachers who responded to the questionnaires, the largest group of respondents were social studies and science teachers, 20,2 % and 19,8 % respectively. Foreign languages, mathematics and literature teachers along with the teachers of other areas are represented by somewhat similar percentages of respondents ranging from 10,4 % to 18,6 %. The overwhelming majority of the respondents have a Bachelor's degree (83,4 %). More than half (55,4 %) of the teachers, who responded to the questionnaire, have teaching experience of 10 years or less. Male respondents were represented slightly higher than female respondents, 56,5 % and 43,5 % respectively. Two-thirds of the teachers, that is, 67,4 % teach at urban schools.

43

Table 3. Distribution of Teachers Responding to Survey by Background Variables

		Frequency	Percent
Subject Area	Social Studies	105	20,2
	Science	103	19,8
	Mathematics	68	13,1
	Literature	94	18,0
	Foreign Languages	54	10,4
	Other Areas (e.g.,	97	18,6
	arts, religion, physical education)	$\underline{N}$ = 521	100
Educational Background	Associate degree (2year)	41	7,9
	Bachelors (4 year)	433	83,4
	Masters	29	5,6
	Doctorate	2	0,4
	Other	14	2,7
		$\underline{N}$ = 519	100
Teaching Experience	0-5	145	28,6
	6-10	136	26,8
	11-15	86	17,0
	16-20	58	11,4
	21 and more	82	16,2
		$\underline{N}$ = 507	100
Gender	Male	294	56,5
	Female	226	43,5
		$\underline{N}$ = 520	100
School Location	Urban	352	67,4
	Suburban	170	32,6
		$\underline{N}$ = 522	100

Total number of respondents ($\underline{N}$'s) might vary for each variable due to missing data.

4.2. Teachers' Perceptions of Thinking and Improving Thinking

In the second part of the questionnaire, teachers were given five general statements about the importance of thinking skills and were asked about the degree of agreement with those. As Table 4 indicates, the majority of the respondents, i.e., more than 90 %, agree that thinking skills are needed for daily problem solving, learning the content better, and transfer of knowledge between courses. The respondents, approximately 56 %, disagreed that learning the content is more important than thinking skills. They mostly (67 %) agreed with the need to spend time on thinking skills.

Table 4. Degree to Which Teachers Agree With The Statements on Thinking and Improving Thinking (in percentages and means)

	(4) Strongly Agree	(3) Agree	(2) Disagree	(1) Strongly Disagree	(0) Undecided	Mean	N
Thinking skills are needed for daily problem solving.							
	61,1	33,8	2,9	1,7	0,4	3,54	517
Thinking skills are needed for the courses to be learned better.							
	65,3	29,5	2,1	2,9	0,2	3,57	519
Thinking skills are needed to transfer knowledge between courses.							
	60,8	31,4	4,5	1,9	1,4	3,48	513
Learning the content is more important than thinking skills.							
	6,0	11,9	55,6	23,5	2,9	1,95	514
There is no need to spend time on thinking skills, they are learned naturally.							
	7,9	22,2	52,0	14,5	3,3	2,17	517

N's for each item vary due to missing responses.

These results show that teachers acknowledge the importance of thinking skills and improving students' thinking skills as they think that thinking skills are needed for daily problem solving, learning the content better, and transfer of knowledge between courses. This is highligted in the literature that education and thinking are inseparable (Dewey, 1933, cited in Beyer, 1988). Teachers display agreement with the literature that people should be able to think and develop (Piaget, 1958), therefore, societies would benefit (Beyer, 1988; Costa, 1985). This means that teachers are aware of the fact that improving students' thinking skills is an important goal in the teaching and learning process.

The results indicate that 80 % of the teachers disagreed or strongly disagreed with the statement 'Learning the content is more important than thinking skills,' and nearly 70 % disagreed or strongly disagreed with the statement that 'There is no need to spend time on thinking skills, they are learned naturally.' This may mean that teachers would like to emphasize thinking skills clearly in the teaching and learning process rather than expecting them to be developed naturally.

4.3. Teachers' Perceptions of Teacher-Related Constraints on Improving Thinking Skills

Teachers were given eleven statements about the teacher-related constraints on improving thinking skills and were asked about the degree

of agreement with those. As Table 5 indicates, the majority of the teachers state that teachers feel a need to cover content (82,1 %), and usually to use lecturing strategy (75,5 %). In addition, more than two-thirds (70,7 %) feel that there is not sufficient time for thinking in class. The respondents are divided on the issue that teacher tests do not stress thinking skills. While 55,1 % feel that teacher tests do not stress thinking skills, 41,6 % disagree with this point. Close to three-fifths of the teachers (58,4 %) perceive that teachers are uncomfortable with questions that have no obvious answers, and half of the teachers (50,9 %) believe only certain students can perform higher order thinking. Teachers stated that neither pre-service programmes including teacher training nor in-service programmes stress improving thinking skills (80 % and 68 % respectively). Furthermore, most respondents mentioned that teachers do not have enough resources (81,1 %) and enough time to get prepared for developing activities toward thinking skills (64,4 %). When all teacher-related constraints are taken into consideration, the majority of the respondents tend to agree that there are teacher-related constraints on improving student thinking skills (with a mean value of 2,80).

Table 5. Degree to Which Teachers Agree With Teacher-Related Constraints On Improving Thinking Skills (in percentages and means)

	(4) Strongly Agree	(3) Agree	(2) Disagree	(1) Strongly Disagree	(0) Undecided	Mean	N
Teachers feel a need to cover content.							
	38,1	44,0	12,5	4,4	1,0	3,14	520
Teachers usually use lecturing strategy.							
	11,7	63,8	20,7	3,1	0,8	2,83	522
Teachers do not provide sufficient time for thinking in class.							
	18,0	52,7	23,2	5,4	0,8	2,82	522
Teacher tests do not stress thinking skills.							
	11,9	43,2	33,5	8,1	3,3	2,52	519
Teachers are uncomfortable with questions that have no obvious answer.							
	13,6	44,8	31,8	5,2	4,6	2,58	522
Teachers believe only certain students can perform higher order thinking.							
	12,1	38,8	39,0	7,7	2,5	2,50	521
Pre-service programmes do not stress improving thinking skills.							
	26,2	51,3	14,4	3,8	4,2	2,91	520
Teachers are not given information on improving thinking skills when they first start teaching.							
	28,0	52,7	11,1	4,0	4,2	2,96	522
In-service programmes do not stress improving thinking skills.							
	21,1	47,0	16,5	3,1	12,3	2,62	521

Table 5. cont.

Teachers do not have enough resources.						
29,8	51,3	13,8	3,5	1,5	3,04	520
Teachers do not have enough time to get prepared for developing activities toward thinking skills.						
24,7	39,7	27,2	7,3	1,1	2,80	522
MEAN FOR TEACHER-RELATED CONSTRAINTS					2,80	

<u>N</u>'s for each item vary due to missing responses.

These results show that teachers feel a pressure to cover content and therefore, they might prefer lecturing as the mode of instruction. As a result, they may not have sufficient time or opportunity to improve student thinking in class. Lecturing strategy may be used mostly by the teachers since the curriculum is loaded and the teachers feel a need to cover the whole content within a short time. Therefore, there may not be much time left for improving thinking skills. The literature indicates that teachers mostly use lecturing strategy in class (Goodlad, 1984; Common, 1985). Another reason might be little planning time left for teachers (Andrews, 2000).

