Relationship between High School Students' Motivation Levels and Learning Strategies

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Abstract

This study aims to reveal high school students' learning strategies and motivation levels, the relationship between their learning strategies and motivation levels and to determine if these two variables differ according to gender and grade at school. This study was conducted in correlational survey model. Besides, "Motivation and Learning Strategies Scale" (GOSO), which was adapted to Turkish by Büyüköztürk, Akgün, Karadeniz, Kiliç Çakmak and Demirel, was used in the study. Data of the study were collected from 251 high school students studying in Safranbolu district of Karabük province in Turkey in 2017-2018 school year. Results of the study reveal that students' motivation levels and frequency of using learning strategies are slightly higher than average. According to the findings of the study, gender variable does not affect high school students' motivation levels, but female students use learning strategies more than male students do. It was also found that students' grades at school do not affect their motivation levels and frequency of using learning strategies. Lastly, findings of the study reveal that there is a meaningful relationship between students' motivation levels and their learning strategies. In the light of the findings of the study it is recommended that online and digital applications be used in class in order to increase students' motivation levels and develop their learning strategies.

Keywords: Motivation, Learning Strategies, High School Students, Education

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INTRODUCTION

The aim of education is to raise individuals who learn how to learn, find new information and use it in their lives, adapt to changes in the society, and at the same time become the source of these changes. In order to gain these characteristics, individuals need to be willing to participate in the learning process, that is to say, they need to be motivated and use learning strategies effectively because students' motivation levels and their using learning strategies effectively affect their current and future success.

In order for an individual to succeed in a task and feel happy, his / her motivation level is expected to be high. In general, an individual who has high levels of motivation is energetic and determined to succeed in anything, tries hard to be successful, has high levels of performance, uses time wisely, develops himself / herself, has high self-confidence. On the other hand, a student whose motivation level is high in the learning process is interested in the lesson, gets prepared for the class, asks questions, joins discussions, focuses on the subjects he / she needs to learn, never gives up at hard times, is persistent and determined to learn (Zambas, 2019).

Motivation, which is vital for learning and success, is defined as need or desire that makes an individual take action (Merriam-Webster, 1997); effort made to reach a result (DuBrin, 2008; and Williams, 2011). Motivation consists of three main factors namely initiating human behaviour, directing this behaviour and maintaining it. Motivation has two dimensions: intrinsic and extrinsic. Intrinsic motivation is defined as an individual's doing something which he/she is curious about, which attracts him/her and which he/she wants; it is seen that individuals who have high levels of intrinsic motivation make necessary effort with their free will to reach their goals (Lei, 2010). On the other hand, extrinsic motivation is defined as having the desire to learn under the influence of external factors. An individual who behaves with extrinsic motivation makes effort to reach his / her goals with an expectation of material gains in return (getting high scores, being appreciated for learning, getting pocket money, gain status) or abstaining from various punishments or restrictions (Ryan and Deci, 2000).

Literature review reveals that Maslow enriched motivation with a five-level list of needs. These are ordered from basic psychological needs to security, love, belonging, respect and self-realization. In his ERG theory Alderfer classified motivation into three groups, namely existence needs, relationship needs, growing-up needs. McClelland put motivation into three groups: success, membership, power. On the other hand, Herzberg explains two-factor theory consisting of motivating factors and hygiene factors (Badubi, 2017). Pintrich, Smith, Garcia and McKeachie (1991) grouped motivation in three main components (value, expectation, affective) and six sub-components (intrinsic purpose orientation, extrinsic purpose orientation, task value, learning control belief, self-efficacy perceptions regarding learning and performance, exam anxiety). Value component is defined as students' beliefs and interest regarding the importance of their aims and tasks. It consists of sub-components of intrinsic and extrinsic purpose orientation and task value. Intrinsic and extrinsic purpose orientation is about studies regarding students' learning the subjects that are interesting (even if difficult) for them to learn. Task value is about students' evaluation regarding how interesting, important and useful a task is. Expectation component consists of students' perceptions and beliefs about their performances. It is constituted of two sub-components. Learning control is about students' belief about how properly and how much they need to study in order to learn all subjects. Self-efficacy perceptions of learning and performance is about students' beliefs that they can understand the most complicated subjects, that they can do homework in the best way, that they can learn the skills in the best way, that they can be successful, and that they can get high marks. Affective component includes students' affective responses towards a task. Under affective component is only exam anxiety sub-component (Pintrich, et al., 1991).

