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STUDENTS' MOTIVATIONAL BELIEFS AND LEARNING STRATEGIES: AN INVESTIGATION OF THE SCHOLAR DEVELOPMENT PROGRAM

A MASTER'S THESIS

BY

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THE PROGRAM OF CURRICULUM AND INSTRUCTION
İHSAN DOĞRAMACI BILKENT UNIVERSITY
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2015

To my parents and my husband

Aysel-Mehmet Beşir AYAZ and Sinan SOYOĞUL

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EMİNE CİHAN SOYOĞUL

JUNE 2015

I certify that I have read this thesis and have found that it is fully adequate, in scope and in quality, as a thesis for the degree of Master of Arts in Curriculum and Instruction.

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Approval of the Graduate School of Education

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ABSTRACT

STUDENTS' MOTIVATIONAL BELIEFS AND LEARNING STRATEGIES: AN INVESTIGATION OF THE SCHOLAR DEVELOPMENT PROGRAM

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M.A., Program of Curriculum and Instruction

Supervisor: Asst. Prof. Dr. Jennie Farber Lane

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The purpose of this study was to examine the motivational beliefs and learning strategies, with respect to gender and grade level, of academically talented students' enrolled in Scholar Development Program (SDP) within a private school in Ankara, Turkey. A multimethod research was conducted with 149 students from 9^{th}, 10^{th} and 11^{th} grade students. The students were administered an adapted version of Motivated Strategies for Learning Questionnaire (MSLQ-TR) and six teachers were interviewed. The analysis of the data revealed that students enrolled in the program were engaged in learning and developed different strategies in learning. Among the beliefs and strategies, task value, control beliefs for learning and help-seeking were mostly used by all participants. There were significant differences in students' test anxiety, extrinsic goal orientation and effort management as they advanced through the program. Motivational beliefs such as extrinsic goal orientation and task value had a significant difference in favor of female students. Furthermore, they had more test anxiety than male students. The findings also showed that female students surpassed male students in using learning strategies, especially organization and rehearsal constructs. Implications for practice and recommendations regarding these findings are discussed.

Key words: Motivational beliefs, learning strategies, self-regulated learning, scholar development program (SDP), gender differences.

ÖZET

ÖĞRENCİLERİN GÜDÜLENMESİ VE ÖĞRENME STRATEJİLERİ: BİİM İNSANI YETİŞTİRME PROGRAMI ÜZERİNE BIR ARAŞTIRMA

Emine Cihan Soyoğul

Yüksek Lisans, Eğitim Programları ve Öğretim
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Bu çalışmanın amacı Ankara'da özel bir lisede uygulanan Bilim İnsanı Yetiştirme Programı'na kayıtlı üstün yetenekli öğrencilerin güdülenmesi ve öğrenme stratejilerinin cinsiyet ve sınıf düzeyi açısından incelenmesidir. Çok yöntemli araştırma yöntemi uygulanan çalışmada 9. 10. ve 11. sınıfta okuyan 149 öğrenciye Türkçe'ye uyarlanmış güdülenme ve öğrenme stratejileri anketi uygulanmıştır, ayrıca 6 öğretmenle de yüz yüze görüşme yapılmıştır. Yapılan istatistikler sonucunda programa kayıtlı tüm öğrencilerin farklı güdülenme ve öğrenme stratejilerini kullandıkları; görev değeri, öğrenme kontrolü inancı ve yardım aramanın en sık kullanılan stratejiler olduğu; sınav kaygısı, dışsal hedef yöneliminin üst sınıflarda farklılık gösterdiği ortaya çıkmıştır. Kız öğrenciler ve erkek öğrenciler arasında sınav kaygısı dışsal hedef yönelimi ve görev değeri açısından anlamlı farklılıklar bulunmuştur. Sonuçlar aynı zamanda kız öğrencilerin öğrenme stratejilerinin özellikle de yineleme ve düzenleme stratejilerinin erkeklere oranla daha fazla olduğunu göstermiştir. Son olarak çalışmanın bulguları tartışılarak önerilere yer verilmiştir.

Anahtar Kelimeler: Güdülenme, öğrenme stratejileri, öz düzenleyici öğrenme, Bilim İnsanı Yetiştirme Programı (BİYP), cinsiyet farklılıkları.

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CHAPTER 1: INTRODUCTION

Introduction

This study focuses on the motivational beliefs and learning strategies of academically talented students' who are enrolled in the Scholar Development Program (SDP) within a private high school in Ankara, Turkey. This program utilizes project-based learning and other learning strategies to promote students' advanced thinking and learning skills. This chapter provides background about the need for programs to address the learning needs of academically talented students, particularly regarding motivational beliefs (values, expectancy and affective components) and learning strategies (cognitive, metacognitive and resource management strategies). The discussion leads to a presentation of the problem that is addressed through the study's research questions.

Background

Learning involves improving not only academic skills but also motivational, cognitive and metacognitive skills. Academically talented students are described as "gifted" as they are the "ones who demonstrate an exceptionally high level of performance in one or more areas of human endeavour" (Sousa, 2003, p. 2). They have superior academic capabilities resulting from their higher order cognitive thinking skills.

Pintrich & De Groot (1990) indicate that highly motivated students use cognitive and metacognitive strategies efficiently and their academic performance is better than others. Academic skills can be described as the students' performance that is

measured by formative and summative assessment. However, motivational, cognitive, and metacognitive skills are described using different terms. People who have no intention to act can be defined as unmotivated while people who act towards a goal are named as motivated (Ryan & Deci, 2000). Senemoğlu (2007) states that "cognition" is the awareness of comprehension in learning whereas "metacognition" is the ability of knowing how knowledge is acquired; in other words, metacognition is related to individuals' awareness of their own learning processes (p.336). While Flavell (1979) defines metacognition as "knowledge and cognition about cognitive phenomena" (p.906), Gagne (1988) identifies it as "internal processes that employs cognitive strategies to monitor and control the memory and learning processes" (as cited in Altındağ & Senemoğlu, 2013, p.16). According to Costa (1984), metacognition is being aware of what an individual knows and does not know.

It has been stated that academically talented students have higher levels of metacognitive skills in comparison to other students (Baker & Cerro, 2000; Coutinho, 2008; Altındağ & Senemoğlu, 2013). They are aware of the knowledge they have and monitor their learning process. Therefore, these students should have challenging learning opportunities, as they can get discouraged or bored with the regular curriculum (Little, 2012). Gifted students demonstrate their skills with particular interests or endeavors. Educators need to recognize those learners' remarkable performance and enable them to use their skills in different learning environments (Bloom, 1985; Renzulli, Leppien, & Hays, 2000; Tomlinson, 2005). Enabling learners to advance their abilities requires curriculum and instruction that is challenging and has a high quality. Creating opportunities for learning that fosters students' abilities in particular areas also increase students' motivational beliefs in those areas (Csikszentmihalyi, Rathunde, & Whalen, 1993; Renzulli & Reis, 1997;

Tomlinson, 2005). Curriculum and instruction that develops advanced students' interests has appropriate pacing, develops passion and presents challenging learning opportunities (Tomlinson, 2005).

Effective curriculum and instruction for advanced learners emphasizes learner centered approaches that place students at the center of learning (Tomlinson, 2005). The learner-centered approach has been accredited to Dewey, Piaget and Vygotsky and relates to the "constructivist approach" (Dean, 2003). In the learner-centered approach, supporting and guiding students is emphasized while they construct their knowledge within the context of their culture and society (Bonk & Cunningham, 1998). Students actively engage in learning and use advanced thinking skills such as decision-making, problem-solving, critical and creative thinking skills that require metacognition. Teachers act as a facilitator and guide in the learner-centered model; in other words, they do not transfer the information to students directly but assist them to "reach the knowledge by their own experience and existing knowledge" (Hursen & Soykara, 2012, p.93).

To meet the needs of academically talented learners, education systems throughout the world have a history of implementing curriculum designed for gifted learners. In Turkey, the education of gifted learners dates back to Ottoman Empire with Enderun Schools (Corlu M. S., Burlbaw, Capraro, Corlu M. A. & Han, 2010). After the foundation of the Turkish Republic, the Village Institute was established and the number of schools providing special education for gifted learners increased. Today in Turkey, there are Science High Schools, Fine Arts Schools, Science and Arts Centres as well as schools with an emphasis on extracurricular activities integrated into national curriculum (Kaya, 2013). The Scholar Development Program is another

example of a program for academically talented learners. It has been implemented within a private school in Ankara integrated into the national curriculum.

Scholar development program

The Scholar Development Program (SDP) is a unique program designed for academically talented students in a private high school in Ankara, Turkey. The main aim of the program is to develop scholars who investigate topics, prepare projects, understand different cultures, and make use of new technologies. In this program, academically talented students focus on research, application, and productivity with enriched learning environments. Moreover, the program aims at enabling students to be aware of social problems, scientific, and technological developments. Students are to apply what they learn to their daily lives with the help of project-based learning (PBL) and problem-based learning practices that enhance metacognitive skills.

The students are offered two compulsory elective courses, "Project Design" and "Research Techniques," that help advance their problem solving skills. In the program, students are encouraged to know foreign languages. Before they start the program they sit English proficiency exam in addition to Turkish. Students are expected to know English to follow the scientific and technological developments in other countries. Therefore, English is prerequisite to be accepted in the program; if they cannot pass English Proficiency exam, students have to attend English preparatory classes before they start the program. The ones who are enrolled in this program have an opportunity to take French or German courses as electives. In addition, this program has some practices to prepare students for the national university entrance exam.

Within this program, students are expected to find solutions to everyday problems. They are encouraged to be aware of their learning process and take the responsibility for their own learning. Therefore, humanistic, scholar academic, social reconstructionist, and systemic ideologies suggested by McNeil (2006) are found in this program.

For instance, the humanistic approach emphasizes learner-centered education; learners are aware of their own abilities, needs and skills. The aim of this curriculum is to foster self-actualization. In SDP, learners are active participants throughout the learning process. Since SDP focuses on inquiry-based learning and requires the students to work on research projects, it includes the characteristics of academic curriculum approach. The scholarly academic ideology emphasizes goals or practices of specific disciplines. Inquiry-based learning in the scholarly academic approach requires learners to reach useful and comprehensible knowledge on their own. The Social Reconstructionist ideology enables learners to build awareness about social problems and find a solution about these problems. While preparing the projects, students in SDP think about social problems and try to come up with a solution. Finally, aligning with the systemic ideology SDP education is systemic, it is controlled and planned systematically with four stages of curriculum such as "design, development, implementation, and evaluation" (McNeil, 2006). Goals with standards are stated beforehand and students are expected to accomplish these goals. Along the lines of a Standards-Based Curriculum, standards are specified according to the students' age, grade, school subject, content and performance. Materials and teaching techniques are designed and implemented according to these standards. Students' strengths and the areas that need improvement are identified using various

assessment measures. The national curriculum implemented in SPD includes these four stages as well.

The SDP started in the 2007-2008 academic year and was integrated into the national curriculum of Turkey with the approval of the Board of Education (Talim Terbiye Kurulu). The language medium of instruction in this program is English. SDP shares the same weekly schedule as the national curriculum and the International Baccalaureate (IB) Program. It is a four-year program (excluding English preparatory classes) and involves both the Natural Sciences and Social Sciences departments. Students choose their area of interest and after choosing they are not allowed to change. For the most part, students are interested in the natural sciences, as they believe science education offers more career opportunities and promotes inquiry (Orbay, Gökdere, Tereci & Aydın, 2010).

SDP admits forty-eight students each academic year. Students from the middle schools have a chance to study in this program as long as they meet the required criteria. The results of Transition from Primary Education to Secondary Education Exam (TEOG-Temel Eğitimden Ortaöğretime Geçiş) conducted by the Ministry of National Education (MONE) has an impact on the admission process in addition to the program's "Scholar Development Selection Exam." This exam covers content of the national curriculum of math, sciences, social sciences within the 6^{th}, 7^{th} and 8^{th} grades (first semester) and Turkish. The exam is prepared by teachers in the program and is administered by an unbiased science commission. The score from this exam along with the TEOG results determine the admission of students to the SDP. Students who are admitted to the program are required to take English and Turkish exams in order to attend the 9^{th} grade. Those who fail the exam have to study in preparatory classes. To avoid being dismissed from the program, students should not

receive a failing grade from subjects such as physics, chemistry, biology, maths, Turkish literature, and language and expression. The students' Cumulative Grade Point of Average (Cum GPA) should be a minimum of 65 from major courses in all grades. The ones who want to leave the program have a chance to transfer to the high school that uses the national curriculum.

The requirements of the scholar development program

Students enrolled in the SDP are required to attend compulsory innovation studies, the Scientific and Technological Research Council of Turkey (TÜBİTAK), which is an agency providing funds for scientific projects, Project Competitions and Science Olympiads, college studies and field trip observations.

Compulsory Innovation Studies

In the 9th grade, students have to participate in "innovation clubs" two hours per week within the scope of their social activities. Innovation clubs enable students to carry out investigations about natural and social sciences and use their problem-solving skills to find new solutions for authentic problems. Students exhibit their innovative designs in a fair held every May by the target school that hosts other schools from different regions of Turkey.

TÜBİTAK Project Competitions and Science Olympiads

Talented students benefit from laboratory, project-based, and computer-based instruction in science education (Hoover, 1989). Project-based instruction is integrated into SDP considering the characteristics of the academically talented students and their science courses. Students conduct projects, either individually or in groups, related to their educational interests. They select a topic to investigate with the guidance of their teachers in the 10th grade and prepare their projects within a

year. Student projects should meet the criteria for the TÜBİTAK Project Competitions and they are reviewed by the teachers. They exhibit their works in science fairs at either their own school or other institutions. Under the guidance of experienced teachers, 10th and 11th grade students work in groups for four to six hours per week for the TÜBİTAK Science Olympiads as well.

Field trip observations

Students are able to visit scientific exhibitions organized by scientific museums and universities throughout the academic year. The purpose of these trips is to help students internalize and conceptualize theoretical knowledge about science and math through visualizing and practicing.

College studies

In the 12th grade, students and parents are concerned about college admissions. Therefore, SDP offers practices for students prepare for the university entrance exam administered by ÖSYM (Student Selection and Placement Centre). In addition to the compulsory components of the program, there are optional seminar studies for students. In seminar studies, students benefit from school facilities such as the laboratory, library, gym, and conference hall. They have a chance to work individually and in groups for seminar studies.

Problem

Advanced learners benefit from extracurricular programming designed to further develop their cognitive skills and potentials. These skills include problem-solving along with critical and creative thinking. Extracurricular programs should increase advanced learning by motivating students to develop their own learning strategies. For the programs to be effective, they must also meet learners' needs, interests, and

expectations. These programs need to be attractive to students while simultaneously advancing their motivational beliefs and learning strategies. Therefore, there is a need to examine these programs to find out if they address students' motivational beliefs and learning strategies.

In particular, it is unclear whether this program takes into consider the learning needs of male and female students. It is also unknown if students' motivational beliefs and learning strategies change as they advance through the program. It is important to understand these changes and differences if the SDP is to effectively design learning experiences to promote scholarly work and advance academic skills.

Purpose

The main purpose of the study is to assess the motivational beliefs and learning strategies of students enrolled in the SDP. The study also aims to identify and investigate aspects of the program designed to advance these thinking skills. It is intended to find out the possible relationship between students' gender and their motivational beliefs and learning strategies. The study also aims to reveal if there are differences between girls and boys regarding motivational beliefs and use of learning strategies. Based on the findings, this study will identify strategies that could be incorporated into the Scholar Development Program to further advance students' thinking skills. The target school might improve the SDP to enhance motivational beliefs and learning strategies of students of different genders. The outcomes of the study can also be beneficial for other schools that intend to implement SDP.

Research questions

In this study, following questions will be addressed;

Main question: Within a program designed for academically talented students in a private high school in Ankara, is there a difference between female and male students regarding the motivational beliefs and learning strategies.

In addition to the main research question, the study seeks to answer the following sub-questions.

Quantitative research questions:

1- What are students' motivational beliefs in SDP?

2- What are students' learning strategies used in SDP?

3- Do students of different genders in SDP differ significantly in their motivational beliefs and their use of learning strategies?

4- Do students' motivational beliefs and their use of learning strategies improve as they advance through the SDP?