Although they do not constitute the majority, a considerable number of respondents say that teachers believe only certain students can perform higher order thinking skills. This finding is parallel to the findings of the study conducted by Zohar et al. (2001), indicating that most teachers believe higher order thinking is inappropriate for low-achieving students.

This might exactly be the reason why many teachers do not prefer questions that do not have obvious answers. They may have concerns that students would not be able to handle these types of questions or activities well. In any case, teachers do not have sufficient resources and time to realise such an educational goal. Since teachers' beliefs become a self-fulfilling prophecy, this may be the basic constraint on improving student thinking skills in classrooms. When teachers believe that students lack the skills of judgment and expression as indicated by Tama (1989), they assume that students would resist mental effort that high level thinking skills require. In addition, teachers need a broader and deeper understanding of subject matter and pedagogical strategies in order to improve student thinking skills (Grant, 1988). This could only be achieved through pre-service and in-service programmes that focus on improving teachers' perceptions of thinking skills, and the importance of it for the coming generations.

4.4. Teachers' Perceptions of Student-Related Constraints on Improving Thinking Skills

Teachers were given nine statements about the student-related constraints on improving thinking skills and were asked about the degree of agreement with those (see Table 6). According to a large majority of the teachers (92,9 %), students expect that each question should have a definite right answer. Similarly, students are afraid of being incorrect in their answers (80,3 %), and they prefer activities and assignments with

simple factual questions and answers (89,4 %). More than two-thirds (68,5 %) of the teachers feel that students perceive the teacher as authority and more than half (53,5 %) say that students perceive the textbook as authority. According to about three-fourths of the teachers, students lack interest in thinking activities (74,2 %), and students also lack needed background knowledge (78,0 %). In addition, a large majority of the respondent teachers think that students lack experience in improving thinking skills in schools (88,5 %) since they are impatient with the difficulty of thinking (78,8 %). When all student-related constraints are taken into consideration, the majority of the respondents agree that students themselves constitute the constraints in improving their thinking skills in various ways (with a mean value of 3,04).

Table 6. Degree to Which Teachers Agree With Student-Related Constraints On Improving Thinking Skills (in percentages and means)

	(4) Strongly Agree	(3) Agree	(2) Disagree	(1) Strongly Disagree	(0) Undecided	Mean	N
Students expect that each question has a right answer.							
	41,8	51,1	4,4	1,5	1,1	3,31	522
Students are afraid of being incorrect.							
	32,1	48,2	16,3	2,7	0,8	3,08	521

51

Table 6. cont.

Students prefer activities and assignments with simple factual questions and answers.							
	47,2	42,2	7,9	2,3	0,4	3,34	521
Students perceive the teacher as authority.							
	22,7	45,8	27,5	3,5	0,6	2,87	520
Students perceive the textbook as authority.							
	15,0	38,5	39,0	6,5	1,0	2,60	520
Students lack interest in thinking activities.							
	25,3	48,9	19,4	3,3	3,1	2,90	521
Students lack needed background knowledge for improving thinking skills.							
	29,5	48,5	18,1	2,7	1,2	3,03	518
Students lack experience in improving thinking skills in schools.							
	32,2	56,3	8,0	2,5	1,0	3,16	522
Students are impatient with the difficulty of thinking.							
	29,9	48,9	14,4	3,3	3,6	2,98	522
MEAN FOR STUDENT- RELATED CONSTRAINTS						3,04	

N's for each item vary due to missing responses.

These results show that teachers perceive various student-related constraints on improving thinking skills. As Yıldırım (1993) found out, students are thought to lack eagerness to explore new perspectives and prefer a structured way of learning by their teachers, which is similar to Sparapani's (1998) findings that students do not want to spend extra energy, and also to Tama's (1989) findings that students resist mental effort required by high level thinking.

Moreover, students do not feel comfortable with the questions or issues that do not have an obvious answer. This may mean that students have a tendency to memorise answers, therefore are reluctant in activities or assignments which require higher order thinking skills, and lack interest and patience in class. This may also cause students to perceive the teacher or the coursebook as the only authority in class.

4.5. Teachers' Perceptions of Curriculum-Related Constraints on
Improving Thinking Skills

Teachers were given nine statements about the curriculum-related constraints on improving thinking skills and were asked about the degree of agreement with those. As Table 7 indicates, a large majority of them (86,6 %) highlight that curriculum stresses only the acquisition of specific facts, ideas, and concepts. Therefore, nearly three-fifths (73 %) of the teachers think that curriculum leads to memorisation of knowledge. More than three-fifths (77 %) of the teachers state that curriculum does not give importance to improving thinking skills. 80,6 % of the respondents underlined that course content is too loaded. According to more than three-fifths (63,3 %) of the teachers, course content is also highly structured, at the same time too loaded, and it is not conducive to those skills. 41,4 % of the teachers do not agree with the statement 'My course is not appropriate to develop thinking skills' whereas 43,1 % agree.

Teaching is very much textbook dependent according to more than four-fifths (83,2 %) of the teachers, and according to 79,6 %, textbooks do not provide activities for improving thinking skills. When all curriculum-related constraints are taken into consideration, the majority of the respondents agree with most of the statements underlying the constraints related to curriculum in improving student thinking skills (with a mean value of 2,98).

Table 7. Degree to Which Teachers Agree With Curriculum-Related Constraints On Improving Thinking Skills (in percentages and means)

	(4) Strongly Agree	(3) Agree	(2) Disagree	(1) Strongly Disagree	(0) Undecided	<u>Mean</u>	<u>N</u>
Curriculum stresses only the acquisition of specific facts, ideas, and concepts.							
	38,7	47,9	10,4	1,9	1,2	3,21	520
Curriculum leads to memorisation of knowledge.							
	25,5	47,5	22,6	3,3	1,2	2,93	514
Curriculum does not give importance to improving thinking skills.							
	33,7	42,5	21,0	1,9	1,0	3,06	520
Course content is too loaded.							
	39,1	41,5	15,1	3,7	0,6	3,15	516
Course content is highy structured.							
	18,8	44,5	29,0	6,4	1,4	2,73	517

Table 7. cont.

Curriculum is not conducive to thinking skills.							

54

| | 27,9 | 49,3 | 18,1 | 2,1 | 2,5 | 2,98 | 519 |

My course is not appropriate to develop thinking skills.

| | 13,3 | 29,8 | 41,4 | 13,9 | 1,5 | 2,39 | 517 |

Teaching is very much textbook dependent.

| | 36,8 | 46,4 | 13,3 | 2,5 | 1,0 | 3,16 | 519 |

Textbooks do not provide activities for improving thinking skills.

| | 31,9 | 47,7 | 16,1 | 2,3 | 1,9 | 3,05 | 514 |

MEAN FOR CURRICULUM- RELATED CONSTRAINTS   2,98

N's for each item vary due to missing responses.

These results show that teachers perceive constraints on thinking skills due to curriculum-related constraints. Textbooks are similar and all require factual knowledge according to Goodlad (1984). Similar to Oxman and Barell's (1983) study, curriculum is perceived as a constraint on improving students' thinking skills by the teachers.

The results indicate that parallel to the teachers' perceptions of both teacher-related and student-related constraints, curriculum leads to memorisation of knowledge, and it does not stress thinking skills. This may mean that the sole determiner in class is the textbook, and since the textbooks do not provide any sections or activities for improving thinking skills, these skills do not take place in classes.