Although motivation is important in the learning process, it is not enough alone for an individual to reach his/her goals. It is pointed out by educational experts (Namlu, Kabakçı and Gülümbay, 2003; Şengül, 2017; Young and Vrongistinos, 2002; Zimmerman and Martinez-Pans,

1990; Eryaman, 2007) that it is necessary and important for individuals to be aware of their learning and use various learning strategies in order to facilitate learning. Relevant studies reveal that when individuals do not use effective, right learning strategies in the learning process, it leads to failure, decrease in trust and motivation, unwillingness and indifference to learning (Çiftçi, 1998, Jimenez, Garcia and Pearson, 1996).

Researchers who agree on the importance and usefulness of learning strategies have different opinions about the definition and classification of learning strategies. Thus, there are a number of definitions and classifications of learning strategies in literature (Güven, 2004). For example, O'Malley and Chamot (1990) define learning strategies as special information processing methods that develop understanding, learning and storing of information (p.1) while Marisi (2019) defines learning strategies as actions, steps and techniques used by students in order to improve their learning (p. 95). Weinstein and Mayer (1986) define learning strategies as strategies which make individual self-learning easy and permanent, enhance productivity in learning, and enable students to gain the skill of independent learning (p. 95). Regarding learning strategies, Özer (2002) maintains that they help students to learn easily and permanently as well as having a very important function: "Learning strategies raise students' awareness of learning and enhance the productivity of learning, enable independent learning, help students to learn willingly and in a fun way, forms the basis for students to continue all these after school as well." A number of factors have a role in students' developing effective learning strategies in the learning process. For example, individual preferences, importance of the task, self-efficacy perception are among these factors (Weinstien, Ridley, Dahl and Weber, 1989). In addition, there are some other factors that influence students' developing effective learning strategies such as students' being unaware of the fact that they are not learning (weak cognitive monitoring), their age, success or failure as a result of the strategies which students are accustomed to using (Fayol and Monteil, 1994).

Just like definitions of learning strategies, their classifications also vary in literature. Weinstein and Mayer (1986) put learning strategies into five groups namely repetition, interpretation strategies, organization strategies, comprehension monitoring strategies and affective strategies. Özturk (1995) puts learning strategies into seven groups namely attention strategies, repetition strategies, interpretation strategies, encoding strategies, remembering strategies, cognitive management strategies, and affective strategies. Pintrich et al. (1991) divide learning strategies into three main components (cognitive strategies, metacognitive strategies and resource management strategies) and nine sub-components (regulation, critical thinking, repetition, elaboration, meta-cognitive, peer cooperation, time and study environment, effort management, seeking help). Cognitive strategies are about what kind of strategies are used when learning reading passages about the lesson or class notes; these strategies consist of four sub-components namely repetition, elaboration, regulation and critical thinking. Repetition strategies refer to reading or repetition of items to be learned on a list. Elaboration strategies consist of paraphrasing, summarizing, making analogues and taking notes productively. These strategies help learners to connect and combine new information with previous knowledge. Regulation strategies include grouping information, making outlines, deriving main ideas in reading passages and organization. Critical thinking strategies are about to what extent students apply previous knowledge in solving problems, making inferences from what they have learned, making critical assessments in terms of perfection standards (Pintrich, vd., 1991). Metacognition can be defined as individuals' knowledge about in what ways they can learn better, their awareness of their own thinking processes, and their ability to control these processes. Metacognitive strategies consist of three main processes: 1. Planning, 2. Monitoring, 3. Regulation. Planning process includes activities such as setting goals and task analysis. This process helps learners to activate gained knowledge or make it ready for use, which facilitates organization and comprehension of the material. Monitoring strategies include students' monitoring their attention, testing and questioning themselves, which helps learners to understand the material and combine it with their previous knowledge. Regulation strategies are about an individual's carefully performing cognitive activities and continuously correcting them. It is assumed that regulation strategies enhance students' performance by helping them to control and correct their behaviours as they proceed in the task (Büyüköztürk, Akgün, Karadeniz, Kılıç Çakmak and Demirel, 2007). Resource management