Qualitative research questions:

5- Do teachers perceive that there is a significant difference between female and male students regarding motivational beliefs and learning strategies?

6- Do teachers report that they need to support the motivational beliefs and learning strategies of students of boys and girls differently within the classroom setting of SDP?

7- What strategies do teachers use to support students' motivational beliefs and learning strategies in SDP?

Significance

There are a large number of studies that measure learners' motivational beliefs and learning strategies. These studies can provide insights into cognitive and metacognitive learning processes. However, there is a lack of research about

assessing academically talented students' motivational beliefs and learning strategies within a specific program. Therefore, research about motivational beliefs and learning strategies might raise awareness in stakeholders who to improve the quality of instruction of a program designed to enhance metacognitive skills of academically talented learners.

Additionally, there is not a specific study about students' motivational beliefs and their use of learning strategies in a program like SDP in Turkey; a program that has been designed for academically talented students to support their cognitive and metacognitive abilities in learning. Since the program consists of learner-centered approaches and its aim is to educate individuals who are to be innovative, creative and productive, it is essential to gain access to students' motivational beliefs and learning strategies and teachers' perspectives on how students' learning needs are addressed. For this reason, this study has the potential to help the school identify if students of different genders and grade levels have different motivational beliefs and learning strategies. In addition, this study can be beneficial for teachers since it gives some suggestions for practice. It might lead teachers to use various strategies for motivating their students and advance their learning strategies. Teachers might design their lessons to support students the various learning needs of different genders.

The instrument used for this study is normally used to investigate learning in a single subject area. It was used in this study to gain insights into the learning within an entire program. Although there may be limitations to this application, the findings are nonetheless informative. Besides benefitting the SDP, other programs for advance learners such as the International Baccalaureate (IB) might relate to the results to examine their programs. Lastly, the results of this study might contribute to

the related literature as well as further studies in Turkey. In other words, the results and implications of the study might serve as a basis for further research that assesses students' motivational believes and strategies for learning in SDP.

Definition of key terms

Academically-talented students or gifted learners: Learners who have high abilities in particular areas or pursuits (Tomlinson, 2005).

Learning Strategies: "Specific actions taken by the learner to make learning easier, faster, more enjoyable, more self-directed, more effective, and more transferable to new situations" (Oxford, 1990, p. 8)

Metacognitive skills: Metacognitive skills are the skills that enable individuals to control their own learning processes (Altındağ & Senemoğlu, 2013).

Motivational Beliefs: "Beliefs involving achievement goal orientations" (Beghetto, 2004).

Scholar Development Program (SDP): The program, the aim of which is to raise academically talented learners as problem solvers, innovative and critical thinkers, is called Scholar Development Program.

Project-based learning (PBL): "Project-Based Learning (PBL) is an innovative approach to learning that teaches a multitude of strategies critical for success in the twenty-first century" (Bell, 2010, p.39).

Problem-based learning: It is a learning strategy in which "students analyze an ill-defined problem in order to define their own learning goals" (Vos & Graaff de, 2004, p. 544).

Self-regulated learning: Learners' intentional activity in learning without the guidance of a tutor is defined as self-regulated learning (SRL) (Rheinberg, Vollmeyer & Rollett, 2000).

CHAPTER 2: REVIEW OF RELATED LITERATURE

Introduction

Students' motivational beliefs and their use of various learning strategies have been of concern in the fields of education and psychology. It is essential for schools that enroll academically talented students to determine the motivational beliefs and learning strategies of their students. Often, these schools design special programs to advance these students' potential and academic skills. Gifted students can be defined as those "who are so acutely advanced in their abilities" and "who are advanced in one or more areas of study" (Tomlinson, 2005, p.160). Rabinowitz and Glaser (1985) indicate that gifted students are more likely to apply pre-existing knowledge into new learning experiences than other students, thus they need to have enriched experiences. Therefore, gifted students need to be highly motivated and supported with a curriculum designed for advancing their use of cognitive and metacognitive strategies.

Curriculum for gifted students should address the students' needs, learning levels and expectations in order to meet the intended goals, activate higher order thinking skills and provide challenging learning experiences. Student-driven learning in which students are engaged and use their metacognitive skills is emphasized in curriculum designed for gifted learners. According to the student-driven learning model, the more students are engaged in learning, the better they learn the subject matter. The models that support student engagement in learning include inquiry-based, experiential and problem-based learning. Additionally, Dewey's "Constructivism," Kilpatrick's "Project Method" and Bruner's "Discovery Learning" are the student-

driven learning approaches that can be integrated into curriculum designed for gifted learners.

This chapter consists of the theoretical framework for the intended study under various subheadings. First, self-regulated learning is explained. Then motivational beliefs and learning strategies are presented and different approaches towards these strategies are discussed. Lastly, a variety of studies conducted both in Turkey and abroad is mentioned.

Self-regulated learning

The investigation of self-regulation processes is a new research area in which learners integrate "social and academic goals and regulation" (Pintrich, 2003, p. 675). Self-regulated learning is the individuals' beliefs in their potential and strategies they develop in learning. Being aware of what they know and how they acquire knowledge, learners initiate their own learning strategies. Learners' independent activity in learning without the guidance of a tutor is defined as self-regulated learning (SRL) (Rheinberg, Vollmeyer & Rollett 2000). Steffen (2006) indicates that self-regulated learning is a significant issue in educational psychology since the degree of self-regulation enhances learning outcomes (as cited in Al Khatib, 2010).

Baker and Cerro (2000) indicate that "self-regulated learning" and "self-system" are two different terms which have expanded the inquiry in metacognition (p. 101). Self-regulated learning requires self-direction, intrinsic motivation and self-control in learning; self-system, on the other hand, refers to the recognition that metacognitive, affective and motivational factors are related to each other in one's own learning

(Pintrich & De Groot, 1990). Self-regulation is examined from two dimensions in this study; motivational beliefs and learning strategies.

Motivational beliefs

Wolters and Rosenthal (2000) state that studies exploring students' motivational beliefs have revealed that students with higher task value and a learning goal orientation are likely to develop "greater use of strategies that are designed to regulate students' cognitive and metacognitive engagement in academic tasks" (p.806). Students who have high motivational beliefs tend to use motivational regulation strategies than the ones who have low motivational beliefs.

Motivation involves willingness for action to achieve a goal. The concept of motivation has been investigated by many researchers and the definition of motivation has been emphasized. Simon (1967) describes motivation as a cognitive process in which "a goal-terminating mechanism permits the processor to satisfice, dealing generally with one goal" (p.39). According to Ryan and Deci (2000), being motivated means "to be moved to do something" (p.54). In Self-Determination Theory, Deci and Ryan (1985) divide motivation into two as "intrinsic motivation" and "extrinsic motivation" (as cited in Ryan & Deci, 2000). While intrinsic motivation is related to one's own interest or curiosity, extrinsic motivation is shaped by external factors.

Motivation is considered one of the crucial factors in advancing student learning and achievement. Highly motivated students are more engaged in learning and they do the academic tasks more persistently than the ones with low motivation (Pintrich & Schunk, 1996; Pintrich & Schrauben, 1992; Stipek, 1993, as cited in Wolters & Rosenthal, 2000). It can be noted that students' efforts and persistence are the

consequences of students' beliefs, attitudes and perceptions towards learning in cognitive model of motivation (Weiner, 1990). Students' beliefs include the value they give to a task or material, their perceptions of self-efficacy, their goals to achieve comprehension and their engagement, effort and persistence in academic tasks (Wolters & Rosenthal, 2000). Students regulate some of these strategies according to their motivational beliefs.

Students' beliefs in motivation, the value they give to a task, their self-efficacy and goal orientations are appreciated by stakeholders such as educators, administrators, counsellors and parents. Good practitioners know how students' intrinsic motivation, extrinsic motivation, task value and self-efficacy interact to enhance learning and personal development (Schunk, 2000).

Different approaches in motivation

There are different approaches towards motivation. Pintrich and Schunk (2002) noted that motivational theories investigate factors that motivate learners to perform activities or tasks (as cited in Pintrich, 2003). The behavioral approach suggests that individuals are motivated extrinsically by reinforcing a desired behavior. An individual is likely to perform the desired behavior in the future if a positive reinforcement such as grades, praise or other rewards is offered. The cognitive approach, on the other hand, emphasizes intrinsic motivation in which students are more curious and active participants in learning (Yıldırım, Güneri & Sümer, 2002). Even if they do not get any reward, intrinsically motivated students tend to have deeper knowledge about the subject matter. The social learning approach is the integration of behavioral and cognitive approach. This approach is not only concerned about the outcomes of the behavior, but also about the initial beliefs forming individuals' specific behavior. According to this approach, individuals'

beliefs about the potentials of achieving a goal and the value of that goal are the sources of motivation (Yıldırım et al., 2002).

The expectancy-value model of motivation by Ecccles and Wigfield (2002) constitutes the theoretical framework for motivational beliefs for the current study. Pintrich and De Groot (1990) divide motivation into three components; expectancy, value and affective components.

Expectancy component of motivation

Expectancy is related to students' ideas about their performance, beliefs for success and their confidence in accomplishing. Two aspects of expectancy components include assessing "the perceptions of self-efficacy and control beliefs for learning" (Duncan & McKeachie, 2005, p.119). Several studies emphasize learners' beliefs for learning and perceptions of self-efficacy. When people believe that they can achieve a task, they have better performance than others and are more engaged in challenging tasks (Eccles & Wigfield, 2002). According to Bandura's social cognitive theory (1986), human functioning is explained with the reciprocal interactions between personal psychological factors (e.g. beliefs or thoughts) behavior and environment. Individuals' self-efficacy beliefs can influence their behaviors or social environment. Conversely, individuals' social environment can affect personal factors and behaviors (Schunk & Zimmerman, 2007). Self-efficacy affects "choice of activities, effort expenditure, persistence, and achievement" (Bandura, 1997; Schunk, 2001, as cited in Schunk & Zimmerman, 2007, p.8). Control beliefs for learning enable students to persuade themselves that they will see the positive results of their efforts. The idea of controlling their own academic performance encourages students to regulate strategies in learning. That is to say, the more students believe their learning abilities, the more effective strategies they will develop to support their studies.

Value component of motivation

The value component of student motivation emphasizes students' goals for achieving a task, the importance they give to a task and their interest of the task. Although the value component is associated with goal orientation, task value, learning and performance, the reasons why students involve themselves in an academic task is the essential concern. Students who set goals and believe the importance of the academic task might regulate cognitive and metacognitive strategies in learning (Pintrich & De Groot, 1990).

The value component includes intrinsic and extrinsic goal orientation as well as task value. Students' engagement in an academic task might be influenced by inner thoughts. Therefore, the reasons to get involved in an activity might be "challenge, curiosity and mastery" (Pintrich, Smith, Garcia, & McKeachie, 1991, p.13). Similarly, external factors such as grades, praise, rewards or competition might be the reasons students engage in an academic task; they are motivated when they see the results of their efforts. The degree to which students give importance to a task enables them to regulate their learning strategies. Students' interpretation of the importance, interest, and benefits of a task, encourages them to become involved in their learning (Pintrich et al., 1991).

Affective component of motivation

Affective component of motivation is more related to students' emotional reactions to academic tasks (Duncan & McKeachie, 2005, p.119; Pintrich et al., 1991). Students' academic performance might be influenced negatively when they feel nervous, anxious or worried about a task. Students regulate some strategies in order to reduce negative feelings. They especially suffer cognitively and emotionally from test anxiety; in other words, students' negative ideas about a test might prevent their

performance as well as their affective and physiological reactions to a test (Pintrich et al., 1991).

Learning strategies

In the literature, various models of self-regulation have been introduced. Bidjerano (2005) claims that several models of self-regulation stem from Bandura's theory; however, Pintrich and Zimmerman's theoretical framework has been the most predominate continuation of Bandura's theory. Pintrich and De Groot (1990) divides self-regulated strategies into three components; the first component is the individuals' use of "metacognitive strategies such as planning, monitoring and modifying cognition" (p.33). Next, students' effort management on tasks is another component; for example, when they devote their efforts to a challenging task even if they find it difficult. The third component is the cognitive strategies used by individuals to learn the subject matter, remember and comprehend.

Cognitive and metacognitive strategies

Thoughtful practitioners who know their students' learning strategies provide learning opportunities in which students advance their potentials and skills. Flavell (1979) indicates that young children are restricted in terms of knowledge about their own learning processes as well as monitoring their cognitive skills by exemplifying the studies done. Therefore, Flavel (1979) develops the model of "cognitive monitoring" as an attempt to present information to children and adolescents about "the development of metacognition and cognitive monitoring/regulation" (p.906). He divides cognitive monitoring into four phrases; 1) metacognitive knowledge, 2) metacognitive experiences, 3) goals (or tasks) and 4) actions (or strategies). He further suggests that children and adolescents monitor their own cognition in social life. Metacognitive knowledge and cognitive monitoring can be improved by

training. He believes that in educational settings, children and adults might be taught to make thoughtful decisions about life.

Dong (2014) emphasizes that study skills facilitating learning are related to the cognitive levels in Bloom's taxonomy. Since each level in the taxonomy requires different skills, learning strategies to be taught at each level should be determined accordingly. Dong expresses the need to teach study skills, how to teach them and which learning techniques should be taught at each level.

When students acquire cognitive thinking skills, they can also improve their metacognitive skills. They have the ability to know how they acquire knowledge and identify and improve weaknesses. In other words, students who have higher order thinking skills have advanced metacognitive skills. Metacognition which is defined as being aware of one's own learning process and choosing the best learning techniques to get the most out of studying might be taught at school. Teachers might encourage the students to recognize their own learning processes and make students acquire learning strategies in a student-centered learning environment. Metacognition is related to knowledge and "control of cognition that is conscious or accessible to consciousness" (Baker & Cerro, 2000, p. 101).

Martinez (2006) divides metacognition into three categories that are metamemory and metacomprehension, problem solving and critical thinking. He indicates that while metacognitive skills show the traces of conscious and intentional actions, cognition might be unconscious. In classroom settings, students should be provided situations in which they can acquire and improve metacognitive skills. Social interaction among students should be encouraged as well as being presented a model with the help of teacher's "thinking aloud" as in Vygotsky's teaching. Emotional and

motivational considerations in metacognition are also taken into consideration in the case of achievement, problem solution, and difficulty and uncertainty. In other words, metacognition is related to celebrating the success, solving the problems, overcoming difficulty and uncertainty. Teachers should consider not only strategies of metacognition but also emotional and motivational aspects.

Students use rehearsal strategies to activate their schemata and recall information instead of storing the information into long-term memory and transferring new information to prior knowledge. Elaboration techniques help students store knowledge into long-term memory by summarizing, paraphrasing, and synthesizing so that they combine new knowledge with the previous one. Organization strategies include outlining, creating charts and tables to make connections with the new information to be learned. Critical thinking is the strategy in which students use their existing knowledge and apply it to new situations in order to find a solution to a problem. Metacognitive control strategies are measured by one subscale, which is metacognitive self-regulation, consisting of strategies the students use to control and regulate their own learning. Planning, monitoring and regulating which help students understand the material better and integrate it with existing knowledge are the strategies defined in this subscale.

Metacognitive processes should be included in educational assessment in different approaches such as problem-based and project-based learning. Reflection on the processes or on the approach to the solution is emphasized in learning in both approaches. Students use their higher level cognitive thinking skills in both approaches by stating learning goals and objectives, finding a solution to a problem, and making generalizations from the findings of the study (Ramirez-Corona, Ramirez, & Lopez-Malo, 2013).

Resource management strategies

Resource management strategies are related to controlling the resources in learning. The subscales in resource management are "time and study environment, effort-regulation, peer-learning and help seeking" (Pintrich, et al. 1991, pp. 25-29). Time and study management techniques such as planning, scheduling and organizing the learning environment enhance students' learning. Effort management is a self-regulation technique in which the students control their effort when they get distracted or the tasks seem uninteresting. Collaborative learning is achieved with peer learning and students can learn the material better when they interact with each other. Likewise, students should know how to ask for help from their instructors and peers. To improve students' resource management strategies, practitioners might provide learning experiences in which students work cooperatively. They should also guide their students to construct their own learning environment and learn from each other with different types of activities.