4.6. Teachers' Perceptions of External Factors to the Classroom as Constraints on Improving Thinking Skills

Lastly, teachers were given nine statements about the external factors to the classroom as constraints on improving thinking skills and were

asked about the degree of agreement with those. As the percentages in Table 8 indicate, exactly the three-fourths (75 %) of the teachers stated that improving thinking skills has not been established as one of the school priorities whereas with a percentage of 89,2, teachers think that the pressure of university entrance exam blocks priority of thinking skills. With regard to supervisors, more than half (51,7 %) of the teachers think that supervisors do not provide support for improving thinking skills, and they do not include improving thinking skills in their observations. Moreover, they force teachers to cover content. More than three-fourths of the teachers (77,2 %) fear administrative disapproval and following that half of the teachers (52,5 %) fear parental disapproval. In addition, 79,1 % underlined that time is not allocated for activities outside school. Finally, 81,8 % of the teachers highlighted that society does not value thinking skills. When all external factors to classroom as constraints are taken into consideration, the majority of the respondents agree with most of the statements underlying the constraints related to external factors to the classroom in improving student thinking skills (with a mean value of 2,84).

Table 8. Degree to Which Teachers Agree With External Factors as Constraints on Improving Thinking Skills (in percentages and means)

(4) Strongly Agree	(3) Agree	(2) Disagree	(1) Strongly Disagree	(0) Undecided	<u>Mean</u>	<u>N</u>

Improving thinking skills has not been established as one of the school priorities.

23,9	50,4	20,8	2,1	2,7	2,91	518

The pressure of university entrance exam blocks priority of thinking skills.

56,6	33,6	5,6	3,7	0,6	2,60	507

Administration and supervisors do not provide support for improving thinking skills.

13,8	37,9	33,4	4,3	10,7	2,40	515

Improving thinking skills is not included in supervisors' observations.

25,0	39,3	22,9	3,1	9,7	2,67	516

Supervisors force teachers to cover content.

19,3	38,3	29,2	6,2	7,0	2,57	517

Teachers fear administrative disapproval.

23,7	53,5	17,9	3,3	1,7	2,94	520

Teachers fear parental disapproval.

15,8	36,7	35,2	6,5	5,8	2,50	520

Time is not allocated for activities outside school.

31,3	47,8	18,0	2,1	0,8	3,07	521

Table 8. cont.

Society does not value thinking skills.

33,8	48,0	13,2	2,3	2,7	3,08	521

MEAN FOR EXTERNAL FACTORS AS CONSTRAINTS	2,84

N's for each item vary due to missing responses.

These results show that teachers perceive constraints on thinking skills due to external factors to the classroom, such as administrative and societal pressure on teachers. As Sarason (1982) and Smith (1987) mentioned the procedures and regularities of schools limit the improvement of thinking skills.

The results indicate that the teachers believe that the society do not value thinking skills. This may be the result of the Turkish education system, which leads students, even teachers to memorisation of knowledge. Similar to the curriculum being highly structured, the schooling system seems to be the same since teachers fear administrative disapproval. They stated that no time is allocated for activities outside school. This may mean that neither the school supervisors nor parents support improving student thinking skills.

4.7. Differences in Teachers' Perceptions of Constraints on Improving Thinking Skills

The data were further analysed in order to determine if there was a significant difference between teachers' perceptions of the four major constraints, namely, teacher-related, student-related, curriculum-related, and external factors to the classroom as constraints, on improving student thinking skills. For this purpose, the mean scores for these constraint scales were compared and a paired samples t-test for each pair in the table (i.e., teacher-related versus student-related, teacher-related versus curriculum-related, teacher-related versus external factors to classroom, student-related versus curriculum-related, student-related versus external factors to classroom, curriculum-related versus external factors to classroom) were conducted.

As Table 9 displays, according to the comparison of means, teachers seem to display a higher level of agreement with student-related constraints than the other three (Mean= 3,04). Following that, the curriculum-related constraints are perceived as the second most agreed one (Mean= 2,98). Lastly, teachers' level of agreement is lower with teacher-related and external factors to the classroom than student-related and curriculum-related constraints (Mean= 2,80 and 2,84 respectively).

Table 9. Mean Scores for Teachers' Perceptions of Various Constraints

	Mean	S. D.	N

Teacher-Related Constraints	2,80	0,50	522
Student-Related Constraints	3,04	0,50	522
Curriculum-Related Constraints	2,98	0,57	522
External Factors To Classroom As Constraints	2,84	0,57	522

As Table 10 displays, according to the paired samples t-test for each pair, there are four major factors that are perceived as constraints on improving student thinking by the teachers. Except for teacher-related and the external factors to classroom, all values prove to be significantly different from each other at the ,05 level. However, the most agreed constraint is the one related to students, and next is the one related to curriculum. The least agreed constraints by the teachers are the factors which are external to classroom and related to teachers.

Table 10. Paired Samples T-test Results for Teachers' Perceptions of Constraints

	Teacher-Related Constraints	Student-Related Constraints	Curriculum-Related Constraints	External Factors To Classroom

				As Constraints
Teacher-Related Constraints	X	t(500)= -9,53 p=0,00	t(479)= -6,80 p=0,00	t(487)= -1,56 p=0,12
Student-Related Constraints	✓	X	t(480)= 2,47 p=0,014	t(489)= 7,10 p=0,00
Curriculum-Related Constraints	✓	✓	X	t(470)= 5,24 p=0,00
External Factors To Classroom As Constraints	✓	✓	✓	X

Not surprisingly, in the literature, it can be seen that teacher-related constraints are the least agreed ones by the teachers. According to Yıldırım's (1993) findings, some teachers do not perceive any teacher-related constraints on improving thinking skills. As Munzur (1999) and Serdar (1999) found out teaching depends mostly on textbooks, and these textbooks do not let teachers improve thinking skills in classes. In addition, Oxman and Barell's (1983) study proved that teachers mainly attribute the constraints on improving thinking skills to the curriculum and to the students.

According to further statistical analyses, i.e., ANOVA and t-test, no significant differences were found in teachers' perceptions of the four major constraints, namely, teacher-related, student-related, curriculum-related, and external factors to classroom as constraints, based on the background variables, namely, course subject, educational background, teaching experience, geographical regions, gender, and school location (see Appendix C).

In the light of the literature, some of the findings regarding the relationship between the background variables and the major constraints are found to be parallel. Serdar (1999) indicated that gender, educational background or experience in teaching do not make a difference, however, subject matter may make a difference in improving thinking skills since the courses such as science and maths are thought to be more appropriate to improving thinking skills by the teachers. In another study done by Gelen (1999), gender, educational background, experience in teaching or the subject area do not make a difference in teachers' perceptions of improving thinking skills in classes.

4.8. Teachers' Comments on Improving Thinking Skills

In the last section of the questionnaire, an open-ended question was asked to the teachers about their additional comments on improving

62

thinking skills and the constraints on it. 209 teachers, who constituted 40 % of the respondents, provided comments on various aspects of teaching thinking and the constraints they often face while promoting student thinking. These comments are grouped on thematic bases. The groupings of the themes mentioned by the teachers are based on the main constraints determined by the researcher in advance, i.e., teacher-related, student-related, curriculum-related, external factors to classroom; and in addition, there appeared one more group named as other constraints.

As Table 11 indicates, regarding teacher-related constraints, 18 teachers asked for in-service training. According to three teachers, teachers do not have enough power, therefore, education of teachers should be given utmost importance. Three teachers called attention to teachers' low socio-economic status.