strategies help students to adapt to their environment and change it in order to reach their aims and meet their needs (Hofer, Yu and Pintrich, 1998). These strategies include six sub-components: regulating time and study environment, effort management, peer cooperation, and seeking help (Pintrich et al., 1991; Zimmerman and Risemberg, 19997).

In literature there are studies on learners' motivation carried out with students from different grades of education (Debnath, 2005; De Vicente, 2003; D'Souza and Maheshwari, 2010; İflazoğlu-Saban and Tümkaya, 2008; Namlu, et al., 2003) as well as studies explaining the relationship between motivation and different variables (grade, department, success, etc.). Moreover, literature review reveals that there are a number of studies which aim to determine learning strategies with different study groups (Aydın, 2011; Eroğlu, 2007, Güven, 2004; Lynch, 2006; Toy, 2007; Young, and Vrongistinos, 2002) and that these studies are related to different variables (academic success, academic self-efficacy, attitude towards lessons, department, gender, etc.). Obviously both concepts have a structure which can directly contribute to individuals' shaping their future lives. Literature review shows that the number of studies which explain to what extent students' learning strategies influence their motivation levels is low. For example, the study conducted by Namlu et al. (2003) reveals that there is a meaningful relationship between success, motives and cognitive strategies, and that learning strategies can facilitate success without motivation. In her study, Cebesoy (2013) researched the effect of variables such as gender and physics course final scores on preservice teachers' self-regulation skills regarding physics course, also the relationship between motivation and learning strategies. The data, which were obtained via sectioning approach of correlational survey model, reveal that sub-dimensions in the motivational strategies and learning strategies were related in line with the original form in which the scale was developed. What encouraged the writer to do research on this subject was that both studies abovementioned were conducted with preservice teachers and the number of studies analysing the relationship between high school students' motivation and learning strategies is quite limited. It is thought that findings of this study can enable high school teachers and directors to design learning environment in such a way to develop students' learning strategies and support the development of students' motivation levels positively. Besides, this study is expected to contribute to making education more effective. Therefore, the study aims to reveal high school students' learning strategies and motivation levels, the relationship between their learning strategies and motivation levels and to determine if these two variables differ according to gender and grade at school. In line with this general aim, answers were sought for the following questions:

1. What are high school students' motivation levels? Is there a meaningful difference between high school students' motivation levels in terms of their gender and grades at school?

2. What are high school students' learning strategies? Is there a meaningful difference between high school students' learning strategies in terms of their gender and grades at school?

3. What kind of relationship is there between high school students' learning strategies and their motivation levels?

METHOD

Correlational survey model was used in this study in order to determine whether high school students' motivation levels are affected by their learning strategies (Karasar, 2014). Correlational survey model is a research model that aims to reveal the existence or degree of covariance between two or more variables (Karasar, 2013). Study group consists of students studying in the 9th, 10th and 11th grades of Safranbolu Ataturk Anatolian High School in Safranbolu district of Karabük in Turkey in 2017-2018 educational semester. Study group was determined via convenience sampling method. The study group consists of 251 students in total. 48.6 % of students are females (n=122); 51.4% of students are males (n=129); 35.1% of students study in the ninth grade; 17.1% of students study in the tenth grade (n=43), and 47.8% of students study in the eleventh grade (n=120).

Data Collection Tool

The scale used in this study is "Motivation and Learning Strategies Scale" (GOSO), which was developed by Pintrich, Smith, Garcia and McKeachie (1991) for university students and was adapted to Turkish in 2007 by Büyüköztürk, Akgün, Karadeniz, Kılıç Çakmak and Demirel, who defined the norms and approved that the scale could be used for primary, secondary and high school students. The scale has two dimensions. There are 63 items; 20 items in the motivation dimension, 43 items in the learning strategies dimension.