Studies in Turkey

Students' motivational beliefs and learning strategies have been a concern in the research since the national curriculum was redesigned according to constructivist approach in Turkey (MEB, 2005). Although there is a lack of research in this issue countrywide, the number of studies being conducted to determine students' motivational beliefs and their use of learning strategies is increasing.

Karadeniz, Büyüköztürk, Akgün, Çakmak and Demirel (2008) points out that Motivated Strategies for Learning Questionnaire (MSLQ) developed by Pintrich et al. (1991) has been translated into different languages such as Greek, German, Hebrew, Korean, Norwegian and Chinese. It has been used to measure the motivation and learning strategies of students from various levels-from primary

school to university level. The 7 point Likert scale MSLQ has been adapted into Turkish culture by Karadeniz et al. (2008). The questionnaire was administered to measure students' motivational beliefs and learning strategies in science, mathematics, and Turkish language and social studies courses in 6^{th}-11^{th} grade (12-18 ages) to find out the factors affecting academic achievement at primary and secondary level. There were 1,114 students from three primary and three high schools in Ankara, Turkey. Confirmatory factor analysis was used to adapt the scale. It can be concluded that cultural values and beliefs might have had an impact on the results of the study. While translating the scale into Turkish, some items seemed to be similar; therefore, these items were removed from the scale. However, it is mentioned in the study that research continues to improve the model and identify the norms of the scale in terms of Turkish culture.

Üredi and Üredi (2005) conducted a study in order to examine 8^{th} grade students' motivational beliefs and learning strategies and their relationship with mathematics achievement. In this relational model, the adapted version of MSLQ by the authors was administered to 515 students in a primary school in İstanbul. The findings of the study showed that the most powerful predictor of mathematics achievement was the use of cognitive strategies. Additionally, the predictive power of cognitive strategies, self-regulation, self-efficacy and intrinsic value for mathematic achievement was found higher in boys compared to girls.

In their study, Alcı and Altun (2007) investigated high school students' motivational beliefs and learning strategies in mathematics achievement regarding gender, level and disciplines. The data from 314 students (159 female and 155 male) in an Anatolian High School in İstanbul was collected by the adapted version of MSLQ by Üredi and Üredi (2005). The students were academically talented students whose

grade levels ranged from 9-12 from the disciplines of Turkish, Maths and Science. It was found that girls surpassed boys in their self-regulation and metacognitive strategies. While no differences were found for different disciplines, the significant difference was found between grade levels; in other words, 9^{th} and 10^{th} grade students' results were higher than 11^{th} grade students.

Yükseltürk and Bulut (2009) investigated gender differences in motivational beliefs, self-regulatory strategies and achievement in an online course at a university. Participants included 145 (101 male and 44 female) university students whose ages were ranging from 20 to 40 and above. MSLQ was used in order to assess students' motivational beliefs and learning strategies. The findings of the study demonstrated that the variance in female students' achievement was explained by test anxiety, while the variance in male students' achievement was explained by self-efficacy for learning and performance, and task value. The study displayed similar results in achievement, motivational orientations and use of learning strategies both for male and female students in online learning. Essentially, no significant difference was found in terms of gender in the study.

Keklik and Keklik (2012) administered the MSLQ to 312 voluntary high school students to measure if high school students' motivational beliefs and learning strategies differed regarding gender, grade level, mother's level of education and father's level of education. The results of the study showed that students' motivation were different in different grade levels and learning strategies differed according to gender and grade level. Female students' mean scores on rehearsal, organization, elaboration, metacognition, help-seeking, effort management, time and study environment were higher than boys.

One of the most recent studies was conducted to describe "pre-service teachers' levels of self-efficacy and self-regulation skills on science teaching as well as examining the relationship between these two variables" (Tortop & Eker, 2014, p.168). The authors adapted the MSLQ and they administered it with "Science Teaching Self-efficacy Beliefs Scale" to 130 2nd and 3rd year students in science and technology teaching departments of a college (Tortop & Eker, 2014, p.168). Low correlation between pre-service teachers' perceptions of self-efficacy towards science teaching and their motivational beliefs and learning strategies was identified in the results of the study.

Studies abroad

Numerous studies have been done about students' motivational beliefs and learning strategies in educational psychology. A variety of scales have been developed to assess these strategies and the results have been different with regard to variables such as gender, grade level, discipline.

Duncan and McKeachie (2005) examine the Motivated Strategies for Learning Questionnaire (MSLQ) in their study. The study mainly gives information about the need for MSLQ, the development of the questionnaire, the components it includes and the limitations that researchers need to take into consideration. Analyzing the motivation and learning strategies subscales, the authors point out that MSLQ is translated into various languages and widely used for theoretical and practical purposes. The authors state that MSLQ was developed to be used for course levels since the participants' motivation and learning strategies might vary according to the course and the course was the most convenient level of analysis.

Moreover, Artelt (2005) conducted a research and used the questionnaire to find out the effects of culture on reading performance, motivation and learning strategies (as cited in Karadeniz et al., 2008, p.109). He noticed that the students using motivation and learning strategies on reading materials performed better than the others.

Zimmerman and Martinez-Pons (1990) conducted research in which they asked students to identify 14 self-regulated strategies they used. They also aimed at estimating students' verbal and mathematical efficacy in relation to grade, gender and giftedness. In their study, they used mixed research method by interviewing students and giving them "student academic efficacy scales" (Zimmerman & Martinez-Pons, 1990, p.53). Participants included 45 boys and 45 girls of 5^{th}, 8^{th} and 11^{th} grades academically gifted students that had different ethnic and socio-economic backgrounds as well as identical number of students from regular schools. According to the results of the study, gifted students demonstrated significantly higher results compared to students from regular school. Also, there were significant differences between grade levels; that is to say, students in 11^{th} grade surpassed students in 8^{th} grade students and 8^{th} grade students surpassed 5^{th} grade students in turn on the verbal efficacy, mathematical efficacy and the use of self-regulated learning strategies. The study displayed that a significant difference was in favor of boys in verbal efficacy but not in mathematical efficacy. However, Zimmerman and Martinez-Pons (1990) stated that girls surpassed boys in some self-regulated strategies such as "keeping records, monitoring, environmental structuring, goal-setting and planning" (p.57).

In his quantitative study, Niemivirta (1997) examined motivation and learning in terms of gender differences. The study was administered to 628 junior high school

students (295 girls and 333 boys). The findings indicated that boys used more superficial learning strategies than girls.

Higgings (2000) investigated the impact of using metacognitive strategies on high school students' achievement, self-efficacy and test anxiety in a quasi-experimental study. Forty participants from advanced geography classes were administered MSLQ in the study. The findings of the study revealed significant differences between gender and achievement, metacognitive self-regulation, and test anxiety. While male students had higher achievement scores, female students had higher scores on metacognitive strategy use and test anxiety.

Bidjerano (2005) conducted a study, the aim of which was to explore the relationship between self-regulated learning strategies and gender. Thus, he administered MSLQ to 198 undergraduate students at a university in Northeastern U.S. The results showed that there was a statistically significant difference between female and male students. Female students had higher scores in using the strategies of rehearsal, organization, metacognition, time-management skills, elaboration and effort than male students (Bidjerano, 2005).

Additionally, Hong, Peng and Rowell (2009) investigated the differences in students' motivational and self-regulated strategies in doing homework in relation to grade, gender and achievement level. The participants consisted of 330 7^{th} and 407 11^{th} grade students in China. According to the study, students' use of strategies had a decrease as they progress through the educational system. There was also no significant difference between male and female students but higher achievement-level in homework was found in 7^{th} grade students.

In the quantitative study carried out by Al Khatib (2010), the aim was to reveal the potential relationship between metacognitive strategies, motivational beliefs and academic performance. The study involved seven subscales of the learning strategies scale of MSLQ and the participants were 404 (204 males and 200 females) college students enrolled in different education courses in Al Ain University of Science and Technology in the United Arab Emirates (UAE). Al Khatib (2010) noted that female students surpassed their male counterparts in "intrinsic goal orientation, task value, control beliefs, self-efficacy and metacognitive self-regulation"; nevertheless, male students had higher mean scores in "extrinsic goal orientation and test anxiety" (p.67). The aforementioned were the significant predictors of college students' performance.

Credé and Phillips (2011) meta-analyzed many studies for several reasons: 1) to reveal the validity of MSLQ subscales for academic performance, 2) to find evidence for the relationship between the scores of MSLQ subscales and college GPA, 3) to examine the psychometric properties of the items that might affect the utility and contribution to learning in MSLQ. Credé and Phillips claim that their study clarifies MSLQ is a reliable measure of strategies having relationship with college academic performance. Moderate to strong relationships are indicated between class grades and self-efficacy, effort regulation and time and study environment management strategies; nevertheless, other relationships between grades and MSLQ strategies are weaker. Students who have self-monitoring and effort-regulation skills, who have intrinsic interest and value, high levels of efficacy and who use suitable learning strategies have higher GPA than others. Low relationships have been found between academic performance and many of the specific learning strategies such as rehearsal, elaboration, organization, critical thinking, peer learning and help seeking.

In his article, Schofield (2012) clarifies how teachers can encourage their students to improve their metacognitive skills. Classroom observations and teacher and student interviews consist of the qualitative data of the study. He found out that explicit teaching facilitates students' acquiring metacognitive skills. In the study, classroom observations did not show much evidence of teachers' strategies on advancing the students' higher-order thinking skills; even though the teachers stated that they used strategies to enhance students' metacognitive skills in their instruction. Students' interviews demonstrated that students had knowledge about metacognition; nonetheless, it was not quite obvious to what extend they understood, when and why they used the metacognitive strategies at year 9 level. As mentioned in the study, the results are based on qualitative data which might affect the validity of the study.

Another study by Velayutham, Alridge and Fraser (2012) examined the impact of students' goal orientation toward learning, task value and self-efficacy in science learning on students' use of learning strategies in classroom setting. This study revealed that all three motivational components were predictors of self-regulation. Moreover, task value on self-regulation was significant in favor of boys. There were 719 boys and 641 girls from 8 to 10 grade levels in 5 public schools in Australia who completed "Students' Adaptive Learning Engagement in Science (SALES)" instrument, which was designed for assessing students' motivation and self-regulation in science (Velayutham et al., 2012, p.1352).

Conclusion

When the literature is reviewed, it can be noted that there a number of studies the aim of which has been to investigate students' motivational beliefs and learning strategies. Gender differences regarding the use of strategies have been concern in these studies. The table below shows the studies where MSLQ was used and

motivational beliefs and learning strategies with regard to gender differences in favor of girls.

Table 1
Gender differences in motivational beliefs and learning strategies in favor of girls

	Zimmerman & Martinez-Pons (1990)	Higgins (2000)	Bidjerano (2005)	Alcı & Altun (2007)	Yükseltürk & Bulut (2009)	Al Khatib (2010)	Keklik & Keklik (2012)
Goal setting	✓						
Planning	✓						
Record keeping	✓						
Monitoring	✓						
Environmental structuring	✓						
Metacognitive strategy		✓	✓	✓			✓
Test anxiety		✓			✓	✓	
Rehearsal			✓				
Organization			✓				✓
Time management			✓				
Elaboration			✓				✓
Effort			✓				✓
Self-regulation				✓		✓	✓
Self-efficacy						✓	
Help-seeking							✓
Time and study environment							✓

The studies in Table 1 show the differences in motivational beliefs and learning strategies in favor of girls in previous studies. Although some studies revealed no significant difference between boys and girls, there are other studies that found high mean scores in favor of boys (e.g. Hong et al., 2009; Al Khatib, 2010; Velayutham et al., 2012). Given that so many studies examined gender differences related to metacognition and other learning experiences, this review further emphasizes the importance of researching if and how girls and boys enrolled within the SDP differ in their learning strategies and motivational beliefs.

CHAPTER 3: METHOD

Introduction

This study examines the motivational beliefs and learning strategies of students who are enrolled in the Scholar Development Program (SDP) that is designed for academically talented students. This chapter describes the research design used to answer the research questions, context of the study, participants, instruments, and method of data collection and analysis.

Research design

This study was conducted where quantitative data was collected and supplemented with qualitative data. The qualitative data further informs findings of the quantitative data.

Table 2
Research questions and data collection methods

Sub-questions	QUAN	QUAL
1. What are students' motivational beliefs in SDP?	Student Surveys	
2. What are students' learning strategies used in SDP?	Student Surveys	
3. Do students' motivational beliefs and their use of learning strategies improve as they advance through the SDP?	Student Surveys	
4. Do students of different genders in SDP differ significantly in their motivational beliefs and their use of learning strategies?	Student Surveys	
5. Do teachers perceive that there is a significant difference between female and male students regarding motivational beliefs and learning strategies?		Teacher Interviews
6. Do teachers report that they need to support the motivational beliefs and learning strategies of students of boys and girls differently within the classroom setting of SDP?		Teacher Interviews
7. What strategies do teachers use to support students' motivational beliefs and learning strategies in SDP?		Teacher Interviews

Researchers should find the best research design to answer the research questions identified. Choosing a single design that suits best to the research problem makes a study more manageable and easier to conduct and describe (Creswell & Clark, 2007). However, researchers can see the whole picture of a study and the relationship between the variables in depth by using multiple methods research design rather than focusing on a single approach. Multimethod research design used in this study is defined as the conduct qualitative and quantitative research methods that are rigorously complete on their own in one study and then the results are triangulated to form a comprehensive whole (Morse, 2003).

For this study, multimethod research design was carried out in order to answer the research questions in this study. Each research method was designed to answer different sub-questions. In the first phase, quantitative data analysis of the MSLQ was conducted to explore students' motivational beliefs and learning strategies in SDP and to see if there is a difference between students regarding grade level and gender. The second phase consisted of semi-structured interviews with a different sample of individuals, developed to gather more detail with respect to gender differences and elaborate on the findings of the quantitative data. Figure 1 below shows the sequence of the research design.

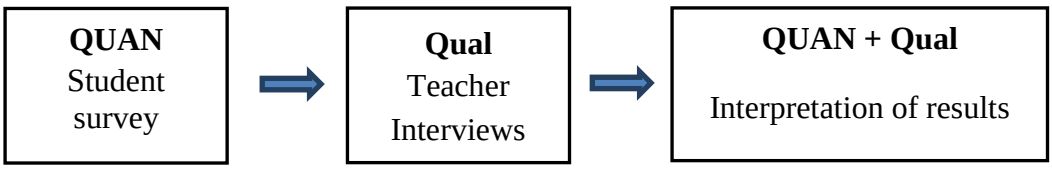

Figure1. Multimethod research design

The quantitative data from the survey was collected and analyzed first. After analyzing the quantitative data from the survey, the qualitative data from interviews were collected and used to elaborate on the results obtained in the first phase. By

combining the two phases, a more complete understanding of the research problem was provided.

Context

This study was conducted in a private school in Ankara. The school was established in 1930. At this school, a variety of curricula are implemented such as The Cambridge International General Certificate of Secondary Education (IGCSE), International Baccalaureate (IB) and Scholar Development Program (SDP) along with the national curriculum. For this study, the Scholar Development Program was examined to gain insights into students' motivational beliefs and learning strategies.

Participants

Participants in the quantitative phase consisted of 149 students who were enrolled in the SDP. In the qualitative phase, six teachers (4 *Female*; 2 *Male*) from different disciplines who teach in the program were interviewed.

Participants in the quantitative phase

There are two schools that implement SDP in Turkey. For this study, students from the 9-11th grade in the target school were purposefully sampled to complete the questionnaire. The small number of schools that implement SDP and the restricted number of students in the program limited the number of students who participated. There were 203 questionnaires delivered to the target school; however, 30 students from 12th grade were not available on the designated date since the questionnaires were given to the students in mid-May near the end of the semester. Therefore, the researcher could not reach students from 12th grade. Of the questionnaires, 157 were returned, however eight were not included in the analysis since they were

incomplete. The final number of participants resulted in 149 students. Information about the participants is presented in the table below:

Table 3
Demographic information about the participants in the quantitative phase

Main categories	**Sub-categories**	***f***	**P**	**N**
Gender	Female	56	37.6	149
	Male	93	62.4	
Grade Level	9^{th} grade	59	39.6	149
	10^{th} grade	55	36.9	
	11^{th} grade	35	23.5	
Age	14	14	9.4	149
	15	51	34.2	
	16	57	38.3	
	17	27	18.1	

As seen in Table 3, 149 students who were enrolled in the SDP participated in the study. There were 56 females and 93 males (37.6 % female; 62.4 % male). Of the participants, 59 were 9^{th} graders (39.6 %), 55 were in the 10^{th} grade (36.9 %) and 35 were 11^{th} grade (23.5 %) students. Most of the participants (34.2 % and 38.3 %) were 15 and16 years old (f = 51 and f = 57).