Regarding student-related constraints, 11 teachers said that students are used to being spoonfed by the teachers, families, and media. Accordingly, as eight teachers argued that they, along with the students, should be guided to do research on different topics discussed in class. The issue that the classes are overcrowded was raised by seven teachers. Seven of the teachers said that students are not motivated to learn. The classes need to be student-centred as stated by seven teachers. Five teachers reported that students' socio-economic status is low, which also causes anxiety about future. Three of the teachers said that classical teaching methods are used in classes. Three suggested that classes should be

homogeneous. Three teachers said that the daily news should be discussed in classes. Two claimed that neither the students nor the teachers are motivated in the teaching-learning process.

Regarding curriculum-related constraints, 34 teachers noted that curriculum is highly structured and requires memorisation of knowledge. Similarly, 33 respondents claimed that curriculum is overloaded and that it needs simplification due to lack of time. Curriculum needs to be completely renewed according to 23 teachers. According to ten teachers, primary school education should be given more importance since it shapes the learning strategies of the students. As six teachers noted, courses should be closer to real-life. Five suggested more teaching hours for philosophy, sociology, and logic courses. New courses such as a course on learning how to learn (as two teachers stated), comparative courses (as two teachers stated) should be introduced to students. Two teachers suggested more hours for arts, physical education, and music courses. One of the teachers claimed that compulsory education should be extended to eleven years. More teaching hours for social sciences by one, for science courses by one, and for composition writing by one other teacher are suggested.

Regarding external factors to classroom as constraint, 23 teachers said that schools need more computers, equipment, and libraries. Another 23

teachers pointed out that the structure of our culture and family life do not help to contribute to education. 16 teachers highlighted the lack of social and cultural activities in schools. In order to motivate the students, 14 suggested that students should be encouraged to read more. As eight teachers put forward, students should be provided with psychological counselling more extensively. In order to motivate the students, four teachers suggested quiz competitions between schools. Three teachers felt that student-parent-teacher cooperation is essential. One suggested courses for families. One teacher suggested that schools could obtain extra income by providing services such as parking areas, internet cafes, and the like.

Regarding some other constraints, 24 teachers argued that the university entrance examination disturbs teaching many skills, including thinking skills. Five teachers underlined the system of testing as a constraint on thinking skills as students do not want to get low grades. However, two teachers stressed that the university entrance examination helps to improve student thinking as it requires the students to reason in order to find the correct answers. Finally, one suggested that teachers should not be required to prepare tests, and tests should be prepared by a seperate unit, whose members would not be teaching at the same time.

Table 11. Teachers' Comments on Open-ended Question

Comments	Frequency	%

Teacher-related		
In-service training should be provided for the teachers.	18	5,5
Teachers do not have enough power, therefore, education of teachers should be given utmost importance	3	0,9
Teachers' socio-economic status is low.	3	0,9

Student-related		
Students are used to being spoonfed by the teachers, families, and media.	11	3,4
Students, along with teachers, should be guided to do research on different topics discussed in class.	8	2,5
Classes are overcrowded.	7	2,1
Students are not motivated to learn.	7	2,1
Classes need to be student-centred.	7	2,1
Students' socio-economic status is low and it causes anxiety about future.	5	1,5

Table 11. cont.

Students are still taught with classical teaching methods in classes.	3	0,9
Classes should be homogeneous.	3	0,9
Students should discuss daily news in classes.	3	0,9

Neither the students nor the teachers are motivated.	2	0,6

Curriculum-related

Curriculum is highly structured and it requires memorisation of knowledge.	34	10,4
Curriculum is overloaded and it needs simplification due to lack of time.	33	10,1
Curriculum needs to be completely renewed.	23	7,1
Primary school education should be given more importance since it shapes the learning strategies of the students.	10	3,1
Courses should be closer to real-life.	6	1,8
More hours for philosophy, sociology, and logic courses should be allocated.	5	1,5
New courses such as a course on learning how to learn should be provided.	2	0,6
Comparative courses should be introduced to students.	2	0,6
More hours for arts, physical education, and music courses should be allocated.	2	0,6

Table 11. cont.

Compulsory education should be extended to eleven years.	1	0,3
More hours for social sciences should be allocated.	1	0,3
More hours for scince should be allocated.	1	0,3

67

More hours for composition writing should be allocated.	1	0,3

Schools need more computers, equipment, libraries.	23	7,1
The structure of our culture and family life do not help contribute to education.	23	7,1
There is lack of social and cultural activities in schools.	16	4,9
Students should be encouraged to read more at home.	14	4,3
Students should be provided with psychological counselling more extensively.	8	2,5
There should be quiz competitions between schools in order to motivate the students.	4	1,2
Student-parent-teacher cooperation is necessary.	3	0,9
Courses for families should be provided.	1	0,3
Schools could obtain extra income by providing services such as parking areas, internet cafes, and the like.	1	0,3

Table 11.cont.

Other factors

The university entrance exam disturbs teaching many skills, including thinking skills.	24	7,4

The system of testing is a constraint on thinking skills as students do not want to get low grades.	5	1,5
The university entrance exam helps to improve student thinking as it requires the students to reason in order to find the correct answers.	2	0,6
Teachers should not be required to prepare tests, and tests should be prepared by a seperate unit, whose members would not be teaching at the same time.	1	0,3
TOTAL	326	100

Respondents gave multiple responses.

CHAPTER V

69

CONCLUSIONS AND IMPLICATIONS

This final chapter presents conclusions of the study, and implications for practice and research.

5.1. Conclusions

The purpose of this study is to investigate teachers' perceptions of constraints on improving student thinking skills in schools, and to find out whether there are differences in teachers' perceptions of constraints in terms of certain background variables. The results are summarised in line with the research questions.

5.1.1. How Teachers Perceive Thinking and Improving Thinking

The first research question was 'How do teachers perceive thinking and improving thinking?'. According to the results, it is clear that teachers are aware of the importance of thinking skills. They believe that thinking skills are needed for daily problem solving, learning the content better, and transfer of knowledge between courses. Parallel to the findings of the study carried out by Oxman and Barell (1983), teachers know that thinking skills are essential, and that improving them is an educational goal.

It can be inferred from the findings that teachers would like to emphasize thinking skills and their importance in class rather than

70

expecting them to be developed naturally. This may indicate that high school teachers agree with the direct approach to teaching thinking, which is also called skill-oriented approach to teaching thinking. As suggested by the teachers in the open-ended section of the questionnaire, new courses such as a course on learning how to learn should be introduced to students, and comparative courses should be provided for them.

5.1.2. Teacher-Related Constraints

The second research question was 'What teacher-related factors do teachers perceive as constraints on improving student thinking skills?'. Teachers were given eleven statements about the teacher related constraints on improving thinking skills and asked whether or not they agreed with those. The results indicated that teacher-related constraints are the least agreed one among the representative teachers. According to Yıldırım's (1993) findings, some teachers do not perceive any teacher-related constraints on improving thinking skills.

As the majority of the teachers stated, teachers feel a need to cover content in class, and to use lecturing strategy. As Goodlad (1984), and Common (1985) stated in literature, most teachers use lecturing in class. Since the curriculum is overloaded, they feel that there is no time left for thinking in class. Nevertheless, both the teachers and the students are uncomfortable with the questions that do not have obvious answers. This

71

may be due to the pre-service and in-service programmes provided to the teachers since these programmes do not stress the importance of improving student thinking skills. According to Grant (1988), teachers need a broader and deeper understanding of subject matter and pedagogical strategies in order to improve student thinking skills. Parallel to that, teachers think that exams in schools do not stress thinking skills as well. Interestingly, half of the teachers believe that only certain students can perform higher order thinking. This finding is approved by Zohar et al. (2001) in which he indicates that teachers believe higher order thinking is inappropriate for low-achieving students. Moreover, most teachers mention the inadequacy of the resources provided, and time to get prepared for developing activities toward thinking skills as stated by Andrews (2000).