Motivation dimension of the scale consists of three main components (Value, Expectation and Affective), six sub-components (Intrinsic Purpose Orientation, Extrinsic Purpose Orientation, Task Value, Self-efficacy Perception Regarding Learning and Performance, Learning Control Belief and Exam Anxiety).

Learning strategies dimension of the scale consists of three main components (Cognitive Strategies, Metacognitive Strategies and Resource Management), nine sub-components (Repetition, Elaboration, Regulation, Critical Thinking, Planning-Monitoring and Regulation, Management of Time and Study Environment, Effort Management, Peer Collaboration Management, Demanding Help). The scale is a seven-point likert scale including items ranging between "absolutely false for me" to "absolutely true for me".

Cronbach's Alpha in motivation dimension of the scale was found 0.86; Cronbach's Alpha in this study was found 0.85. Cronbach's Alpha in Learning Strategies dimension range between 0.51 and 0.83. Cronbach's Alpha in this study was found 0.93.

In the adaptation process of the scale, confirmatory factor analysis, Cronbach's Alpha internal coefficient of consistence and corrected items total correlations were examined in order to determine validity and reliability. Results of confirmatory factor analysis revealed that factorial models defined for both scales are compatible with the data in general (χ^2=28891.34, p=.000, sd=857, RMR=0.12, SRMR=0.038, GFI=0.91, AGFI=0.90, RMSEA=0.050, CFI=0.85, NNFI=0.85). It was found that item factor load and total item correlations are meaningful (Büyüköztürk, et al., 2007).

Analysis of the Data

In the process of analysis of the data, whether the data showed normal distribution or not was tested. With this regard, values of central distribution, deviancy and kurtosis were examined on the distribution of total score which was taken for the factors that constitute the scale. Kolmogorov-Smirnov Test was also used. Accordingly, it was seen that GOSO score showed normal distribution. In addition, homogeneity of the variances of measurements was examined via Levene F test. Percentages, frequencies, arithmetic mean, standard deviation and t test were applied in the analysis of the data in line with sub-problems. While comparisons about GOSO total scores according to gender were made via t test, comparisons regarding GOSO total scores according to department variable were made via one-way analysis of variance (ANOVA). Scheffe test was used in multiple comparisons. Besides, Pearson Correlation coefficient analysis was carried out in order to identify the relationship between students' motivation levels and frequency of using learning strategies. Significance level was taken as .05 in the interpretation of the results.

FINDINGS AND DISCUSSION

Findings are presented separately for motivation and learning strategies dimensions.

Table 1. Motivation Levels of High School Students

Dimensions of Motivation Levels	Sub-components of Motivation Levels	N	x	S
Value Component	Intrinsic purpose orientation	251	4.89	1.47
	Task value	251	5.34	1.60
Expectation	Learning control belief	251	5.96	1.49
	Self-efficacy perception regarding learning and performance	251	5.40	1.32
Affective	Exam anxiety	251	3.76	1.37
Total		251	4.59	1.04

Analysis of Table 1 reveals that high school students' total average scores of motivation levels are slightly above medium level with 4.59. As for sub-components of motivation levels, the table shows that average score of "intrinsic purpose orientation" sub-component is 4.89; average score of "task value" sub-component is 5.34; average score of "learning control belief" sub-component is 5.96; average score of "self-efficacy regarding learning and performance" sub-component is 5.40. These results reveal that high school students' motivation levels are slightly above medium level, and that only the average score of "exam anxiety" sub-component is below medium level with 3.79.

Analysis of sub-components of students' motivation levels reveal that the highest average score belongs to "learning control belief", a sub-component of "expectation" main component, with 5.96 while the lowest average score belongs to "exam anxiety" sub-component of "affective" main component with 3.79.