Participants in the qualitative phase

Through a convenience sampling selection technique, six teachers from different disciplines participated in a semi-structured interview. A set of questions was asked to the teachers face-to-face to further examine the data gathered from the quantitative phase, which revealed students' motivational beliefs and their learning strategies. A particular focus of the interview was to shed light on statistically significant differences found, especially differences with respect to gender. Therefore, the quantitative results informed and influenced the interview questions.

Table 4
Demographic information about the participants in the qualitative phase

Gender	Age	Discipline	Years of teaching experience
Female	55	Philosophy	34
	44	Biology/Project	12
	42	Turkish Literature	21
	39	Mathematics	16
Male	40	Physics	16
	35	Mathematics	6

Table 4 shows that the SDP teachers interviewed came from different subject areas – two social sciences and four from the natural sciences. There were four female and two male participants, the age range was between 35 and 55 (M= 42.50; SD=6.83). They have from 6 to 34 years teaching experience. In addition to their SDP teaching responsibilities, they also teach classes within the Turkish national program and the International Baccalaureate (IB). Therefore, they had an opportunity to share their thoughts on students within these different teaching contexts and how they teach SDP students compared to other programs.

Instrumentation

The Turkish version of Motivated Strategies for Learning Questionnaire (MSLQ-TR) (Karadeniz et al., 2008) (see Appendix I & II) was used for the quantitative phase of the study. The researcher who developed the original instrument has passed away; however, written permission from two authors that adapted the questionnaire was secured. A consent form was signed by the students and parental permission was obtained with a permission form to gather quantitative data. A semi-structured interview form (see Appendix III) with a consent form was used for the qualitative portion of the study.

The Turkish motivated strategies for learning questionnaire (MSLQ-TR)

MSLQ was developed for the purpose of assessing college students' motivational beliefs and learning strategies in order to facilitate their learning in a specific course or subject area (Pintrich et al., 1991). The questionnaire has the required reliability and validity to be adapted and used for different purposes by researchers, teachers and students (Duncan & McKeachie, 2005). It has two scales; motivational beliefs and learning strategies. The questionnaire has 81 items in total. The motivational beliefs scale consists of 31 items and there are 50 items in learning strategies scale.

MSLQ was adapted to be used in Turkish educational settings by Karadeniz et al. (2008) and MSLQ-TR was used as an instrument in the quantitative phase of the study to assess SDP students' motivational beliefs and learning strategies. As shown in the literature review, the instrument has been used to examine differences in strategies for learning among boys and girls. Therefore, it was deemed especially appropriate to use the instrument to address the research questions for this study. The adapted scale MSLQ-TR has two sections that include motivation and learning strategies as in the original questionnaire.

Table 5
Details about the original scale MSLQ

Main Scale	Factors	Components	N of items	Sample item
Motivational beliefs	Value	- Intrinsic Goal Orientation - Extrinsic Goal Orientation - Task Value	14	I like the subject matter of this course.
	Expectancy	- Control Beliefs - Self-Efficacy for Learning and Performance	12	I am certain I can master the skills being taught in this class.
	Affective	- Test Anxiety	5	When I take tests I think of the consequences of failing.
Learning Strategies	Cognitive and Metacognitive Strategies	- Rehearsal - Elaboration - Organization - Critical Thinking - Metacognitive Self-Regulation	31	I try to change the way I study in order to fit the course requirements and instructor's teaching style.
	Resource Management Strategies	- Time and Study Environment - Effort Regulation - Peer Learning - Help Seeking	19	I make sure I keep up with the weekly readings and assignments for this course.

Table 5 shows that the original questionnaire includes items related to both motivational beliefs and learning strategies. Some of the items were removed from the original questionnaire depending on the confirmatory factor analysis during the adaptation of the questionnaire into Turkish. The items were removed from the scale since they had too low factor loadings and there were other items that had similar meaning to these items. When the items were removed, GFI (Goodness-of-Fit Index) results were close to those of the original questionnaire. As a result, the adapted version contains 25 motivational beliefs items and 45 learning strategies items.

Based on social-cognitive model of motivation, the motivational scale consists of three factors: "expectancy, value and affect" (Duncan & McKeachie, 2005, p.119). The learning strategies scale includes cognitive and metacognitive strategies as well as resource management. Cognitive strategies subscales can be referred to processing information from basic to complex strategies. In other words, they include

"rehearsal, elaboration, organization and critical thinking" (Pintrich et al., 1991, pp.19-22).

In this study, MSLQ-TR was used to assess the students' goals and beliefs in learning as well as metacognitive strategies in a program called SDP. It was aimed to evaluate students' overall strategies for the courses in the program instead of specific courses. The use of the questionnaire in SDP restricts the researcher to generalize the findings for all courses in the program since the students' motivational beliefs and learning strategies may vary for each subject area. The questionnaire, on the other hand, enabled the researcher to have general perspective about students' motivational beliefs and learning strategies within the program.

Semi-structured interview form

For the qualitative part of the study, the researcher prepared an interview form that consisted of two parts. In the first part, the demographic information of the participants was asked and in the second part the participants answered three open-ended questions about metacognition. The questions in the second part intended to figure out the teachers' approaches to support students' motivational beliefs and learning strategies and to ascertain if different approaches were used in relation to gender.

The validity of the questions in the interview form was assessed by an expert review from a university. Face validity of the instrument was assessed by asking two colleagues of the researcher to review the questions and the consent forms to learn how they interpreted the questions in the interview. The questions were revised as needed based on these reviews.

Method of data collection

Quantitative and qualitative data were collected according to multimethod design.. First, quantitative data was used through a questionnaire and then the face-to-face semi-structured interview was conducted for the collection of the qualitative data.

Students enrolled in the SDP were given the MSLQ-TR in order to find out their motivational beliefs and learning strategies. Before collecting the quantitative data, initial permission from Ministry of National Education (MoNE) was secured to conduct the study. Having received permission, the researcher arranged a time with the Principal of the school to deliver the questionnaires. The Vice Principal of the school administered the instruments at the end of May, 2014 and it took students 20 to 30 minutes to complete the questionnaires. Of the173 administered, 157 were returned; however, eight questionnaires were omitted during data analysis since they were incomplete. After the removal, the total number of valid questionnaires was 149. The timeline below shows the process of data collection. The timeline below in Figure 2 shows the process of data collection.

Figure 2. Timeline for data collection

After the quantitative data was collected, the data analysis was performed and the results used to inform the development of the qualitative phase. In order to conduct the interviews, initial permission was obtained from the General Director of the School and the researcher arranged a date with the Principal of the target school when all the teachers were at school. The Principal selected teachers who were available to be interviewed. There were two teachers who were interviewed

individually; because of time constraints, the remaining four were interviewed in pairs. Although teachers felt safer when they were in pairs, they were influenced by each other's responses. They concurred with what their colleague said most of the time. The teachers were busy with teaching and other duties at school; therefore, the interview was kept short, to approximately 15 minutes. Before starting the interview, the researcher gave brief information about the purpose of the research and other procedures stated in the consent form. The interview was conducted in Turkish, the native language of the participants. During the interview, the researcher reformulated questions and clarified some points when the respondents were not clear about the questions. The researcher audio-recorded five teachers' responses and took notes from the interview with the teacher who preferred not being audio-recorded.

The first questions were asked to figure out teachers' opinions about whether there was a difference between girls and boys in terms of their motivational beliefs and learning strategies in SDP. The researcher did not give information about the results of the quantitative data during the interview protocol so as not to influence their responses. After asking the preliminary questions, the researcher shared the quantitative results with the respondents. All of the respondents, except R1 were astonished at the results since they did not expect a significant difference between boys and girls. However, they acknowledged the difference when the researcher asked follow-up questions. For instance, when the researcher asked about students' learning strategies such as rehearsal and organization, the teachers claimed that girls surpassed boys in these strategies.

Method of data analysis

For the quantitative phase, the data analysis was carried out through descriptive statistics and inferential statistics. All items were rated using the 7-point Likert scale

ranging from 1 (not at all true of me) to 7 (very true of me). There were eight negatively worded items that were reversed during the statistical analysis. The Statistical Package for Social Sciences (SPSS) 20.00 was used throughout the statistical analysis of the quantitative data.

Descriptive statistics analysis was carried out to measure the frequency, mean, percentages and standard deviations to describe dependent and independent variables in the study. Inferential statistics such as one-way analysis of variance (ANOVA) and independent samples t-test analysis were conducted to compare the means of groups in the study and draw conclusions for the research questions.

For the qualitative data analysis, the interviews were transcribed into a Word document format. The content was categorized in order to connect similar content to each other (Lincoln & Guba, 1985). During the content analysis, two academicians worked together to minimize the researcher bias. After the analysis, the findings were reported in English.

Reliability and validity

Reliability of the scores from each subscale in the study was measured to check the internal consistency coefficient of items. After the removal of some items, Cronbach's *alpha (α)* was found .82 for value, .85 for expectancy and .67 for affective components in the motivation scale. The reliability of the scores was higher than the original form of MSLQ-TR in which *alpha* was .79 for both value and expectancy while it was .58 for affective components in the motivation subscale. Cronbach's *alpha* coefficients for cognitive, metacognitive and resource management components in the learning strategies scales ranged from .75 to .88 in original MSLQ-TR and Cronbach *alpha* for the same components were higher in this

study and it was found .92, .87 and .76 respectively. The peer-learning subscale (items 28, 38, 43) and 2 items (control beliefs for learning scale item 8 and help seeking scale item 49) with lower reliability values found to be <.60, were removed from the questionnaire in order to increase the reliability of the subscales. Since the peer learning subscale was removed from the questionnaire, it was not taken into consideration during the analysis and no data was obtained regarding students' learning from each other as learning strategy. The final version of the questionnaire had 65 items in total after the elimination of the items; that is to say, the motivational beliefs scale included 24 items and learning strategies scale had 41 items.

Table 6
Sample items used in the study from the MSLQ-TR

Main Scale	Components	Subscales	N of items	Sample item
Motivational beliefs	Value	- Intrinsic Goal Orientation - Extrinsic Goal Orientation - Task Value	12	In this program, I prefer class work that is challenging so I can learn new things.
	Expectancy	- Students' Perceptions of Self-efficacy - Control Beliefs for Learning	7	If I study in appropriate ways, then I will be able to learn the material in the courses of this program.
	Affective	- Test Anxiety	5	When I take a test I think about how poorly I am doing compared with other students.
Learning Strategies	Cognitive	- Rehearsal - Organization - Elaboration - Critical Thinking	19	I often find myself questioning things I hear or read in the courses to decide if I find them convincing.
	Metacognitive	- Metacognitive Self-Regulation	11	When reading for the courses, I make up questions to help focus my reading.
	Resource Management Strategies	- Time and Study Environment Management - Effort Management - Help Seeking	11	I try to identify students in the classes whom I can ask for help if necessary.

Table 6 shows sample items from each component of MSLQ-TR. Of the 24 items in the motivational scale, 12 items measured value component: items 1, 13, 17, 19 for intrinsic goal orientation; items 6, 10, 14 for extrinsic goal orientation and items 4, 9, 18, 20, 21 for task value beliefs. Expectancy component included 7 items: items 5,

12, 16, 23, 25 for students' perceptions of self-efficacy and items 2, 14 for control beliefs for learning. Lastly, the affective component was measured by reversing items 3, 7, 11, 15, 22 which measured test anxiety.

Of the 41 items in the learning strategies questionnaire, 19 items measured cognitive component: items 33, 39, 50, 63 for rehearsal; items 26, 35, 42, 54 for organization; items 45, 53, 55, 58, 60, 70 for elaboration and items 32, 40, 44, 57, 62 for critical thinking. Items 27, 30, 34, 37, 46, 47, 48, 52, 67, 68, and 69 measured metacognitive self-regulation. Resource management component consisted of 11 items: items 29, 36, 56, 61, 64 for time and study environment management; items 31, 41, 51, 65 for effort management and items 59, 66 for help-seeking. Item 27 (During class time, I often miss important points because I am thinking of other things) in the metacognitive self-regulation and items 31, 51 in effort management subscales were reversed so that low responses of students such as 1, 2, and 3 were actually rated as 7, 6, and 5 respectively for data analysis

Cronbach's *alpha* values for the final version of the subscales are presented in Table 7. The Cronbach's *alpha* for the subscales ranged from .64 to .87 ($\alpha > .60$). The Cronbach's *alpha* for the whole instrument was $\alpha = .95$, which means the instrument has high reliability.

Karadeniz et al. (2008) indicated that MSLQ-TR had acceptable construct validity since factor loading for motivation scale ranged between .30 and 73, while it was between .18 and .65 in learning strategies scale.

Table 7
Reliability analysis of the MSLQ-TR

	MSLQ-TR	Item N	Total	*α*
MOTIVATION SCALES	**Value**		**12**	**.82**
	Intrinsic Goal Orientation	1, 13, 17, 19	4	.70
	Extrinsic Goal Orientation	6, 10, 14	3	.74
	Task Value Beliefs	4, 9, 18, 20, 21	5	.83
	Expectancy		**7**	**.85**
	Students' Perceptions of Self-efficacy	5, 12, 16, 23, 25	5	.83
	Control Beliefs for Learning	2, 14	2	.71
	Affective		**5**	**.67**
	Test Anxiety	3, 7, 11, 15, 22	5	.67
LEARNING STRATEGIES SCALES	**Cognitive**		**19**	**.92**
	Rehearsal	33, 39, 50, 63	4	.76
	Organization	26, 35, 42, 54	4	.85
	Elaboration	45, 53, 55, 58, 60, 70	6	.84
	Critical Thinking	32, 40, 44, 57, 62	5	.86
	Metacognitive		**11**	**.87**
	Metacognitive Self-regulation	27, 30, 34, 37, 46, 47, 48, 52, 67, 68, 69	11	.87
	Resource Management		**11**	**.76**
	Time and Study Environment Management	29, 36, 56, 61, 64	5	.68
	Effort Management	31, 41, 51, 65	4	.64
	Help-seeking	59, 66	2	.74
	Total Scale		**65**	**.95**

Conclusion

In this chapter, the research methodology was shared including the design, the research context, participants, instrumentation, data collection and data analysis. In particular, an instrument was identified that could be used to examine differences in learning strategies used by boys and girls and within different grade levels. Statistical analysis revealed the survey was valid and reliable and the interview questions were reviewed to ensure validity. The results of the data analysis will be examined in the following chapter.

CHAPTER 4: RESULTS

Introduction

This chapter presents the findings from the data analysis of both the quantitative and qualitative phases of the study. The quantitative phase results are presented using descriptive statistics, correlation analysis of the scales, one-way ANOVA and the Independent samples t-test. For the qualitative phase, the content analysis of the face-to-face semi-structured interviews with teachers is described. Both phases provide preliminary insights to address the research questions of this study that are discussed further in the final chapter.

The quantitative phase

The quantitative phase of the study includes the analysis of the data gathered from students' surveys responses. Table 8 shows the research questions that were answered by using quantitative data analysis.

Table 8
Quantitative research questions

Quantitative research questions
1. What are students' motivational beliefs in SDP?
2. What are students' learning strategies used in SDP?
3. Do students of different genders in SDP differ significantly in their motivational beliefs and their use of learning strategies?
4. Do students' motivational beliefs and their use of learning strategies improve as they advance through the SDP?

To identify students' motivational beliefs and learning strategies in SDP, descriptive statistics were conducted. Correlational analysis was used to find out the correlation between each subscale for the first two questions. A one-way ANOVA was run to

see whether there was a significant difference between grade levels and gender. Then, gender differences in terms motivational beliefs and learning strategies were revealed using independent samples t-test.