5.1.3. Student-Related Constraints

The third research question was 'What student-related factors do teachers perceive as constraints on improving student thinking skills?'. Teachers were given nine statements about the student-related constraints on improving thinking skills and asked whether or not they agreed with those. Teachers seem to display a higher level of agreement with student-related constraints than the other three constraints. Oxman and Barell's (1983) study proved that teachers mainly attribute the constraints on

improving thinking skills to the students, together with the curriculum-related constraints.

It can be inferred from the findings that students in classes do not have the chance to practise thinking skills, mostly due to the overloaded curriculum and their own attitude towards thinking. According to a large majority of teachers, students expect that each question should have a definite answer. Therefore, students prefer activities and assignments with simple factual answers since they lack needed background knowledge and interest in thinking skills. Similarly, they are afraid of being incorrect. In addition, according to their teachers, students are impatient with the difficulty of thinking. As Yıldırım (1993) found out, students are thought to lack eagerness to explore new perspectives and to prefer a structured way of learning. Furthermore, students perceive both the teachers and the coursebooks as authority. This may be because of the highly structured school system. Related to this, as stated by the most teachers, students lack experience in improving thinking skills in schools.

5.1.4. Curriculum-Related Constraints

The fourth research question was 'What curriculum-related factors do teachers perceive as constraints on improving student thinking skills?'. Teachers were given nine statements about the curriculum-related

constraints on improving thinking skills and asked whether or not they agreed with those. The curriculum-related constraints are perceived as the second most agreed constraint. Oxman and Barell's (1983) study proved that teachers mainly attribute the constraints on improving thinking skills to the curriculum, together with the student-related constraints. As stated by the large majority of the teachers, curriculum stresses only the acquisition of specific facts, ideas, and concepts. Therefore, teachers think that curriculum leads to memorisation of knowledge. As Munzur (1999) and Serdar (1999) found out teaching depends mostly on textbooks, and these textbooks do not let teachers improve thinking skills in classes. Moreover, teachers think curriculum does not give importance to improving thinking skills, probably because it is too loaded. According to most of the teachers, teaching in classes is very much textbook dependent. In addition, as stated by Goodlad (1984), textbooks are similar and require factual knowledge. Furthermore, they do not provide activities for improving thinking skills.

Most of the comments stated by the teachers in the open-ended section of the questionnaire emphasized the points related to curriculum. According to the teachers, curriculum needs to be simplified, and even needs to be renewed. Students should be provided with new courses such as a course on how to learn, and some comparative courses. More hours should be allocated to certain subjects such as arts, philosophy, sociology, logic, social sciences, science, and composition writing.

5.1.5. External Factors to the Classroom as Constraints

The fifth research question was 'What external factors to the classroom do teachers perceive as constraints on improving student thinking skills?'. Lastly, teachers were given nine statements about the external factors to the classroom as constraints on improving thinking skills and asked whether or not they agreed with those. Teachers' level of agreement with the external factors to the classroom is lower than their level of agreement with the student-related and the curriculum-related constraints.

As most of the teachers stated, improving thinking skills has not been established as one of the school priorities. As Sarason (1982) and Smith (1987) mentioned the procedures and regularities of schools limit the improvement of thinking skills. Furthermore, teachers stated that university entrance exam hinders thinking skills, and blocks priority of thinking skills. Teachers think that supervisors do not provide support for improving thinking skills since they do not include it in their observations. Instead, they force teachers to cover content. Therefore, most of the teachers fear administrative disapproval, and half of the teachers fear parental disapproval. This may be due to the teachers' perception that society does not value thinking skills.

It can be inferred from the findings that neither the teachers nor the students are guided to do research on different topics and discuss about those. In addition, there is lack of social and cultural activities in schools. Therefore, the supervisors should give more importance to the quality of teaching in classes.

5.1.6. Relationship Between Background Characteristics and

Teachers' Perceptions of Improving Student Thinking

The last research question was 'Are there differences in teachers' perceptions of improving student thinking skills in terms of background characteristics a) subject area, b) educational background, c) teaching experience, d) gender, e) geographical area, f) school location ?'. As the results of the ANOVA and t-tests indicate, there has been no significant difference found between the teachers' perceptions and the background variables. In other words, teachers' perceptions of student thinking skills and the constraints on it do not differ according to the background variables.

When the results of this study are compared with the previous studies done in Turkey, it is possible to find major similarities and slight differences. The findings of this study are similar to Gelen's (1999), which indicated that background variables such as gender, educational

background, subject matter, and teaching experience do not make any difference in teachers' perceptions. As Serdar (1999) found out the background variables such as gender, educational background, and teaching experience do not make any difference in teachers' perceptions. However, she thought subject matter that is taught may make a difference.

5.2. Implications for Practice

This study has been an attempt to find out the constraints on improving student thinking skills. In this section, based on major findings of the study, some suggestions are offered.

One of the major findings is that teachers agree with the importance of thinking skills and the need to improve these skills in classes. However, they expect the society, families, and the students to contribute to their efforts. Some teachers state that parents do not welcome thinking skills. Then, meetings addressing this problem may be a recommendation. It is obvious that student-teacher-parent cooperation is essential in improving student thinking skills.

Another major finding of this study is that teachers reveal lecturing is mostly used in classes and this appears to be an impediment to improving student thinking skills. Therefore, in-service education programmes that teach teachers more active strategies of teaching can be provided. In pre-

service and in-service teacher education, teachers can be given the opportunity to explore the orientations toward thinking and develop their own conceptions. Furthermore, if teachers are given appropriate training on different strategies of teaching, that will promote classroom discourse and improve the level of learning, going beyond typical learning methods such as memorisation, drill, and repetition.

Another finding is that neither the teachers nor the students are comfortable with questions or tasks that have no obvious answers. This may be due to the teachers', maybe even the students', belief that only certain students can perform higher order thinking skills. Then, both the teachers and the students need to be guided to do research on different topics that are discussed in classes.

Another finding is that teachers need administrators and supervisors to place more emphasis on thinking and deal with teachers' concerns in this area such as lack of time and resources, and lack of adequate administrative support. Therefore, school administrators can be provided with in-service training, especially on the importance of improving thinking skills.

Another major finding is that most teachers see students' attitudes toward improving their thinking such as lack of interest and preference for structured learning as constraints on improving thinking skills. This issue

should also be addressed in pre-service and in-service programmes in order to provide the teachers with strategies to overcome this problem. Teachers need to be better equipped with knowledge and strategies to help students become more interested in improving their thinking.

5.3. Implications for Further Research

This study has been an exploratory one. Therefore, some recommendations for future research are presented in this part.

More research is needed on teachers' conceptions of thinking. In this study, standard questions are used for teachers in all subject areas and grade levels to understand their conceptions in a general way. More context specific questions dealing with teachers' subject area, school type, and student demographics will be more helpful in further understanding teachers' perceptions of thinking and the constraints on improving students' thinking.

Moreover, qualitative studies, interviews with teachers, and in-class studies can be carried out with teachers face-to-face. In order to see whether there is a linkage between their thoughts and practices, teachers can be interviewed and then observed in class while teaching. Thus, the strategies that the teachers are using can be identified, which might give a

better idea for the experts and trainers while designing in-service or pre-service training programmes.

Observations and interviews with students might also be helpful in comparing the perceptions of two parties. There may still be other factors that discourage improving thinking skills in classes. This way, a more detailed picture of the factors that are perceived as constraints on improving student thinking can be examined.