Table 2. Comparison of High School Students' Motivation Levels according to Their Gender

(Independent Samples t test)

Dimensions of Motivation Levels	Sub-components of Motivation Levels	Gender	N	$\overline{X}$	SS	sd	t	p
Value Component	Intrinsic purpose orientation	Female	122	5.02	1.34	249	1.44	0.15
		Male	129	4.76	1.57			
	Task value	Female	122	5.38	1.42	249	0.37	0.70
		Male	129	5.31	1.76			
Expectation	Learning control belief	Female	122	6.17	1.25	249	2.18	0.03
		Male	129	5.76	1.66			
	Self-efficacy perception regarding learning and performance	Female	122	4.64	1.51	249	0.13	0.89
		Male	129	4.61	1.56			
Affective	Exam anxiety	Female	122	3.69	1.29	249	-0.82	0.41
		Male	129	3.83	1.44			
Total Scores of Motivation Levels		Female	122	4.62	0.95	249	0.33	0.73
		Male	129	4.57	1.12			

Independent samples t test results about the comparison of high school students' total scores of motivation levels according to gender reveal that the difference between female and male students is not meaningful. It can be maintained according to this finding that students' gender differences do not affect motivation levels.

Analysis of Table 2 reveals that only in "learning control belief" sub-component of "expectation" component the difference between female and male students is meaningful [$t_{(249)}$=2.18; P<0.05]; average scores of female students are higher than those of male students. In other words, it can be maintained that in "learning control belief" sub-component, female students' motivation levels are higher than male students'.

Table 3. Results of One-way Analysis of Variance (ANOVA) That was Conducted in order to Determine whether High School Students' Motivation Levels Differ according to Their Grades at School

Dimensions of Motivation Levels	Components of Motivation Levels	Grade	N	$\overline{X}$	S	sd	f	p
Value Component	Intrinsic Purpose Orientation	9th Grade	88	4.95	1.25	2	0.53	0.58
		10th Grade	43	5.03	1.52	248		
		11th Grade	120	4.79	1.59	250		
	Task Value	9th Grade	88	5.63	1.26	2	2.58	0.07
		10th Grade	43	5.36	1.68	248		
		11th Grade	120	5.12	1.77	250		
Expectation	Learning Control Belief	9th Grade	88	6.24	1.08	2	3.18	0.04
		10th Grade	43	6.05	1.37	248		
		11th Grade	120	5.72	1.74	250		
	Self-efficacy perception regarding learning and performance	9th Grade	88	5.61	0.94	2	2.36	0.09
		10th Grade	43	5.48	1.38	248		
		11th Grade	120	5.21	1.51	250		
Affective	Exam Anxiety	9th Grade	88	3.71	1.41	2	0.11	0.89
		10th Grade	43	3.74	1.36	248		
		11th Grade	120	3.80	1.35	250		
Total Scores of Motivation Levels		9th Grade	88	4.60	0.97	2	0.09	0.91
		10th Grade	43	4.65	1.03	248		
		11th Grade	120	4.57	1.10	250		

The results of One-way Analysis of Variance (ANOVA) regarding comparison between high school students' total scores of motivation levels and their grades at school reveal that although the result in the "Learning Control Belief" sub-component of "Expectation" main component is meaningful at .05 level, the results of Scheffe test conducted between the groups reveal that there is no meaningful difference. In other words, students' grades at school do not affect their motivation levels.

Table 4. Descriptive Statistics regarding High School Students' Views about their Learning Strategies

Dimensions of Learning Strategies	Sub-components of Learning Strategies	N	x	S
Cognitive Strategies	Repetition	251	4.50	1.51
	Elaboration	251	4.09	1.60
	Regulation	251	4.34	1.57
	Critical Thinking	251	4.21	1.45
Metacognitive	Planning, Monitoring and Regulation	251	4.29	1.28
Resource Management	Time and StudyEnvironment	251	4.76	1.37
	Effort Management	251	4.37	1.75
	Peer Collaboration	251	3.64	1.43
	Seeking Help	251	4.55	1.51
Total		251	4.33	1.10

Table 4 shows that average total score of high school students' learning strategies is 4.33. Statistics regarding sub-components reveal that mean score of repetition sub-component of cognitive strategy main component is 4.50, mean score of elaboration sub-component is 4.09, mean score of regulation sub-component is 4.34, mean score of critical thinking sub-component is 4.21; mean score of "planning, monitoring and regulation" sub-component of metacognitive main component is 4.29; mean score of "time and study environment" sub-component of "resource management" main component is 4.76, mean score of "effort management" sub-component is 4.37, mean score of "peer collaboration" sub-component is 3.64, and mean score of "seeking help" sub-component is 4.55. These statistics reveal that frequency of high school students' use of learning strategies is at medium level.