Descriptive statistics

To identify the motivational beliefs and learning strategies of students enrolled in the SDP, the MSLQ-TR was administered to 157 high school students (grades 9 to 11) enrolled in SDP. Of the 157 returned questionnaires, 149 questionnaires were analyzed since 8 incomplete questionnaires were incomplete and not included in the analysis. The scores of SDP learners were measured for each subscale through descriptive statistics. The first two research questions in the study were "What are students' motivational beliefs and their use of learning strategies in SDP?" The mean scores and standard deviations of the subscales were measured to answer the research question and presented in Table 9 below.

The mean score for each subscale is ranged from 4.16 (*SD* = 1.38) to 5.66 (*SD* = 1.26). The SDP students' results are over 4.00 for each subscale indicating that students have high mean scores on each subscale, with task value beliefs, control beliefs for learning and help-seeking having the highest mean scores. The results show that students have high positive motivational beliefs since their mean scores are high for intrinsic goal orientation, extrinsic goal orientation, task value beliefs, control beliefs for learning and perceptions of self-efficacy. Students' responses were also high for test anxiety, however, these items were negatively worded in the survey (e.g., item 3: "When I take a test I think about how poorly I am doing compared with other students.") and were therefore the results reversed for the analysis. For example, in item three "7 (very true of me)" means more worrying and indicates that students might perceive they have high test anxiety. After the reversal of means, the

analysis revealed students experience high anxiety for exams. Regarding the learning strategies, the results show high mean scores on rehearsal, elaboration, organization, critical thinking, metacognitive self-regulation, time and study environment management, effort management and help-seeking.

Table 9
Descriptive statistics of the motivated strategies for learning for SDP learners

MSLQ-TR	**Mean**	***SD***
Motivation Scales		
Intrinsic Goal Orientation	4.69	1.34
Extrinsic Goal Orientation	4.29	1.51
Task Value Beliefs	5.11	1.27
Control Beliefs for Learning	5.66	1.26
Students' Perceptions of Self-efficacy	4.80	1.30
Test Anxiety	4.18	1.30
Learning Strategies Scales		
Rehearsal	4.19	1.54
Elaboration	4.75	1.41
Organization	4.31	1.75
Critical Thinking	4.70	1.49
Metacognitive Self-regulation	4.51	1.24
Time and Study Environment Management	4.87	1.22
Effort Management	4.16	1.38
Help-seeking	5.36	1.65

Correlation analysis of the scales

Pearson correlation analysis was conducted in order to reveal the correlation between the total scores of scales (Motivational Beliefs and Learning Strategies) and the subscales.

Table 10
Pearson correlation coefficients of motivation subscales

Subscales	1	2	3	4	5	6
1. Intrinsic Goal Orientation	-	.20	.76**	.66**	.01	.49**
2. Extrinsic Goal Orientation		-	.18*	.16*	-.39**	.00
3. Task Value Beliefs			-	.64**	-.01	.41**
4. Students' Perceptions of Self-efficacy				-	.21*	.57**
5. Test Anxiety					-	.13
6. Control Beliefs for Learning						-
TOTAL	.80**	.22**	.82**	.89**	.32**	.62**

**. Correlation is significant at the 0.01 level (2-tailed).
*. Correlation is significant at the 0.05 level (2-tailed).

As seen in Table 10, the correlation between the motivation scale and subscales range from .22 to .89 and the significant correlation among the subscales is from -.39 to .76. Intrinsic goal orientation, task value beliefs, students' perceptions of self-efficacy and control beliefs for learning are positively correlated with each other ($p<.01$). A significant positive correlation can also be seen among extrinsic goal orientation, task value beliefs and students' perceptions of self-efficacy as well as between test anxiety and students' perceptions of self-efficacy ($p<.05$). The students' scores from these subscales correlate positively. For instance, if students' scores on one intrinsic goal orientations are high, they are high in task value beliefs, their perceptions of self-efficacy and control beliefs for learning as well. In other words, if students want to learn the subject matter because they are interested or curious, they might give more value to the tasks and practices in classroom settings; they believe that they can succeed and learn the subject matter as long as they study. Notably, there is a significant negative correlation between extrinsic goal orientation and test anxiety ($r = -.39$), which implies that the higher the students are motivated extrinsically, the less anxiety they have in the tests. When students feel less anxious, they perform better in the exams.

Table 11
Pearson correlation coefficients of learning strategies subscales

Subscales	1	2	3	4	5	6	7	8
1. Rehearsal	-	.72**	.56**	.35**	.19**	.73**	.57**	.60**
2. Organization		-	.59**	.36**	.11	.69**	.51**	.53**
3. Elaboration			-	.76**	.09	.79**	.53**	.53**
4. Critical Thinking				-	-.04	.65**	.38**	.42**
5. Help Seeking					-	.16	.01	.10
6. Metacognitive Self-Regulation						-	.69**	.95**
7. Effort Management							-	.69**
8. Time and Study Environment Management								-
TOTAL	.79**	.77**	.86**	.71**	.19*	.95**	.74**	.77**

**. Correlation is significant at the 0.01 level (2-tailed).
*. Correlation is significant at the 0.05 level (2-tailed).

The Pearson correlation matrix shows a significant positive correlation between learning strategies and its subscales where correlations ranged from .19 to .95 (see Table 11). All variables are positively correlated with each other, and with the exception of help-seeking the correlations are strong. These results indicate that if a student's score on rehearsal is high, scores on the other subscales (e.g., organization, elaboration, critical thinking, help-seeking, metacognitive self-regulation, effort management, time and study environment management) will likely be high for this student, too. It can be inferred that that students use multiple learning strategies in concert and the application of one strategy complements another. Although still positive, help-seeking has the weakest relationship with the other subscales. This could mean that as students develop other learning strategies, they are more inclined to work independently and less inclined to seek help from peers or teachers.

One-way ANOVA

A one-way ANOVA was carried out to learn whether there was any significant difference in students' motivational beliefs and learning strategies in relation to grade level. Overall, the ANOVA revealed a significant difference among the

subscales for extrinsic goal orientation, test anxiety and effort management (see Table 12).

Table 12
ANOVA according to grade level

Scales		**Sum of Squares**	***df***	**Mean Square**	***F***	**Sig.**
Extrinsic Goal Orientation	Between Groups	15.52	2	7.76	3.54	.03
	Within Groups	320.40	146	2.20		
Test Anxiety	Between Groups	15.24	2	7.62	4.70	.01
	Within Groups	236.60	146	1.62		
Effort Management	Between Groups	12.67	2	6.34	3.44	.04
	Within Groups	269.12	146	1.84		

*p<.05

Significant differences were found for extrinsic goal orientation F (2,146) = 3.54; p = .03 <.05, for test anxiety F (2,146) = 4.70; p = .01<.05 and for effort management F (2,146) = 3.44; p =.04 <.05 (see Table 11). The findings demonstrate that students from different grade levels differ from each other in terms of extrinsic goal orientation, test anxiety and effort management. For example, students in one grade level may be motivated extrinsically by grades, praise or rewards, while students at other levels might have intrinsic motivation due to their interest or curiosity on a specific topic. Since the difference was significant for extrinsic goal orientation, test anxiety and effort management, the Bonferroni multiple comparison analysis was run to compare the grade levels; the results are shown in Table 13.

Table 13
Multiple comparisons of grade levels

Scales	**Grade**	***M***	**SD**	**Sig.**
Extrinsic Goal Orientation	9^{th} grade	3.95	1.56	.027
	10^{th} grade	4.68	1.39	
Test Anxiety	9^{th} grade	4.39	1.14	.030
	10^{th} grade	3.77	1.37	
	11^{th} grade	4.49	1.33	
Effort Management	9^{th} grade	3.81	1.42	.037
	10^{th} grade	4.45	1.27	

*p<.05

The multiple comparison analysis revealed that 10th grade students' extrinsic goal orientation were significantly higher than 9th grade students. Although two different populations are compared, it may be interpreted that students in the 10th grade rated themselves more extrinsically motivated than 9th grade students. Additionally, 10th grade students' mean scores on test anxiety were significantly lower than 9th and 11th grade students. One possible interpretation is that 9th grade students might feel more anxious because they are new to the program. A reason why students in the 11th grade have high test anxiety may be because they are close to the university entrance exam. The 10th grade might be a buffer year, where students are more familiar with the program and not yet feeling any pressure about external exams. Another finding for the10th grade students' mean scores is for effort management which was significantly higher than 9th grade students (see Table 13). It can be inferred that 10th grade students believe more in their efforts to manage their learning than 9th grade students because 10th grade students have more experience within the SDP conducting research and projects and appreciate the time and effort they must allocate to their school work.

Independent samples T-test

An independent samples t-test analysis was conducted to find out whether there were any differences between female and male SDP students' motivational beliefs and strategies for learning. One-way ANOVA was also run to check if there were any differences with regard to gender and the results were found the same. Significant values were found in some subscales of the learning strategies scale and presented in the table below:

Table 14
Independent samples t-test analysis of the relationship between gender and motivational beliefs and learning strategies

Scales	Gender	N	Mean	SD	*t*	p
Extrinsic Goal Orientation	Female	56	4.73	1.51	2.86	.005*
	Male	93	4.02			
Task Value Beliefs	Female	56	5.38	1.27	2.01	.046*
	Male	93	4.95			
Rehearsal	Female	56	4.99	1.54	5.39	.000*
	Male	93	3.71			
Elaboration	Female	56	5.16	1.41	2.83	.005*
	Male	93	4.50			
Organization	Female	56	5.33	1.75	6.20	.000*
	Male	93	3.69			
Metacognitive Self-regulation	Female	56	4.95	1.24	3.53	.001*
	Male	93	4.24			
Time and Study Environment Management	Female	56	5.27	1.22	3.17	.002*
	Male	93	4.63			
Effort Management	Female	56	4.62	1.38	3.25	.001*
	Male	93	3.88			

*p<.05

The table demonstrates that extrinsic goal orientation and task value beliefs subscales from motivation scale were found to be significant in favor of female students (p <.05). The findings may be interpreted that girls' mean scores on extrinsic goal orientation and task value beliefs were higher than boys. Extrinsic goal orientation gives insights into students' perceptions of their motivations for learning such as grades, rewards, praise, competition and evaluation by others. Task value is concerned with students' evaluations of the importance, interest and benefit of a task (Pintrich et al., 1991). According to the findings, girls perceive themselves to be more extrinsically goal oriented and value tasks more than boys. Girls might prone to achieve high grades from exams and to be appreciated by their peers, families and teachers. The results also indicate that girls value the tasks they participate in more than boys.

Further insights into the learning strategies of girls compared to boys was found when the study revealed significant differences in favor of girls for the subscales of

rehearsal, elaboration, organization, metacognitive self-regulation, time and study environment management and effort management. Related to girls' motivation to earn high grades and value task work, it could imply that girls perceive they employ more strategies than boys to achieve these marks. In particular, it is interesting to note that the mean scores for rehearsal and organization were below 4.00 for boys. In their responses, boys shared that practicing, reviewing, and organization are the strongest learning strategies they employ. Perhaps boys feel more self-confident in their knowledge than girls and do not feel the need to practice and prepare. In the literature, there were a number of studies that emphasized gender differences in motivational beliefs and learning strategies and found significant difference in favor of girls (Ablard & Lipschultz, 1998; Bidjerano, 2005; Al Khatib, 2010; Kuzu, Balaman, Canpolat, 2014; Zimmerman & Martinez-Pons, 1990). Therefore, the findings of the current study were consistent with other research findings.

As mentioned before, the quantitative data revealed a significant difference between female and male students with regard to extrinsic goal orientation, task value, rehearsal, elaboration, organization, metacognitive self-regulation, time and study management environment and effort management. Based on the quantitative data analysis, an interview with teachers was conducted to figure out if teachers also thought that there was a difference between female and male students regarding students' motivational beliefs and learning strategies. It was also aimed to find out if the teachers use different strategies for boys and girls to support their motivational beliefs and learning strategies and specify the strategies.

The qualitative phase

The qualitative data was collected to further analyze the quantitative results and elaborate on the findings. The qualitative phase consists of the content analysis of the

data gathered through face-to-face semi-structured interviews with teachers. Interviews were conducted in Turkish and illustrative quotes translated into English to exemplify key findings. The questions in the interview were based on the research questions represented in Table 15. The interview questions intended to elicit teachers' opinions about the potential difference between female and male students. Additionally, it was also aimed to find out if teachers use various strategies to support students' motivational beliefs and learning strategies with respect to gender differences and grade levels. The interview questions can be found in Appendix III.

Table 15
Qualitative research questions

Qualitative research questions
5. Do teachers perceive that there is a significant difference between female and male students regarding motivational beliefs and learning strategies?
6. Do teachers report that they need to support the motivational beliefs and learning strategies of students of boys and girls differently within the classroom setting of SDP?
7. What strategies do teachers use to support students' motivational beliefs and learning strategies in SDP?

Findings were organized along two subheadings: a) motivational beliefs and b) learning strategies. During the presentation of the analysis of the qualitative data six respondents were named R1, R2, R3, etc. according to the order in which they were interviewed.

The respondents were not only teaching in SDP, but also they had classes in IB and within the national program. They reported that students in SDP surpass students in other programs academically; however, they were not aware of differences in motivational beliefs and learning strategies between female and male students within the SDP. In general, all respondents except R1 indicated that there was no difference

between boys and girls in terms of motivational beliefs and learning strategies; however, they stated that individual learners differed from each other regardless of gender. The respondents believed that the students in SDP showed a homogenous distribution; that is to say, they were all academically talented students and had high academic performance.

a) Motivational beliefs

To elaborate on the findings from quantitative data, teachers were asked if they observed any differences between boys and girls regarding their motivational beliefs. It was also important to determine teachers' beliefs about the strategies they use to support students' motivational beliefs and if they used different strategies for different groups of students in terms of grade level and gender.

The quantitative data revealed high mean scores on test anxiety but not any differences between boys and girls. In the qualitative data, on the other hand, teachers indicated that test anxiety was more frequently observed in girls compared to boys. The respondents reported that girls had more test anxiety than boys even if both groups consisted of academically talented students. For instance, R1 said,

> Girls are more motivated than boys since we opened this program. This year, the program will give the fifth graduates. Girls are always more motivated and diligent both in exam preparation and for the work that they have to do as the requirements of the program. I see girls more eager to study; therefore, their sense of responsibility is higher. The process for the test preparation… We have project preparation requirements and Olympiads studies in this program; girls are more willing in all of them but their level of anxiety is higher in this sense. Boys seem to be more relaxed. Of course, there are boys

> who have high test anxiety; however, to generalize, girls have more test anxiety and more sense of responsibility.

R5 noted that "test anxiety is a bit higher in girls but grade anxiety is similar in both. Girls might reflect more. This is my observation." Similarly, R6 said,

> In my group, even, I thought the boys did not have any test anxiety, I have two groups (classes A and B); in both groups the boys do not have any test anxiety; but the girls have high. Test anxiety is noticeable in girls in both A and B.

There were five respondents who reported that the students' motivation level changes as they advance through the program. They believe that the students become more motivated when the course content is related to the exam; in other words, students want to capitalize on the subject matter. Students in 9-10th grade are more motivated to learn; they read, go to the library and do some research whereas 11-12th grade students are more exam-oriented. The students in upper grades need to have a high cumulative GPA and a high score from the university entrance exam to gain admission to a university in Turkey. The teachers noted that all students have more test anxiety and they are more motivated by exam results. For instance, R3 said,

> The process is important here. When the students advance through the program – from 9th to 12th grade, the situation is changing… While in 9th and 10th grade, students are eager to do the tasks when teachers tell them; the strategy is, of course, changing due to exam grade and test anxiety in 11th and 12th grades. They become more motivated with a higher grade in upper levels.

When the respondents compared students in different grade levels, they reported that they could encourage students by relating the subject matter to real-life and

addressing the students' interests in 9th and 10th grade. They acknowledged, however, that they motivated students in 11th and 12th grades by emphasizing exam questions. R4 indicated, "They are more motivated and active when they are interested in subject matter. In 11th and 12th grade, test anxiety is increasing." R5 also claimed,

> Age group is important as well. In 9th and 10th grades students were more motivated with explaining something in relation to real life. But now – in 11th and 12th grade, since they are more exam-oriented, they become more motivated when you say this can be asked in university entrance exam. Because they aim at university admission, their motivation is towards it, too.