More research is still needed on the themes used in this study since it is limited to constraints as teacher-related, student-related, curriculum-related, and external factors to classroom. There might still be other factors affecting teachers' perceptions of improving student thinking and the constraints on it, directly or indirectly.

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APPENDICES

APPENDIX A

CONSTRAINTS ON IMPROVING

STUDENTS' THINKING SKILLS QUESTIONNAIRE

Section 1: Please respond to the questions below by circling or writing in where appropriate.

1. What is your area of specialisation?

    a) Social sciences

    b) Science

    c) Mathematics

    d) Literature

    e) Foreign languages

    f) Other _____ (please write in)

2. What is your educational background?

    a) Associate degree

    b) Bachelors

    c) Masters

    d) Doctorate

    e) Other _____ (please write in)

3. How many years have you taught? _____ years

4. What is your gender?

    a) Male

    b) Female

5. What is the location of your school?

    a) Urban

    b) Suburban

Section 2: Below are the statements which refer to the significance of improving student thinking skills and the constraints on it. Please read, and respond to each statement on the five–point scale by indicating the strength of your agreement or disagreement with each one. Circle one of the following:

(4) Strongly Agree   (3) Agree   (2) Disagree
(1) Strongly Disagree   (0) Undecided

General perception

1. Thinking skills are needed for daily problem solving.	1	2	3	4	0
2. Thinking skills are needed for the courses to be learned better.	1	2	3	4	0
3. Thinking skills are needed to transfer knowledge between courses.	1	2	3	4	0
4. Learning the content is more important than thinking skills.	1	2	3	4	0
5. There is no need to spend time on thinking skills, they are learned naturally.	1	2	3	4	0

88

Teacher-related constraints

6. Teachers usually use lecturing strategy.	1	2	3	4	0
7. Teacher tests do not stress thinking skills.	1	2	3	4	0
8. Teachers do not provide sufficient time for thinking in class.	1	2	3	4	0
9. Pre-service programmes do not stress improving thinking skills.	1	2	3	4	0
10. Teachers are not given information on improving thinking skills when they first start teaching.	1	2	3	4	0
11. In-service programmes do not stress improving thinking skills.	1	2	3	4	0
12. Teachers believe only certain students can perform higher order thinking.	1	2	3	4	0
13. Teachers are uncomfortable with questions that have no obvious answer.	1	2	3	4	0
14. Teachers feel a need to cover content.	1	2	3	4	0
15. Teachers do not have enough resources.	1	2	3	4	0
16. Teachers do not have enough time to get prepared for developing activities toward thinking skills.	1	2	3	4	0

Student-related constraints

17. Students are afraid of being incorrect.	1	2	3	4	0
18. Students expect that each question has a right answer.	1	2	3	4	0
19. Students perceive the teacher as authority.	1	2	3	4	0
20. Students perceive the textbook as authority.	1	2	3	4	0

21. Students prefer activities and assignments with simple factual questions and answers.	1	2	3	4	0
22. Students lack needed background knowledge for improving thinking skills.	1	2	3	4	0
23. Students lack interest in thinking activities.	1	2	3	4	0
24. Students lack experience in improving thinking skills in school.	1	2	3	4	0
25. Students are impatient with the difficulty of thinking.	1	2	3	4	0

Curriculum-related constraints

26. Curriculum stresses only the acquisition of specific facts, ideas, and concepts.	1	2	3	4	0
27. Curriculum does not give importance to improving thinking skills.	1	2	3	4	0
28. Curriculum is not conducive to thinking skills.	1	2	3	4	0
29. Course content is highly structured.	1	2	3	4	0
30. Curriculum leads to memorization of knowledge.	1	2	3	4	0
31. My course is not appropriate to develop thinking skills.	1	2	3	4	0
32. Course content is too loaded.	1	2	3	4	0
33. Textbooks do not provide activities for improving thinking skills.	1	2	3	4	0
34. Teaching is very much textbook dependent.	1	2	3	4	0

External factors as constraints

35. Teachers fear administrative disapproval. 1 2 3 4 0

36. No time is allocated for activities outside school. 1 2 3 4 0

37. Improving thinking skills is not included in supervisors' observations. 1 2 3 4 0

38. Supervisors force teachers to cover content. 1 2 3 4 0

39. Improving thinking skills has not been established as one of the school priorities. 1 2 3 4 0

40. Administrators and supervisors do not provide support for improving thinking skills. 1 2 3 4 0

41. Society does not value thinking skills. 1 2 3 4 0

42. Teachers fear parental disapproval. 1 2 3 4 0

43. The anxiety of the university entrance exam does not let the improvement of student thinking skills. 1 2 3 4 0

Section 3: If you have any other comments about the constraints

on improving student thinking skills, please write them down.

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Thank you.

APPENDIX B

DÜŞÜNME BECERİLERİNİ ENGELLEYEN TEMEL FAKTÖRLER ANKETİ

Sayın Öğretmenler,

Bu çalışmanın amacı öğrencilerin düşünme becerilerinin geliştirilmesinde karşılaşılan engelleri tespit etmektir. 'Düşünme becerileri' terimi ile üst-düzey düşünme, yani edinilen bilgilerin verimli bir şekilde uygulanması, analiz edilmesi, sentezlenmesi ve değerlendirilmesi kastedilmektedir. Bu çalışmada öğretmenlerin algıları incelenecektir. Verdiğiniz bilgiler sadece araştırma amacıyla kullanılacaktır. Lütfen tüm maddeleri dikkatle okuyup cevaplayınız. Çalışmaya gösterdiğiniz ilgiye teşekkür ederiz.

Doç. Dr. Ali Yıldırım, O.D.T.Ü. Eğitim Fakültesi, Tez Danışmanı
Şule Özkan-Akan, O.D.T.Ü. Eğitim Fakültesi, Yüksek lisans öğrencisi

Bölüm 1: Lütfen aşağıdaki sorulara, maddeleri yuvarlak içine alarak veya uygun ise bırakılan yerlere yazarak cevap veriniz.

1. Ders branşınız nedir?
   - a) Sosyal bilimler
   - b) Fen bilimleri
   - c) Matematik
   - d) Edebiyat
   - e) Yabancı dil
   - f) Diğer _____
     (buraya yazınız)

93

2. Eğitim durumunuz nedir?

   a) Lisans Tamamlama   b) Lisans   c) Yüksek lisans

   d) Doktora   e) Diğer _____

                                    (buraya yazınız)

3. Kaç yıldır öğretmen olarak görev yapmaktasınız? _____ yıldır

4. Cinsiyetiniz?   a) Bay   b) Bayan

5. Okulunuzun yeri?

     a) İl merkezi, adı _____ (buraya yazınız)

     b) İlçe merkezi, adı _____ (buraya yazınız)

Bölüm 2: Aşağıda verilen maddeleri dikkatli okuyarak görüşünüzü verilen beş seçenekli çizelge üzerinde işaretleyiniz. Seçeneği yuvarlak içine alınız. Lütfen cevapsız madde bırakmayınız.