As statistics about sub-components of learning strategies used by students show, students use "time and study environment" sub-component of "Resource management" dimension the most with the highest mean score (x=4.76) while students use "peer collaboration" sub-component of "resource management" dimension the least with the lowest mean score (x=3.64).

Table 5. Comparison of high School Students' Learning Strategies according to Their Gender (Independent Samples t test)

Dimensions of Learning Strategies	Sub-components of Learning Strategies	Gender	N	$\overline{X}$	S	sd	t	p
Cognitive Strategies	Repetition	Female	122	4.82	1.39	249	3.27	0.00
		Male	129	4.20	1.56			
	Elaboration	Female	122	4.15	1.27	249	0.53	0.59
		Male	129	4.04	1.86			
	Regulation	Female	122	4.76	1.46	249	4.20	0.00
		Male	129	3.95	1.58			
	Critical Thinking	Female	122	4.21	1.34	249	0.00	0.99
		Male	129	4.21	1.56			
Metacognitive	Planning, Monitoring and Regulation	Female	122	4.48	1.14	249	2.37	0.01
		Male	129	4.10	1.39			
Resource Management	Time and Study Environment	Female	122	4.86	1.35	249	1.05	0.29
		Male	129	4.67	1.39			
	Effort Management	Female	122	4.52	1.73	249	1.35	0.17
		Male	129	4.22	1.75			
	Peer Collaboration	Female	122	3.58	1.49	249	- 0.66	0.50
		Male	129	3.70	1.38			
	Seeking Help	Female	122	4.68	1.46	249	1.25	0.21
		Male	129	4.44	1.54			
Total Score of Learning Strategies		Female	122	4.52	1.02	249	2.23	0.02
		Male	129	4.21	1.17			

Analysis of the results of independent samples t test about comparison between high school students' learning strategies according to their gender reveals that the difference between male and female students is meaningful [$t_{(249)}$=2.23; P<0.05]. Thus, it can be maintained that female students' mean scores are higher than male students'. In other words, female students use learning strategies more frequently than male students do.

The results of independent samples t test about comparison between high school students' learning strategies according to their gender show that there is meaningful difference between male and female students on behalf of female students in "Repetition" sub-component [$t_{(249)}$=3.27; P<0.05] and "regulation" sub-component [$t_{(249)}$=4.20; P<0.05] of cognitive strategies dimension, and also in "planning, monitoring and regulation" sub-component [$t_{(249)}$=2.37; P<0.05] of metacognitive dimension. This finding shows that female students use learning strategies more frequently than male students do.

The same table reveals that the difference between male and female students is not meaningful in "Elaboration" sub-component of Cognitive Strategies dimension, "Time and Study Environment", "Effort Management", "Peer Collaboration" and "Seeking Help" sub-components of Resource Management dimension. According to the table, the difference between male and female students is meaningful only in "Critical Thinking" sub-component [$t_{(249)}$=0.00; P>0.05] of Cognitive Strategies dimension, which means that female and male students use this strategy equally.

Table 6. Comparison of High School Students' Learning Strategies according to Their Grades (One-way Analysis of Variance – ANOVA)