The teachers talked about some specific strategies that they used for SDP students that differ than those they use in other programs. Since the students in the SDP are more challenging and academically-talented, the teachers indicated that they needed to develop various strategies. A list of the strategies teachers provided are shown in Figure 3, which includes the number of times they were mentioned by the participants.

Teaching Strategies	Arousing students' interests (6)
	Relating to students' learning level (2)
	Providing challenging taks(3)
	Giving examples from teachers' or other people's lives (2)
	Related to real-life situations (2)
	Designing experiments and laboratory studies (2)
	Guiding for future career (1)
	Using performance grade (1)
	Directing students for competitions, university competitions (1)
	Encouraging students to attend festivals (1)

Figure 3. Teaching strategies used to motivate students (frequencies in parenthesis)

One of the most frequent strategies used by the teachers is designing the course content according to students' interests and learning level. The course content should be more challenging to address the students' needs in SDP since the students are academically talented and demand more challenging tasks. The teachers indicated that the students should relate what they learn in the classroom to real life situations. Instead of presenting content to activate lower level cognitive process (e.g., memorization and recall), the teachers emphasized they used problems that require using higher level thinking skills such as analysis and synthesis.

For example, R3 said,

> Either the content should attract the students' attention or the difficulty level of a problem should require analysis, synthesis dimension since the students have already internalized lower level concepts. We need to relate the subject matter to real life and present it for the students to understand better.

The teachers further postulated that they have students use extra materials apart from their course books. R4 said,

> We should teach according to students' learning level. Otherwise, they get easily bored and the lessons do not draw their attention. In literature for instance, we read a book and apart from the books read in the classroom, we give referencing to other books since the students already read them as they have their own intellectuality.

They especially encourage girls to consider careers in natural sciences, maths or engineering. R5 mentioned,

> I am a kind of a person that wants the girls to be successful because we have that problem in Turkey. Therefore, I try to motivate them more. Instead of guiding them to specific jobs - boys always choose engineering, girls choose more different jobs - it can be to guide the girls to engineering maybe. I talk about female mathematicians in my lessons frequently.

The students in SDP are required to do experiments and laboratory studies throughout their education. The teachers give examples from TÜBİTAK (the Scientific and Technological Council of Turkey) experiments to increase the students' motivation. Notably, R2 said, "by giving examples from TÜBİTAK experiments, we try to draw the students' attention and increase their motivation." The students in SDP are expected to participate in the activities in different areas – not only in natural sciences, but also social sciences. Highly motivated students are selected and given a chance to participate in competitions at universities. For example, R1 said,

> The students, who have high academic performance in the selection, willing to attend to the competitions are given an opportunity to participate in the extracurricular activities and to see different perspectives both in school and out of school activities… They both learn and are motivated by a high performance grade.

The teachers shared other examples to explain students' extrinsic motivations. They explained that students are actively involved in festivals, competitions and projects. They participate in these events because of their interests and abilities in addition to their motivation to earn high grades.

To conclude, respondents design a rich content in their courses and use various teaching strategies to motivate their SDP students. The quantitative data showed that 9th and 11th grade students had high test anxiety and girls reported higher text anxieties. Since these students are from two different populations, it cannot be assumed students test anxiety levels change as they advance through the program. The difference for test anxiety between different grade levels and genders may be comparable to students in other programs and could be attributed other reasons such as socio-cultural and socio-economic backgrounds. Nonetheless, the teachers did seem to perceive that student test anxiety increased as they advanced through the program and they observed that compared to boys, girls have more test anxiety even if their academic level is almost the same.

b) Learning strategies

Three interview questions were designed to identify teachers' opinions about using different teaching techniques to enhance students' use of learning strategies. The questions also aimed to figure out if teachers use different techniques for different grade levels and genders. Respondents described students' learning strategies first and then they justified their teaching strategies.

All of the respondents emphasized that the SDP students come from similar academic backgrounds and compared to students in other programs, they display different learning strategies. For instance, they use more autonomous learning strategies; they listen to the lessons more carefully, take notes, review the subject matter, relate ideas to other topics, think critically, confer with experts, use different sources, and so forth. In other words, they use cognitive and metacognitive strategies such as elaboration, organization, rehearsal, critical thinking, metacognitive self-regulation, as well as resource management strategies like seeking help. For

example, R3 expressed that the students in SDP might not be satisfied with their teachers' explanations and asked questions to their parents, who were engineers or academicians and had high level of education. R3 added,

> They (students) never forget… They remember the things that you (teachers) told them 3 days or one week ago and ask you if there is a relationship between what you said and what they learned by investigating. They examine how much they are related. It is in their nature.

Additionally, R4 said, "they (the students) have mobile phones in their hands and have access to the internet easily. They are more inquiring and investigating students".

R5 said,

> There are students who want to see the evidence of the origin of the information given and its relation with other subject matter. For example, differentiation and integrals weren't tested in YGS (University Entrance Exam); however, I taught them in my class. Some of the students were listening to me since they were really curious. Even if it may not be asked in the exam, they were interested somehow. There were some students though who were listening without any interest.

The respondents further postulated that the strategies they used did not depend much on grade level or gender. Figure 4 below shows the details about teachers' use of strategies to reinforce students' learning strategies in SDP.

Teaching Strategies	Telling short stories (3)
	Related guidance (4)
	Inviting guest speaker (1)
	Raised awareness (3)
	Using traditional teaching (1)
	Encouraging student centered learning (1)
	Designing extracurricular activities (1)

Figure 4. Strategies used to promote students Learning Strategies (frequencies in parenthesis)

As is seen in Figure 4, the respondents use different strategies such as telling short stories, guiding students, inviting a guest speaker, raising awareness, benefitting from traditional and student-centered teaching, and designing extracurricular activities in order to enhance students' make use of learning strategies in SDP.

The respondents most often pointed out that they advised their students rather than instructing them. They gave students suggestions about how to study and get a higher grade or to handle challenges throughout their academic education. Moreover, they enhanced their lessons by telling short stories either from their own lives or from important people's lives.

R2 said,

> I teach my lesson by giving examples from my own life. Sometimes I tell them stories about my own life or important people's lives. I share prize-winning projects with my students. I explain them possible challenges they might face while preparing a project.

They also shared that they raised awareness among students by giving examples of bad study habits and mistakes they had made. R6 explained that,

> I tell the children (students), in detail, bad study habits in general and the mistakes that I did in my high school years were common mistakes… We use classical strategies such as writing a false statement on the board for students to question and wait who will realize what is wrong.

Inviting a guest speaker to the classroom was another strategy used by one of the respondents. R5 stated, "We need to present different strategies for all of them (students). I invite my graduate students to interact with my current students about what they did, where they are now and what they are doing, how they work."

Teachers in SDP indicated that students benefit from both teacher- and student-centered teaching approaches. Along with the SDP, the national program must also be implemented. Therefore, teachers involve students in out-of-class work and design extracurricular activities since they have limited time to address all SDP needs. Teachers also expect students to participate in laboratory studies, conduct presentations and complete projects either individually or as a group. R1 noted,

> We are a deeply-rooted high school that has traditional education. The teacher is the center of the classroom and then s/he enriches the learning environment with various activities… We are a MoNE regulated school. We use MoNE curriculum. We might have small adaptation by group leader's decision in each discipline; however, our main framework is based on MoNE curriculum… When you look at the laboratory studies, students are actively involved in learning… They improve their presentation skills and have more self-confidence.

Summary

To conclude, the quantitative data displayed students' motivational orientation and their use of learning strategies with respect to grade level and gender. A significant difference was found in extrinsic goal orientation, test anxiety and effort management among different grade levels. The quantitative data further revealed that girls surpassed boys in extrinsic goal orientation, task value beliefs, rehearsal, organization, elaboration, metacognitive self-regulation, effort management and time and study environment management. The qualitative data related to teachers' beliefs about students' learning strategies were used to elaborate on the results of quantitative data. In most cases, the qualitative data further confirmed the quantitative data and teachers supported the findings. However, in other cases, such as differences in learning strategies used by boys and girls, teachers were surprised with the results and did not notice the difference. They did comment on girls being more anxious about testing and boys being more relaxed and confident about their learning successes. They further postulated that girls are more organized than boys; they take notes regularly and rehearse but accept the information taught without questioning. Nonetheless, boys are more inquiring and examine the information from different perspectives since they are more confident than girls. The teachers supported the quantitative data by reporting that students feel more anxious as they get closer to the university entrance exam. The respondents also identified their students' use of learning strategies and explained the techniques they used to support them.

In the next chapter, the findings are discussed, implications for practice and further research are suggested and some limitations of the study are presented.

CHAPTER 5: DISCUSSION

Introduction

This study examined students' motivational beliefs and learning strategies in terms of grade and gender in SDP. In this chapter the interpretation of the data, gathered by both quantitative and qualitative research methods, is presented under the subheadings "motivational beliefs" and "learning strategies." Then, implications for practice, suggestions for further research and limitations of the current study are discussed.

Overview of the study

The current study was conducted to identify academically talented students' motivational beliefs and their use of learning strategies in SDP. While identifying their motivational beliefs and learning strategies, students' grade level and gender differences were also taken into consideration. Participants completed a questionnaire including items related to their demographic data, motivation and learning strategies scales. The data collected from the questionnaire were analyzed by using quantitative methods.

To learn teachers' opinions about the strategies they used to support their students' motivational beliefs and learning strategies in the program, face-to-face semi-structured interviews with teachers were conducted. The researcher asked teachers whether they developed different strategies according to grade level or gender and used content analysis to interpret the data.

Major findings

Traditionally, the MSLQ instrument has been used with specific subject areas to examine situational factors that might have an impact on students' motivation and learning. Rotgans and Schmidt (2010), however, assumed that students' motivational beliefs and learning strategies might not be limited to situational contexts and they might have established learning patterns. They carried out research to observe students' self-regulated strategies at the curriculum level. The findings of the aforementioned study led the researcher to the same conclusion and assumed that within the SDP, students might have consistent motivational beliefs and learning strategies they use for all the disciplines within the program. Therefore, the items were slightly changed to administer MSLQ-TR in the SDP. The reliability of the subscales in the questionnaire was actually a bit higher than the adapted version of MSLQ. Within the curriculum context, the findings of this study were consistent with previous research in literature that found significant difference in favor of girls compared to boys.

From the review of the literature, it was found many studies used the MSLQ instrument to examine differences between genders regarding motivational beliefs and learning strategies. In the literature review, Table 1 was created to list the compiled findings is presented here again to aid with discussion of the findings.

Table 1 (from page 31)
Gender differences in motivational beliefs and learning strategies in favor of girls

	Zimmerman & Martinez-Pons (1990)	Higgins (2000)	Bidjerano (2005)	Alcı & Altun (2007)	Yükseltürk & Bulut (2009)	Al Khatib (2010)	Keklik & Keklik (2012)
Goal setting	✓						
Planning	✓						
Record keeping	✓						
Monitoring	✓						
Environmental structuring	✓						
Metacognitive strategy		✓	✓	✓			✓
Test anxiety		✓			✓	✓	
Rehearsal			✓				
Organization			✓				✓
Time management			✓				
Elaboration			✓				✓
Effort			✓				✓
Self-regulation				✓		✓	✓
Self-efficacy						✓	
Help-seeking							✓
Time and study environment							✓

Motivational beliefs

The descriptive findings of the study showed that students perceive that they have strong motivational beliefs in SDP since the mean scores were high. The highest rated subscales were control beliefs for learning and task value beliefs, which means participants may perceive that the content of the courses are important to their success in a course. They also think that they can be successful as long as they study. This might be because students in the program have high self-confidence resulting from their high academic performance.

Additionally, the mean score of test anxiety was high in the analysis. Teachers also indicated that the students in the program had high test anxiety. Meanwhile, a

significant difference in test anxiety was found in relation to grade levels. When the grade levels are considered, it can be stated that students' scores on test anxiety in the 9th and 11th grade are higher. The results were consistent with those by Kılıç Çakmak, Akgün, Karadeniz, Büyüköztürk and Demirel (2008) who found high scores on test anxiety in 11th grade students than 9th and10th grade students. Keklik and Keklik (2012) also found out 11th grade student had higher test anxiety scores than others. Teachers' responses supported that students feel more anxious as they advance through the program. The reason for test anxiety might be expectations of the people around students and the university entrance exam. Since the students in the program are academically-talented, their families, teachers and friends might expect them to have high academic performance which might cause anxiety. As the students advance the program they get closer to the university entrance exam, which they need to take in the 12th grade. Therefore, they might be worried about their career in future.

Furthermore, teachers mentioned that extrinsic goal orientation increases in the 11-12th grade levels when compared to the 9-10th grades. Students might be motivated extrinsically in many ways within the program. For instance, they are actively involved in festivals, competitions and projects in accordance with their interests and abilities. The teachers also stated that although students relate subject matter to the real life situations in lower grade levels, in higher grade levels they get more motivated by getting high grades from the exams.

According to the Pearson correlation analysis, there is a strong positive correlation between the subscales of intrinsic goal orientation and task value beliefs. When students perceive the subject matter important, they might be more interested in learning it. Additionally, students' perceptions of the self-efficacy are strongly

correlated with intrinsic goal orientation and task value beliefs. That is to say, students' beliefs in success depend on their curiosity or interest in the subject matter and the content of the courses in the program. In the qualitative phase of the study, teachers also mentioned the correlation between test anxiety and extrinsic goal orientation by indicating "motivation reaches its peak when the subject matter is useful for the exams. For example, they are highly motivated if they have an exam the next day" (R6). These findings support the notion that interest and relevance may be more positive motivators than test anxiety.

Extrinsic goal orientation and task value beliefs had a significant difference in favor of girls in terms of gender. In other words, it can be implied that girls perceive themselves to have more extrinsic motivation and have more interest in course content than boys do. However, the qualitative findings revealed that the only difference between boys and girls was test anxiety in which the girls had more anxiety than boys. Pintrich and De Groot (1990) also found a significant difference between boys and girls in terms of students' perceptions of self-efficacy and test anxiety in which boys had more self-efficacy but less test anxiety than girls. Al Khatib (2010) on the other hand, expressed girls had higher means for test anxiety, when compared to boys. Previous studies also found girls had high mean scores on test anxiety than boys (Higgings, 2000; Yükseltürk & Bulut, 2009). The reason for the difference might be attributed to different factors; however, further research might shed a light on this issue. Evidence from the qualitative data showed that teachers develop various strategies to support their students' motivational beliefs. They try to make students more engaged in learning. However, they may not recognize some key differences that motivate girls compared to boys.

Learning strategies

The findings of the study demonstrated that students perceive that they benefit from various learning strategies within the SDP; the help seeking subscale had the highest mean score among the various learning strategies. Students' interaction with each other and the desire to learn from each other might be one the most common strategies used by the students in SDP. Teachers' also shared that students asked for help from their families and used it as a strategy in learning.

Pearson correlation analysis revealed that all learning strategies subscales, except help-seeking, are positively correlated with each other, which implies that whether students ask for help from their peers are not relevant to the other learning strategies. Nevertheless, teachers stated that students get help from not only their teachers or peers but also their parents. In general, the findings show that SDP students use a variety of learning strategies in conjunction with each other.

This study helped address a key problem of this study to examine if girls and boys indicate differences in learning strategies they use. The findings showed that girls surpassed boys regarding rehearsal, elaboration, organization, metacognitive self-regulation, time and study environment management and effort management. The results of the study were consistent with previous studies in literature in terms of gender differences (Al Khatib, 2010; Alcı & Altun, 2007; Bidjerano, 2005; Higgins, 2000; Keklik & Keklik, 2012; Yükseltürk & Bulut, 2009; Zimmerman & Martinez-Pons, 1990). Keklik and Keklik (2012) found the same learning strategies were in favor of girls in their study; they also found a significant difference in terms of help seeking subscale. Moreover, Bidjerano (2005) indicated that girls had higher scores than boys with regard to rehearsal, organization, metacognition, time management, elaboration, effort management. According to the results of the study, there was a

significant difference between girls and boys in rehearsal and organization subscales of the learning strategies. The qualitative findings also supported that *"girls are more organized and they take-notes regularly."* Zimmerman and Martinez-Pons (1990) found similar results in the use of the organization strategy in favor of girls compared with boys. High mean scores on elaboration, metacognitive self-regulation, time and study environment management and effort management were also in favor of girls. It can be implied that girls believe that they use advanced cognitive and metacognitive skills. The difference between girls and boys might be attributed to different factors such as parents, teachers or socio-cultural background of students. Further research might be needed to find the factors for gender differences in motivational beliefs and learning strategies within the SDP.