(4) Tamamen katılıyorum (3) Katılıyorum (2) Katılmıyorum
(1) Hiç katılmıyorum (0) Fikrim yok

Genel Değerlendirme

1. Düşünme becerileri günlük problemlerin çözümü için gereklidir.   1   2   3   4   0

2. Düşünme becerileri derslerin iyi öğrenilmesi için gereklidir.   1   2   3   4   0

3. Düşünme becerileri dersler arası bağlantı yapmak için gereklidir.   1   2   3   4   0

4. Dersin öğrenilmesi düşünme becerilerinden daha önemlidir.   1   2   3   4   0

5. Düşünme becerileri okulda değil, günlük yaşamda geliştirilir.   1   2   3   4   0

Öğretmen ile ilgili faktörler

6. Öğretmenler genellikle dersi kendileri anlatmayı tercih ediyorlar.   1   2   3   4   0

7. Öğretmenler düşünme becerilerini sınavlarda test etmiyorlar.   1   2   3   4   0

8. Öğretmenler sınıfta düşünmeye yönelik etkinliklere yeterli zaman ayıramıyorlar.   1   2   3   4   0

9. Öğretmen yetiştiren programlar düşünme becerilerini geliştirme konusuna önem vermiyorlar.   1   2   3   4   0

10. Hizmet öncesinde öğretmenlere düşünme becerilerini geliştirme konusunda bilgi verilmiyor.   1   2   3   4   0

11. Hizmet-içi eğitim programları düşünme becerilerini geliştirme konusuna önem vermiyorlar.   1   2   3   4   0

12. Öğretmenler sadece belli öğrencilerin üst düzey düşünce geliştirebileceğine inanıyorlar.   1   2   3   4   0

13. Öğretmenler belli bir doğru cevabı olmayan sorulardan rahatsız oluyorlar.   1   2   3   4   0

14. Öğretmenler programı yetiştirme kaygısı içindeler.   1   2   3   4   0

15. Öğretmenlerin elinde düşünme becerilerini geliştirecek yeterli kaynakları yok.   1   2   3   4   0

16. Öğretmenlerin düşünme becerilerini geliştirecek etkinlikler hazırlamaya yeterli zamanları yok.   1   2   3   4   0

**(4) Tamamen katılıyorum (3) Katılıyorum (2)Katılmıyorum
(1) Hiç katılmıyorum (0) Fikrim yok**

Öğrenci ile ilgili faktörler

17. Öğrenciler yanlış yapmaktan korkuyorlar.　　　　1　2　3　4　0

18. Öğrenciler her sorunun doğru bir cevabı　　　　1　2　3　4　0
olmasını bekliyorlar.

19. Öğrenciler öğretmeni tek bilgi kaynağı　　　　1　2　3　4　0
olarak görüyorlar.

20. Öğrenciler ders kitaplarını tek bilgi kaynağı　　　　1　2　3　4　0
olarak görüyorlar.

21. Öğrenciler cevabı, çözümü basit olan soru ve　　　　1　2　3　4　0
problemleri tercih ediyorlar.

22. Öğrenciler düşünme için gerekli olan　　　　1　2　3　4　0
bilgilere sahip değiller.

23. Öğrenciler okulda düşünmeyi geliştiren　　　　1　2　3　4　0
etkinliklerle ilgilenmiyorlar.

24. Öğrenciler düşünme becerilerini geliştirme　　　　1　2　3　4　0
konusunda deneyime sahip değiller.

25. Öğrenciler düşünme becerilerini geliştirebilecek　　1　2　3　4　0
sabra sahip değiller.

Müfredat ile ilgili faktörler

26. Müfredat sadece belli doğruların, düşüncelerin　　　1　2　3　4　0
ve kavramların kazanılmasını vurgulamaktadır.

27. Müfredat düşünme becerilerini geliştirmeye　　　1　2　3　4　0
önem vermiyor.

28. Müfredat düşünme becerilerini geliştirmeye açık değil.　　　　1　2　3　4　0

29. Sınıfta müfredat dışına çıkılamıyor.　　　　1　2　3　4　0

30. Müfredat bilginin ezberlenmesini gerektiriyor.　　　　1　2　3　4　0

31. Müfredata göre benim dersim düşünme becerilerini geliştirmeye açık değil.　　　　1　2　3　4　0

32. Müfredat oldukça yoğun.　　　　1　2　3　4　0

33. Ders kitapları düşünme becerilerini geliştirecek etkinlikler sunmuyor.　　　　1　2　3　4　0

34. Eğitim daha çok kitaba bağlı olarak yürütülüyor.　　　　1　2　3　4　0

Sınıf dışı faktörler

35. Öğretmenler idarenin onaylamayacağı şeyleri yapmaktan korkuyorlar.　　　　1　2　3　4　0

36. Okul dışı etkinliklere, çevre gezileri gibi, zaman ayrılmıyor.　　　　1　2　3　4　0

37. Müdür / müfettiş gözlemlerinde düşünme becerilerinin geliştirilmesi dikkate alınmıyor.　　　　1　2　3　4　0

38. Müdür / müfettişler öğretmenlere programı tamamlamaları için baskı yapıyorlar.　　　　1　2　3　4　0

39. Düşünme becerilerinin geliştirilmesi okulun öncelikleri arasında yer almıyor.　　　　1　2　3　4　0

40. Müdür/müfettiş düşünme becerilerinin geliştirilmesi konusunda destek vermiyor.　　　　1　2　3　4　0

41. Toplumumuz düşünme becerilerinin geliştirilmesine önem vermiyor.　　　　1　2　3　4　0

(4) Tamamen katılıyorum (3) Katılıyorum (2) Katılmıyorum
(1) Hiç katılmıyorum (0) Fikrim yok

42. Öğretmenler müfredat dışında velilerin   1   2   3   4   0
    onaylamadığı şeyleri yapmaktan korkuyorlar.

43. Üniversite sınavının kaygısı düşünme   1   2   3   4   0
    becerilerinin önceliğini engelliyor.

Bölüm 3: Lütfen, düşünme becerileri ile ilgili engeller hakkında belirtmek istediğiniz problem, öneri ve düşüncelerinizi varsa buraya yazınız.

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Teşekkür ederiz.

APPENDIX C

ANOVA and T-TEST TABLES FOR FACTORS AS CONSTRAINTS

Teacher-Related Factors as Constraints

Area of Specialisation	Mean	SD	<u>N</u>
Social Sciences	2,87	,47	101
Science	2,69	,42	101
Mathematics	2,74	,51	67
Literature	2,87	,50	92
Foreign Languages	2,89	,61	54
Other	2,79	,49	95

$F(5, 504)=2,488, p=,031$

Mean scores are based on a five-point Likert scale where 1=strongly agree, 2=agree, 3=disagree, 4=strongly disagree, 0=undecided.

Educational Background	Mean	SD	N
Associate Degree	2,72	,35	40
Bachelors	2,82	,50	424
Masters	2,81	,55	28
Doctorate	2,55	,39	2
Other	2,79	,48	14

$F_{(4, 503)}=,503$, $p=,733$

Mean scores are based on a five-point Likert scale where 1=strongly agree, 2=agree, 3=disagree, 4=strongly disagree, 0=undecided.

Teaching Experience	Mean	SD	N
0 – 5 years	2,81	,47	139
6 – 10 years	2,82	,48	132
11 – 15 years	2,81	,46	86
16 – 20 years	2,85	,66	58
21 - .....years	2,74	,47	81

$F_{(4, 491)}=,462$, $p=,764$

Mean scores are based on a five-point Likert scale where 1=strongly agree, 2=agree, 3=disagree, 4=strongly disagree, 0=undecided.

Gender	Mean	SD	N
Male	2,83	,54	287
Female	2,79	,41	222

t (507) =,921, p = ,358

Mean scores are based on a five-point Likert scale where 1=strongly agree, 2=agree, 3=disagree, 4=strongly disagree, 0=undecided.