Dimensions of Learning Strategies	Sub-components of Learning Strategies	Grade	N	$\overline{X}$	S	sd	f	p
Cognitive Strategies	Repetition	9th Grade	88	4.58	1.35	2	0.89	0.41
		10th Grade	43	4.22	1.65	248		
		11th Grade	120	4.55	1.58	250		
	Elaboration	9th Grade	88	4.05	1.17	2	0.81	0.44
		10th Grade	43	3.85	1.36	248		
		11th Grade	120	4.20	1.92	250		
	Regulation	9th Grade	88	4.41	1.40	2	1.75	0.17
		10th Grade	43	3.94	1.60	248		
		11th Grade	120	4.44	1.66	250		
	Critical Thinking	9th Grade	88	4.17	1.24	2	0.06	0.93
		10th Grade	43	4.18	1.54	248		
		11th Grade	120	4.24	1.57	250		
Metacognitive	Planning, Monitoring and Regulation	9th Grade	88	430	1.04	2	0.94	0.39
		10th Grade	43	4.05	1.37	248		
		11th Grade	120	4.36	1.41	250		
Resource Management	Time and Study Environment	9th Grade	88	4.86	1.18	2	0.69	0.50
		10th Grade	43	4.86	1.47	248		
		11th Grade	120	4.66	1.45	250		
	Effort Management	9th Grade	88	4.46	1.78	2	1.03	0.35
		10th Grade	43	4.02	1.89	248		
		11th Grade	120	4.42	1.67	250		
	Peer Collaboration	9th Grade	88	3.33	1.43	2	3.15	0.04
		10th Grade	43	3.77	1.36	248		
		11th Grade	120	3.82	1.44	250		
	Seeking Help	9th Grade	88	4.63	1.37	2	0.19	0.82
		10th Grade	43	4.47	1.39	248		
		11th Grade	120	4.53	1.65	250		
Total Score of Learning Strategies		9th Grade	88	4.39	0.92	2	0.24	0.78
		10th Grade	43	4.25	1.17	248		
		11th Grade	120	4.37	1.21	250		

Results of One-Way Analysis of Variance (ANOVA) regarding comparison between total scores of high school students' learning strategies and their grades reveal that although the result is meaningful in "Peer Collaboration" sub-component (.05) of Resource Management dimension, there is no meaningful difference according to the results of Scheffe test applied between the groups. In other words, students' grades at school do not affect the frequency of their using learning strategies.

According to the analysis of sub-components of frequency of students' using learning strategies, the highest mean score belongs to "Time and Study Environment" sub-component (4.86) of Resource Management dimension while the lowest mean score belongs to "Peer Collaboration" (3.33) of the same dimension. This finding makes one think that high schools students do not interact enough with their peers in the learning process.

Table7. Results of Correlation Analysis between High School Students' Motivation Levels and Learning Strategies

			Cognitive Strategies				Meta cognitive	Resource Management				Learning Strategies Total
Motivation / Learning Strategies			Repetition	Elaboration	Regulation	Critical Thinking	Planning, Monitoring and Regulation	Time and Study Environment	Effort Management	Peer Collaboration	Seeking Help	
Value Component	Intrinsic Purpose Orientation	r	.472**	.435**	.433**	.590**	.574**	.502**	.369**	.310**	.325**	.607**
		p	.000	.000	.000	.000	.000	.000	.000	.000	.000	.000
		N	251	251	251	251	251	251	251	251	251	251
	Task Value	r	.482**	.349**	.404**	.584**	.539**	.563**	.333	.166**	.326**	.588**
		p	.000	.000	.000	.000	.000	.000	.000	.000	.000	.000
		N	251	251	251	251	251	251	251	251	251	251
Expectation	Learning Control Belief	r	.379**	.272**	.329**	.400**	.410**	.423**	.234**	.124*	.260**	.437**
		p	.000	.000	.000	.000	.000	.000	.000	.000	.000	.000
		N	251	251	251	251	251	251	251	251	251	251
	Self-efficacy Perception regarding Learning and Performance	r	.368**	.344**	.339**	.525**	.468**	.453**	.314**	.203**	.186**	.494**
		p	.000	.000	.000	.000	.000	.000	.000	.000	.000	.000
		N	251	251	251	251	251	251	251	251	251	251
Affective	Exam Anxiety	r	-.068	.054	-.006	-.003	-.039	-.028	-.105	-.087	-.032	-.045
		p	.284	.398	.930	.962	.536	.655	.097	.167	.618	.480
		N	251	251	251	251	251	251	251	251	251	251
Motivation Total		r	.368**	.317**	.353**	.512**	.459**	.452**	.260**	.158*	.225**	.488**
		p	.000	.000	.000	.000	.000	.000	.000	.000	.000	.000
		N	251	251	251	251	251	251	251	251	251	251

*p< 0.05 **p<0,01

Table 7 reveals that there is a medium-level, positive, meaningful relationship between total scores of high school students' motivation levels and their learning strategies (r= .488; p< .01). Details of Table 7 shows that there is a medium-level, positive, meaningful relationship between learning strategies students use with "Value Component" and "Expectation" motivation levels while there is no meaningful relationship between students' learning strategies they use with "Affective" motivation.