Teachers reported that compared to teaching in other settings, they do use different strategies to support SDP students. They tell students stories about their own lives, guide their students about how to improve learning strategies, invite guest speakers to the class and raise awareness.

The teachers, however, did not report notable differences between boys and girls and their learning strategies. This implies they are unaware of differences that students reported in the survey. It is important for teachers to be aware of these differences; teachers may need to use different teaching strategies to help both boys and girls to develop constructive learning strategies.

Implications for practice

This study sought to examine if the SDP program supported academically talented students' motivational beliefs and learning strategies. In particular, the study was concerned if the beliefs and strategies of students changed as they advanced through

the program and more importantly, if there were differences between girls and boys regarding their motivations and learning strategies. Academically talented students should be supported by extracurricular programming since they need special programs and challenging learning opportunities. The results of the current study can also provide pedagogical implications for teachers and students to create learning environments where each and every student can develop their skills and learning potentials.

The results of the study demonstrated that teachers should be aware of the motivational and learning differences between female and male students. This study found that girls have higher scores for many motivational beliefs and learning strategies. Yet, for the most part, teachers were unaware of these differences. It could be that the boys' exhibited self-confidence misled teachers into perceiving that boys were employing similar strategies as girls. Therefore, teachers should support boys to enhance their skills as well.

It is interesting to note that help-seeking was not strongly correlated with other learning strategies. Therefore, teachers might promote collaboration between boys and girls within the program. They could create activities to encourage girls and boys to work cooperatively. For instance, teachers might prepare some group work activities or assign the students homework to enable both male and female students to work cooperatively and learn from each other. In these ways, boys could improve their learning strategies and girls may be able to reduce some of their test anxieties. During the lesson, teachers can benefit from teaching strategies such as "think aloud protocol" to improve students' metacognitive skills. In addition, they can assign students to keep a journal for self-reflection and to develop other strategies, such as learning portfolios, to monitor their progress.

Regarding differences in test anxiety among grade levels, the findings indicate that the proximity to the university entrance exam date might affect students concerns about test results. Thus, teachers should work with school counsellors to reduce students' anxiety. Girls especially tend to have higher test anxiety than boys. They can interview boys and girls to learn reasons behind their anxieties. By becoming more aware of the deleterious effects of anxiety, they can better educate students in ways to channel concerns into more positive outcomes. Therefore, teachers should guide these students and they might work with parents to minimize the test anxiety. Teachers can improve their awareness of students' motivational beliefs and learning strategies in or outside the classroom by becoming more observant, creating tasks that highlight certain strategies, or conducting surveys such as the MSLQ-TR.

Students might work with their teachers or school counsellors regarding to improve their motivational beliefs and learning strategies. Some students may have difficulty in expanding their repertoire of strategies and need guidance to adopt new ones.

Implications for further research

The results of this study provide opportunities for future investigations. Differences in motivational beliefs and learning strategies for boys and girls are particularly notable and beg for deeper and more extensive investigations. There were a number of limitations to this study that restrict the researcher from making bold assertions as to the impact of the program; similar research using different and larger sample sizes could help verify and explain the results. Since the size of the sample was limited to one school, research with a larger sample size is needed to generalize the findings. A longitudinal study of a student population as it advances through a program would better determine if and how experience within the program and proximity to national exams affect motivational beliefs such as test anxiety.

More extensive qualitative research, such as interviews with the students might shed more light on the issue. Additionally, socio-economic backgrounds of students might be of interest to the researchers for further research.

During the interview process, the teachers indicated that the students in SDP did not differ greatly from each other in terms of motivational beliefs and learning strategies; however, they further postulated that there might be some differences between students in SDP and the ones in other programs like IB and national program. During the qualitative data collection respondents indicated that the students in the SDP were different from the students in other programs. R1 reported that there was no significant difference in students *within* the program but a difference may be observed between students in the SDP and other programs. R3 said, "While X student in another program might forget what is taught and do not think about it, the students in this program continue to inquire." On the other hand, R3 noted no difference between boys and girls as far as their motivation and learning strategies. A question that arises from these findings is do teachers observe differences among boys and girls in any learning situation? Therefore, comparative studies between SDP and other programs would further confirm if and how the findings can be contributed to the program and the teaching strategies used.

Limitations

The limitations of this study include its sample size, how the instrument, lack of a control group and that it was not longitudinal. This study focused on a unique program, "the SDP," and the uniqueness of the program restricts data collection to a small group of participants. Therefore, it is not possible to generalize the results of the study for all programs in Turkey specifically designed for academically talented students.

Another limitation is the instrument used to collect the quantitative data. The MSLQ is normally used within a single subject area; however, in this study it was used to investigate a program that includes many subject areas. Students may develop different strategies for different courses and their motivation for each subject area may vary. Students reported their motivational beliefs and learning strategies in general, rather than for a specific subject area which might affect the intention of the instrument. However, there are some studies that have used the instrument in similar contexts. For example, Bidjerano (2005) administered the instrument to undergraduate students enrolled in 10 basic education courses at a university in the USA. Rotgans and Schmidt (2010) used the instrument in at program level similar to the current study. Nonetheless, using the instrument in this way provided interesting insights into the program and presented useful information for stakeholders, especially regarding differences in learning strategies used by boys and girls.

Not having a control or comparative group limits the ability of attributing the findings specifically to the SDP; there might be other reasons for the differences between participants. The findings may be typical for Turkish students enrolled in any program for academically talented students or even those within traditional schooling. Thus, cautious interpretations were used when interpreting the results with the aim of providing constructive recommendations to improve the program.

Due to time limitations, a longitudinal study was not performed. The study compared three different groups of students who were at different grade levels. Therefore, the results may be similar to other students in the same grade levels in different programs or in regular schooling. Any significant difference between students cannot be credited to the SDP only; it might be because of students' age, maturity and socio-cultural background. Other studies have compared three different grade levels using

a one-time study to draw conclusions about student motivation and learning. Zimmerman and Martinez-Pons (1990) also compared 5th, 8th and 11th grade students in their study. Kılıç Çakmak, Akgün et al. (2008) conducted a study to students from 6th grade to 11th grade and they reported that students' motivational beliefs and learning strategies decreased as they progressed through a program.

Despite the lack of control group and that this not a longitudinal study, the use of a sequential mix of quantitative and qualitative data did help to address some of the limitations, as well as to raise opportunities for future research. The qualitative data did support that students' motivational beliefs and learning strategies change as they advance through the program. For instance, R5 reported noticed that students in higher grades became more exam-oriented and anxious as they neared the date to take the university entrance exam. On the other hand, it was notable that the qualitative results did not comply with the quantitative data regarding differences in learning strategies used by boys and girls. Therefore, despite its limitations, the study revealed worthwhile findings that will be shared with the SDP teachers and stakeholders to further improve its programming.

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APPENDICES

APENDIX I: Data collection instrument-MSLQ-TR

Anket No:

Değerli öğrenci,

Bu ölçek Bilim İnsanı Yetiştirme Programı'nda kullandığınız öğrenme stratejilerini ve öğrenme güdülenmenizi belirlemek amacıyla yapılan bilimsel bir araştırmanın yürütülmesi amacıyla hazırlanmıştır. Ölçekte yer alan sorulara verdiğiniz yanıtlar, kesinlikle **size not vermek** ya da sizi **eleştirmek** amacıyla **kullanılmayacaktır**. Bu soruların herkes için geçerli **doğru yanıtları bulunmamaktadır**. Bu nedenle lütfen aşağıda verilen tüm soruları dikkatle okuyarak cevabınızı, ifadenin karşısındaki seçeneklerden sizin için en uygun olanı işaretleyerek belirtiniz.

Öncelikle aşağıdaki soruları cevaplayınız.

Cinsiyetiniz:

()Kız

()Erkek

Sınıfınız:

( ) 9. Sınıf ( ) 11. Sınıf

( ) 10. Sınıf( ) 12. Sınıf

Yaşınız:

( ) 14

( ) 15

( ) 16

( ) 17

( ) 18

( ) 19

Soruları yanıtlamak için aşağıdaki ölçütleri kullanınız. Soruda geçen ifade sizin için **kesinlikle doğru ise (7)**'yi; sizinle ilgili **kesinlikle yanlışsa (1)**'i işaretleyin. Eğer ifadenin size göre doğruluğu bunlardan farklı ise sizin için en uygun düzeyi gösteren (1)'le (7) arasındaki rakamı işaretleyin.

	Yanlış ←			Doğru →			
Benim için Kesinlikle Yanlış.	**1**	**2**	**3**	**4**	**5**	**6**	**7** Benim için Kesinlikle Doğru.

Lütfen arka sayfaya geçiniz

Soru No

GÜDÜLENME

	Yanlış ← Doğru **Benim için Kesinlikle Yanlış.** 1 2 3 4 5 6 7 **Benim için Kesinlikle Doğru.**	
1	Bu programdaki derslerde beni zorlayan, aynı zamanda da geliştiren konuları tercih ederim; böylece yeni şeyler öğrenebilirim.	(1) (2) (3) (4) (5) (6) (7)
2	Uygun bir şekilde çalışırsam, bu programdaki tüm konuları öğrenebilirim.	(1) (2) (3) (4) (5) (6) (7)
3	Sınav sırasında, sorulara verdiğim cevapların diğer öğrencilerin cevaplarından daha kötü olduğunu düşünürüm.	(1) (2) (3) (4) (5) (6) (7)
4	Bu programda bir derste öğrendiklerimi diğer derslerde de kullanabileceğimi düşünüyorum.	(1) (2) (3) (4) (5) (6) (7)
5	Derslerden yüksek not alacağıma inanıyorum.	(1) (2) (3) (4) (5) (6) (7)
6	Bu programda beni en çok memnun eden iyi bir not almaktır.	(1) (2) (3) (4) (5) (6) (7)
7	Sınavlarda soruları çözerken, cevaplayamayacağımı düşündüğüm diğer sorular aklıma gelir.	(1) (2) (3) (4) (5) (6) (7)
8	Eğer derslerdeki bir konuyu öğrenemiyorsam bu benim hatamdır.	(1) (2) (3) (4) (5) (6) (7)
9	Derslerin konularını öğrenmek benim için önemlidir.	(1) (2) (3) (4) (5) (6) (7)
10	Bu programda benim için en önemli şey, not ortalamamı yükseltmektir, yani bu programdaki asıl amacım yüksek bir not almaktır.	(1) (2) (3) (4) (5) (6) (7)
11	Sınavlar sırasında, başarısız olursam bunun getireceği sonuçları düşünürüm.	(1) (2) (3) (4) (5) (6) (7)
12	Bu programdaki derslerde öğretmenin anlatacağı en karmaşık konuları bile anlayabileceğime inanıyorum.	(1) (2) (3) (4) (5) (6) (7)
13	Bu programdaki derslerde, öğrenmesi daha zor olsa bile, merak uyandıran konuları tercih ederim.	(1) (2) (3) (4) (5) (6) (7)
14	Çok çalışırsam tüm derslerin tüm konularını anlarım.	(1) (2) (3) (4) (5) (6) (7)

	Yanlış ← Doğru **Benim için Kesinlikle Yanlış.** 1 2 3 4 5 6 7 **Benim için Kesinlikle Doğru.**	
15	Sınavlar esnasında kendimi huzursuz ve sıkıntılı hissederim.	(1) (2) (3) (4) (5) (6) (7)
16	Bu programda ödevlerimi çok güzel yapacağıma ve sınavlarımın mükemmel geçeceğine inanıyorum.	(1) (2) (3) (4) (5) (6) (7)
17	Bu programda beni en çok memnun eden, derslerin konularını olabildiğince çok anlamaya çalışmaktır.	(1) (2) (3) (4) (5) (6) (7)
18	Bu programda derslerde işlenen konuların yararlı olduğunu düşünüyorum.	(1) (2) (3) (4) (5) (6) (7)
19	Elimde olsa, yüksek bir notu garantilemese bile daha çok öğrenmemi sağlayacak ödevleri seçerim.	(1) (2) (3) (4) (5) (6) (7)
20	Bu programda derslerde işlenen konular hoşuma gidiyor.	(1) (2) (3) (4) (5) (6) (7)
21	Bu programda derslerde işlenen konuları anlamak benim için çok önemlidir.	(1) (2) (3) (4) (5) (6) (7)
22	Sınavlar esnasında kalbimin hızlı hızlı attığını hissederim.	(1) (2) (3) (4) (5) (6) (7)
23	Bu programda derslerde öğretilen becerileri çok iyi yapabileceğimden eminim.	(1) (2) (3) (4) (5) (6) (7)
24	Ailemin, arkadaşlarımın ve başka insanların yeteneğimi görmesi için derslerde başarılı olmak benim için önemlidir.	(1) (2) (3) (4) (5) (6) (7)
25	Derslerin zorluğunu, öğretmenleri ve becerilerimi dikkate aldığımda, bu programda başarılı olacağımı düşünüyorum.	(1) (2) (3) (4) (5) (6) (7)

ÖĞRENME STRATEJİLERİ

26	Bu programda derslerde verilen kaynakları okurken, düşüncelerimi düzenlememe yardımcı olması için konuların başlıklarını ve alt başlıklarını çıkarırım.	(1) (2) (3) (4) (5) (6) (7)
27	Derslerde başka şeyler düşündüğüm için genellikle önemli noktaları gözden kaçırırım.	(1) (2) (3) (4) (5) (6) (7)

	Yanlış ← Doğru **Benim için Kesinlikle Yanlış.** 1 2 3 4 5 6 7 **Benim için Kesinlikle Doğru.**	
28	Genellikle derslerde, konuları bir başkasına anlatarak çalışırım.	(1) (2) (3) (4) (5) (6) (7)
29	Genellikle dikkatimi toplayabileceğim yerde derslerime çalışırım.	(1) (2) (3) (4) (5) (6) (7)
30	Bu programda derslerle ilgili kaynakları okurken, kendime konuya odaklanmama yardımcı olacak sorular sorarım.	(1) (2) (3) (4) (5) (6) (7)
31	Bu programda derslere çalışırken o kadar sıkılır ya da kendimi tembel hissederim ki planladığımdan daha önce çalışmayı bırakırım.	(1) (2) (3) (4) (5) (6) (7)
32	Bu programda derslerde söylenen ya da derslerle ilgili okuduğum bilgilerin, doğru olup olmadığını genellikle sorgularım.	(1) (2) (3) (4) (5) (6) (7)
33	Bu programda derslere çalışırken konuları kendi kendime tekrar ederim.	(1) (2) (3) (4) (5) (6) (7)
34	Bu programda derslerle ilgili herhangi bir şey okurken kafam karıştığında, okuduklarıma döner ve bu karışıklığı gidermeye çalışırım.	(1) (2) (3) (4) (5) (6) (7)
35	Bu programda derslere çalışırken, okuduğum bilgilerin ve derste tuttuğum notların üzerinden geçip en önemli noktaları bulmaya çalışırım.	(1) (2) (3) (4) (5) (6) (7)
36	Bu programda derslere çalışmak için ayırdığım zamanı iyi değerlendiririm.	(1) (2) (3) (4) (5) (6) (7)
37	Ders kitaplarını anlamakta zorlandığımda, bu kitapları okuma yöntemimi değiştiririm.	(1) (2) (3) (4) (5) (6) (7)
38	Derslerde verilen ödevleri bitirmek için sınıftaki diğer arkadaşlarımla birlikte çalışmayı denerim.	(1) (2) (3) (4) (5) (6) (7)
39	Bu programda derslere çalışırken, derste tuttuğum notları ve kitapları tekrar tekrar okurum.	(1) (2) (3) (4) (5) (6) (7)
40	Derste ya da okuduğum kitaplarda bir görüş, yorum ya da sonuç verildiğinde, bunların doğruluğunu destekleyen yeterli kanıt olup olmadığına karar vermeye çalışırım.	(1) (2) (3) (4) (5) (6) (7)
41	Bu programda derslerde yaptıklarımızdan hoşlanmasam da herhangi bir derste başarılı olmak için çok çalışırım.	(1) (2) (3) (4) (5) (6) (7)
42	Bu programda derslerin konularını düzenlememe yardımcı olması için basit şemalar, tablolar ya da şekiller çizerim.	(1) (2) (3) (4) (5) (6) (7)