School Location	Mean	SD	N
Urban	2,81	,51	345
Suburban	2,78	,47	166

t (509) =,694, p = ,488

Mean scores are based on a five-point Likert scale where 1=strongly agree, 2=agree, 3=disagree, 4=strongly disagree, 0=undecided.

Geographical Region	Mean	SD	N
Black Sea	2,84	,39	130
The Marmara	2,83	,45	138
Mediterranean	2,77	,56	120
East Anatolia	2,76	,57	123

F(3, 507)=,817, p=,485

Mean scores are based on a five-point Likert scale where 1=strongly agree, 2=agree, 3=disagree, 4=strongly disagree, 0=undecided.

Student-Related Factors as Constraints

Area of Specialisation	Mean	SD	N
Social Sciences	3,05	,56	103
Science	3,03	,54	102
Mathematics	2,91	,51	68
Literature	3,16	,43	91
Foreign Languages	3,08	,42	52
Other	2,97	,45	95

$F(5, 505)=2,351, p=,040$

Mean scores are based on a five-point Likert scale where 1=strongly agree, 2=agree, 3=disagree, 4=strongly disagree, 0=undecided.

Educational Background	Mean	SD	N
Associate Degree	3,08	,44	40
Bachelors	3,03	,50	426
Masters	2,96	,58	27
Doctorate	3,28	,71	2
Other	3,21	,28	14

$F(4, 504)=,817, p=,515$

Mean scores are based on a five-point Likert scale where 1=strongly agree, 2=agree, 3=disagree, 4=strongly disagree, 0=undecided.

Teaching Experience	Mean	SD	N
0 – 5 years	3,04	,47	143
6 – 10 years	3,03	,51	132
11 – 15 years	3,82	,57	86
16 – 20 years	3,02	,48	57
21 - .....years	3,00	,49	80

$F(4, 493)=,297, p=,880$

Mean scores are based on a five-point Likert scale where 1=strongly agree, 2=agree, 3=disagree, 4=strongly disagree, 0=undecided.

Gender	Mean	SD	N
Male	3,01	,53	289
Female	3,07	,46	221

$t (508) = -1,430, p = ,153$

Mean scores are based on a five-point Likert scale where 1=strongly agree, 2=agree, 3=disagree, 4=strongly disagree, 0=undecided.

School Location	Mean	SD	N
Urban	3,05	,48	345
Suburban	2,99	,53	167

$t (510) =1,258, p = ,209$

Mean scores are based on a five-point Likert scale where 1=strongly agree, 2=agree, 3=disagree, 4=strongly disagree, 0=undecided.

Geographical Region	Mean	SD	N
Black Sea	3,06	,48	127
The Marmara	3,06	,41	139
Mediterranean	2,97	,58	123
East Anatolia	3,05	,52	123

$F_{(3, 508)}=,899$, p=,441

Mean scores are based on a five-point Likert scale where 1=strongly agree, 2=agree, 3=disagree, 4=strongly disagree, 0=undecided.

Curriculum-Related Factors as Constraints

Area of Specialisation	Mean	SD	<u>N</u>
Social Sciences	3,16	,55	101
Science	2,90	,54	97
Mathematics	2,82	,60	65
Literature	3,07	,55	88
Foreign Languages	2,88	,45	52
Other	2,93	,64	85

$F(5, 482)=4,305, p=,001$

Mean scores are based on a five-point Likert scale where 1=strongly agree, 2=agree, 3=disagree, 4=strongly disagree, 0=undecided.

Educational Background	Mean	SD	<u>N</u>
Associate Degree	2,97	,48	32
Bachelors	2,98	,58	409
Masters	2,99	,64	29
Doctorate	3,00	,63	2
Other	2,90	,51	14

$F(4, 481)=,080, p=,988$

Mean scores are based on a five-point Likert scale where 1=strongly agree, 2=agree, 3=disagree, 4=strongly disagree, 0=undecided.

Teaching Experience	Mean	SD	N
0 – 5 years	2,92	,60	130
6 – 10 years	2,99	,57	133
11 – 15 years	3,05	,47	80
16 – 20 years	3,04	,66	57
21 - .....years	2,93	,53	75

$F_{(4, 470)}=,913$, $p=,456$

Mean scores are based on a five-point Likert scale where 1=strongly agree, 2=agree, 3=disagree, 4=strongly disagree, 0=undecided.

Gender	Mean	SD	N
Male	3,00	,60	278
Female	2,95	,54	209

$t_{(485)} =,989$, $p = ,323$

Mean scores are based on a five-point Likert scale where 1=strongly agree, 2=agree, 3=disagree, 4=strongly disagree, 0=undecided.

School Location	Mean	SD	N
Urban	2,97	,58	332
Suburban	2,99	,56	157

$t_{(487)} = -,260$, $p = ,795$

Mean scores are based on a five-point Likert scale where 1=strongly agree, 2=agree, 3=disagree, 4=strongly disagree, 0=undecided.

Geographical Region	Mean	SD	N
Black Sea	3,04	,56	126
The Marmara	3,00	,49	130
Mediterranean	2,88	,57	121
East Anatolia	2,99	,67	112

$F(3, 485)=1,780, p=,150$

Mean scores are based on a five-point Likert scale where 1=strongly agree, 2=agree, 3=disagree, 4=strongly disagree, 0=undecided.

External Factors to Classroom as Constraints

Area of Specialisation	Mean	SD	N
Social Sciences	2,88	,57	97
Science	2,78	,45	100
Mathematics	2,68	,65	65
Literature	2,97	,58	89
Foreign Languages	2,81	,58	52
Other	2,85	,59	94

$F(5, 491)=2,351, p=,040$

Mean scores are based on a five-point Likert scale where 1=strongly agree, 2=agree, 3=disagree, 4=strongly disagree, 0=undecided.

Educational Background	Mean	SD	N
Associate Degree	2,91	,56	39
Bachelors	2,82	,56	414
Masters	2,93	,69	27
Doctorate	3,22	,47	2
Other	2,96	,53	14

$F(4, 491)=,823, p=,511$

Mean scores are based on a five-point Likert scale where 1=strongly agree, 2=agree, 3=disagree, 4=strongly disagree, 0=undecided.

Teaching Experience	Mean	SD	N
0 – 5 years	2,73	,61	134
6 – 10 years	2,93	,54	129
11 – 15 years	2,84	,48	84
16 – 20 years	2,91	,59	56
21 - .....years	2,85	,58	80

$F(4, 478)=2,406$, $p=,049$

Mean scores are based on a five-point Likert scale where 1=strongly agree, 2=agree, 3=disagree, 4=strongly disagree, 0=undecided.

Gender	Mean	SD	N
Male	2,82	,60	281
Female	2,86	,52	215

$t(494) = -,776$, $p = ,438$

Mean scores are based on a five-point Likert scale where 1=strongly agree, 2=agree, 3=disagree, 4=strongly disagree, 0=undecided.

School Location	Mean	SD	N
Urban	2,86	,57	335
Suburban	2,80	,58	163

$t(469) =,983$, $p = ,326$

Mean scores are based on a five-point Likert scale where 1=strongly agree, 2=agree, 3=disagree, 4=strongly disagree, 0=undecided.

Geographical Region	Mean	SD	N
Black Sea	2,88	,83	129
The Marmara	2,83	,57	136
Mediterranean	2,77	,49	115
East Anatolia	2,86	,68	118

$F(3, 494)=,746, p=,525$

Mean scores are based on a five-point Likert scale where 1=strongly agree, 2=agree, 3=disagree, 4=strongly disagree, 0=undecided.