	Yanlış ← Doğru **Benim için Kesinlikle Yanlış.** 1 2 3 4 5 6 7 **Benim için Kesinlikle Doğru.**	
43	Bu programda derslere çalışırken, çalıştığım konuları arkadaşlarımla tartışmak için genellikle zaman ayırırım.	(1) (2) (3) (4) (5) (6) (7)
44	Derslerin konularını bir başlangıç noktası olarak görür ve bu konularla ilgili kendi düşüncelerimi geliştirmeye çalışırım.	(1) (2) (3) (4) (5) (6) (7)
45	Yeni bir konuyu ayrıntılı çalışmadan önce genellikle konuların nasıl düzenlendiğini gözden geçiririm.	(1) (2) (3) (4) (5) (6) (7)
46	Bu programda derslere çalışırken, ders notları, kitaplar ve tartışmalar gibi farklı kaynaklardan edindiğim bilgileri bir araya getiririm.	(1) (2) (3) (4) (5) (6) (7)
47	Yeni bir konuyu ayrıntılı çalışmadan önce genellikle konuların nasıl düzenlendiğini gözden geçiririm.	(1) (2) (3) (4) (5) (6) (7)
48	Çalıştığım konuyu anlayıp anlamadığımdan emin olmak için kendi kendime sorular sorarım.	(1) (2) (3) (4) (5) (6) (7)
49	Derslerin gereklerine ve öğretmenin öğretme şekline uyacak biçimde ders çalışma yöntemimi ayarlamaya çalışırım.	(1) (2) (3) (4) (5) (6) (7)
50	Öğretmenlerden iyi anlamadığım konuları açıklamasını isterim.	(1) (2) (3) (4) (5) (6) (7)
51	Bu programda derslerdeki önemli kavramları bana hatırlaması için anahtar kelimeleri ezberlerim.	(1) (2) (3) (4) (5) (6) (7)
52	Ödevlerde zorlandığım zaman, ya ödevi yapmaktan vazgeçerim ya da sadece kolay kısımlarını yaparım.	(1) (2) (3) (4) (5) (6) (7)
53	Bu programda derslere çalışırken yalnızca okuyup geçmek yerine, neyi öğrenmem gerektiğine karar vermeye ve konuyu düşünmeye çalışırım.	(1) (2) (3) (4) (5) (6) (7)
54	Bu programda derslerde öğrendiğim konuyla diğer derslerdeki konular arasında olabildiğince bağlantı kurmaya çalışırım.	(1) (2) (3) (4) (5) (6) (7)
55	Bu programda derslerle ilgili kitapları okurken, önceden bildiğim konularla bağlantısını kurmaya çalışırım.	(1) (2) (3) (4) (5) (6) (7)
56	Derslerime belli bir yerde çalışırım.	(1) (2) (3) (4) (5) (6) (7)
57	Derslerde öğrendiğim bilgilerle kendi düşüncelerim arasında bağlantı kurmaya çalışmak hoşuma gider.	(1) (2) (3) (4) (5) (6) (7)
58	Bu programda derslere çalışırken, derste tuttuğum notlardan ve okuduğum kaynaklardan konunun ana fikrini çıkarırım.	(1) (2) (3) (4) (5) (6) (7)

	Yanlış ← 1 2 3 — Doğru → 4 5 6 7 **Benim için Kesinlikle Yanlış.** **Benim için Kesinlikle Doğru.**	
59	Bu programda derslerdeki herhangi bir konuyu anlamadığım zaman, sınıfımdaki başka bir öğrenciden yardım isterim.	(1) (2) (3) (4) (5) (6) (7)
60	Okuduğum kitaplarla, derslerde öğrendiğim kavramlar arasında bağlantı kurarak derslerin konularını anlamaya çalışırım.	(1) (2) (3) (4) (5) (6) (7)
61	Bu programda derslerin ödevlerini zamanında yaparım.	(1) (2) (3) (4) (5) (6) (7)
62	Bu programda derslerle ilgili bir görüş okuduğumda ya da duyduğumda, bu görüşün alternatiflerini düşünürüm.	(1) (2) (3) (4) (5) (6) (7)
63	Bu programda ders için önemli olabilecek noktaların listesini çıkarır ve bu listeyi ezberlerim.	(1) (2) (3) (4) (5) (6) (7)
64	Bu programda derslere düzenli olarak devam ederim.	(1) (2) (3) (4) (5) (6) (7)
65	Derslerin konuları ilgimi çekmese ve çok anlamlı gelmese bile, bu konuların tamamını bitirinceye kadar çalışırım.	(1) (2) (3) (4) (5) (6) (7)
66	İhtiyacım olduğunda yardım isteyebileceğim öğrencileri belirlemeye çalışırım.	(1) (2) (3) (4) (5) (6) (7)
67	Bu programda derslere çalışırken iyi anlamadığım kavramları belirlemeye çalışırım.	(1) (2) (3) (4) (5) (6) (7)
68	Bu programda derslere çalışırken, her aşamada yapacaklarımı belirlemek için kendime hedefler koyarım.	(1) (2) (3) (4) (5) (6) (7)
69	Notlarımı tutarken bir karışıklık olursa daha sonra bu karışıklığı mutlaka düzeltirim.	(1) (2) (3) (4) (5) (6) (7)
70	Kitaplardan edindiğim bilgileri, anlatım ve tartışma gibi diğer sınıf etkinliklerinde de kullanmaya çalışırım.	(1) (2) (3) (4) (5) (6) (7)

ÇALIŞMAMIZA KATILDIĞINIZ İÇİN TEŞEKKÜR EDERİZ.

APPENDIX II: Data collection instrument-MSLQ

Questionnaire No:

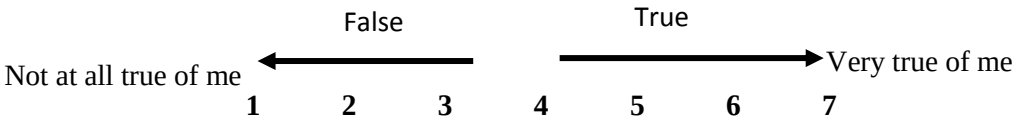
The attached questionnaire asks you about your study habits, your learning skills, and your motivation for work in Scholar Development Program (SDP). There are no right or wrong answers to this questionnaire. This is not a test. We want you to respond to the questionnaire as accurately as possible, reflecting your own attitudes and behaviours in this program. Thank you for your cooperation.

Gender
( ) Female
( ) Male

Class Level:
( ) 9. Grade ( ) 11. Grade
( ) 10. Grade ( ) 12. Grade

Age:
( ) 14
( ) 15
( ) 16
( ) 17
( ) 18

The following questions ask about your motivation for and attitudes about this program. Remember there are no right or wrong answers; just answer as accurately as possible. Use the scale below to answer the questions. If you think the statement is very true of you, circle 7; if a statement is not at all true of you, circle 1. If the statement is more or less true of you, find the number between 1 and 7 that best describes you.



Question Number		
1	In this program, I prefer class work that is challenging so I can learn new things.	(1) (2) (3) (4) (5) (6) (7)
2	If I study in appropriate ways, then I will be able to learn the material in the courses of this program.	(1) (2) (3) (4) (5) (6) (7)
3	When I take a test I think about how poorly I am doing compared with other students.	(1) (2) (3) (4) (5) (6) (7)
4	I think I will be able to transfer what I learn from one course to other courses in this program.	(1) (2) (3) (4) (5) (6) (7)
5	I believe I will receive excellent grades in the classes.	(1) (2) (3) (4) (5) (6) (7)
6	Getting a good grade in the classes is the most satisfying thing for me right now.	(1) (2) (3) (4) (5) (6) (7)
7	When I take a test, I think about items on other parts of the test I can't answer.	(1) (2) (3) (4) (5) (6) (7)

8	It is my own fault if I do not learn the material in the courses.	(1) (2) (3) (4) (5) (6) (7)
9	It is important for me to learn the course materials in the courses.	(1) (2) (3) (4) (5) (6) (7)
10	The most important thing for me right now is improving my overall grade point average, so my main concern in this program is getting a good grade.	(1) (2) (3) (4) (5) (6) (7)
11	When I take tests I think of the consequences of failing.	(1) (2) (3) (4) (5) (6) (7)
12	I'm confident I can understand the most complex materials presented by the instructors in the courses.	(1) (2) (3) (4) (5) (6) (7)
13	In the courses of a program like this, I prefer course materials that arouse my curiosity, even if they are difficult to learn.	(1) (2) (3) (4) (5) (6) (7)
14	If I try hard enough, then I will understand the course materials.	(1) (2) (3) (4) (5) (6) (7)
15	I have an uneasy, upset feeling when I take an exam.	(1) (2) (3) (4) (5) (6) (7)
16	I'm confident I can do an excellent job on the assignments and tests in this program.	(1) (2) (3) (4) (5) (6) (7)
17	The most satisfying thing for me in this program is trying to understand the content of the courses as thoroughly as possible.	(1) (2) (3) (4) (5) (6) (7)
18	I think the course material in the courses of this program is useful for me to learn.	(1) (2) (3) (4) (5) (6) (7)
19	When I have the opportunity in this class, I choose course assignments that I can learn from even if they don't guarantee a good grade.	(1) (2) (3) (4) (5) (6) (7)
20	I like the subject matter of the courses.	(1) (2) (3) (4) (5) (6) (7)
21	Understanding the subject matter of the courses is very important to me.	(1) (2) (3) (4) (5) (6) (7)
22	I feel my heart beating fast when I takean exam.	(1) (2) (3) (4) (5) (6) (7)
23	I'm certain I can master the skills being taught in the classes.	(1) (2) (3) (4) (5) (6) (7)
24	I want to do well in the classes because it is important to show my ability to my family, friends, or others.	(1) (2) (3) (4) (5) (6) (7)
25	Considering the difficulty of the courses, the teachers, and my skills, I think I will do well in the classes.	(1) (2) (3) (4) (5) (6) (7)

LEARNING STRATEGIES

26	When I study the readings for the courses in the program, I outline the material to help me organize my thoughts.	(1) (2) (3) (4) (5) (6) (7)
27	During class time, I often miss important points because I am thinking of other things.	(1) (2) (3) (4) (5) (6) (7)
28	When studying for the courses, I often try to explain the material to a classmate or friend.	(1) (2) (3) (4) (5) (6) (7)
29	I usually study in a place where I can concentrate on my course work.	(1) (2) (3) (4) (5) (6) (7)
30	When reading for the courses, I make up questions to help focus my reading.	(1) (2) (3) (4) (5) (6) (7)
31	I often feel so lazy or bored when I study for the classes that I quit before I finish what I planned to do.	(1) (2) (3) (4) (5) (6) (7)
32	I often find myself questioning things I hear or read in the courses to decide if I find them convincing.	(1) (2) (3) (4) (5) (6) (7)
33	When I study for the classes, I practice saying the material to myself over and over.	(1) (2) (3) (4) (5) (6) (7)
34	When I become confused about something I am reading for the classes, I go back and try to figure it out.	(1) (2) (3) (4) (5) (6) (7)
35	When I study for the courses, I go through the readings and my class notes and try to find the most important ideas.	(1) (2) (3) (4) (5) (6) (7)
36	I make good use of my study time for the courses in this program.	(1) (2) (3) (4) (5) (6) (7)
37	If course readings are difficult to understand, I change the way I read the material.	(1) (2) (3) (4) (5) (6) (7)
38	I try to work with other students from in this program to complete the course assignments.	(1) (2) (3) (4) (5) (6) (7)
39	When studying for the courses, I read my class notes and the course readings over and over again.	(1) (2) (3) (4) (5) (6) (7)
40	When a theory, interpretation, or conclusion is presented in classes or in the readings, I try to decide if there is good supporting evidence.	(1) (2) (3) (4) (5) (6) (7)
41	I work hard to do well in the classes in this program even if I do not like what we are doing.	(1) (2) (3) (4) (5) (6) (7)
42	I make simple charts, diagrams, or tables to help me organize course materials in this program.	(1) (2) (3) (4) (5) (6) (7)

43	When studying for the courses in this program, I often set aside time to discuss course materials with a group of students from the class.	(1) (2) (3) (4) (5) (6) (7)
44	I treat the course materials as a starting point and try to develop my own ideasabout it.	(1) (2) (3) (4) (5) (6) (7)
45	When I study for the courses in this program, I pull together information from different sources, such as lectures, readings, and discussions.	(1) (2) (3) (4) (5) (6) (7)
46	Before I study new course material thoroughly, I often skim it to see howit is organized.	(1) (2) (3) (4) (5) (6) (7)
47	I ask myself questions to make sure I understand the material I have been studying in this program.	(1) (2) (3) (4) (5) (6) (7)
48	I try to change the way I study in order to fit any course requirements and the instructors' teaching style.	(1) (2) (3) (4) (5) (6) (7)
49	I ask the instructors to clarify concepts I do not understand well.	(1) (2) (3) (4) (5) (6) (7)
51	When course work is difficult, I either give up or only study the easy parts.	(1) (2) (3) (4) (5) (6) (7)
52	I try to think through a topic and decide what I am supposed to learn from it rather than just reading it over when studying for the courses in this program.	(1) (2) (3) (4) (5) (6) (7)
53	I try to relate ideas in one subject to those in other courses whenever possible.	(1) (2) (3) (4) (5) (6) (7)
54	When I study for the courses, I go over my class notes and make an outline of important concepts.	(1) (2) (3) (4) (5) (6) (7)
55	When reading for the courses, I try to relate the material to what I already know.	(1) (2) (3) (4) (5) (6) (7)
56	I have a regular place set aside for studying.	(1) (2) (3) (4) (5) (6) (7)
57	I try to play around with ideas of my own related to what I am learning in the courses.	(1) (2) (3) (4) (5) (6) (7)
58	When I study for the courses in this program, I write brief summaries of the main ideas from the readings and my class notes.	(1) (2) (3) (4) (5) (6) (7)
59	When I cannot understand the material in a course, I ask another student in the class for help.	(1) (2) (3) (4) (5) (6) (7)
60	I try to understand the material in the classes by making connections between the readings and the concepts from the lectures.	(1) (2) (3) (4) (5) (6) (7)
61	I make sure that I keep up with the weekly readings and assignments for the courses.	(1) (2) (3) (4) (5) (6) (7)
62	Whenever I read or hear an assertion or conclusion in the classes, I think about possible alternatives.	(1) (2) (3) (4) (5) (6) (7)

63	I make lists of important items for the courses and memorize the lists.	(1) (2) (3) (4) (5) (6) (7)
64	I attend the classes regularly in this program.	(1) (2) (3) (4) (5) (6) (7)
65	Even when course materials are dull and uninteresting, I manage to keep working until I finish.	(1) (2) (3) (4) (5) (6) (7)
66	I try to identify students in the classes whom I can ask for help if necessary.	(1) (2) (3) (4) (5) (6) (7)
67	When studying for the courses in this program I try to determine which concepts I do not understand well.	(1) (2) (3) (4) (5) (6) (7)
68	When I study for the courses, I set goals for myself in order to direct my activities in each study period.	(1) (2) (3) (4) (5) (6) (7)
69	If I get confused taking notes in classes, I make sure I sort it out afterwards.	(1) (2) (3) (4) (5) (6) (7)
70	I try to apply ideas from course readings in other class activities such as lecture and discussion.	(1) (2) (3) (4) (5) (6) (7)

APPENDIX III: Semi-structured interview form

Interview Questions:

Name:
Age:
Discipline:
Year of experience:
Gender:

1. **a.** Do you think that there is a difference between girls and boys in terms of their motivational beliefs in SDP? Why/Why not?

   b. Do you also think that there is a difference between girls and boys in terms of their use of learning strategies in SDP?

2. **a.** In which learning situations do the students (girls/ boys) show higher motivational beliefs in SDP?

   b. In which learning situations do the students (girls/ boys) show higher learning strategies in SDP?

3. **a.** Do you need to use different approach for different groups (girls/boys) of learners to foster their motivational beliefs in SDP?

   b. What about learning strategies? Do you use different techniques for boys and girls to encourage them to use learning strategies in SDP?