According to Table 7 there is a medium-level, positive and meaningful relationship between high school students' motivation levels regarding "intrinsic purpose orientation" and all sub-components of learning strategies they use (Repetition r= .472; p< .01), Elaboration r= .435; p< .01), Regulation r= .433; p< .01), Critical Thinking, r= .590; p< .01), Planning, Monitoring and Regulation r= .574; p< .01) and Time and Study Environment r= .502; p< .01), Effort Management r= .369; p< .01), Peer Collaboration r= .310; p< .01) and Seeking Help r= .325; p< .01). Findings of the study show that there is a medium-level, positive and meaningful relationship between high school students' "Task Value" motivation levels and "Repetition" (r=.482; p< .01), "Elaboration" (r= .349; p< .01), "Regulation" (r= .404; p< .01), "Critical Thinking" (r= .584; p< .01), "Planning, Monitoring and Regulation" (r= .539; p< .01), "Time and Study Environment" (r= .563; p< .01), "Effort Management" (r= .333; p< .01) and "Seeking Help" (r= .326; p< .01) strategies among learning strategies they use. On the other hand, there is a low-level, positive and meaningful relationship between high school students' motivation levels and "Peer Collaboration" strategy. As seen in Table 7, there is a medium-level, positive and meaningful relationship between students' "Learning Control Belief" motivation level and "Repetition" (r=.379; p< .01), "Regulation" (r= .329; p< .01), "Critical Thinking" (r= .400; p< .01), "Planning, Monitoring and Regulation" (r= .410; p< .01) and "Time and Study Environment" (r= .423; p< .01) strategies they use. On the other hand, there is a low-level, positive and meaningful relationship between students' "Learning Control Belief" motivation level and "Elaboration" (r= .272;

p< .01), "Effort Management" (r= .234; p< .01), "Peer Collaboration" (r= .124; p< .05) and "Seeking Help" (r= .260; p< .01) strategies. The table also reveals that there is a medium-level, positive and meaningful relationship between students' "Self-efficacy Perception regarding Learning and Performance" levels and "Repetition" (r= .368; p< .01), "Elaboration" (r= .344; p< .01), "Regulation" (r= .339; p< .01), "Critical Thinking" (r= .525; p< .01), "Planning, Monitoring and Regulation" (r= .468; p< .01), "Time and Study Environment" (r= .453; p< .01), "Effort Management" (r= .314; p< .01) and "Peer Collaboration" (r= .203; p< .01) strategies they use while there is a low-level, positive, meaningful relationship between their "Self-efficacy Perception regarding Learning and Performance" levels and "Seeking Help" (r= .186; p< .01) strategy they use. According to the table, there is no meaningful relationship between students' "Exam Anxiety" levels and learning strategies they use ("Repetition" r= -.068; p> .05, "Elaboration" r= -.054; p> .05, "Regulation" r= -.006; p> .05, "Critical Thinking" r= -.003 p> .05, "Planning, Monitoring and Regulation" r= -.039; p> .05, "Time and Study Environment" r= -.028; p> .05, "Effort Management" r= -.105; p> .05, "Peer Collaboration" r= -.087; p> .05 and "Seeking Help" r= -.032; p> .05).

CONCLUSION AND IMPLICATIONS

Results of the study reveal that high school students' total mean scores of their motivation levels are slightly higher than medium level. Results of Yapıcı and Yapıcı's study (2003), in which they got primary school teachers' views, shows that students' motivation levels are low and they behave indifferently. Although students' motivation levels were expected to be high, the result that their motivation levels are slightly higher than average makes one think that studies are to be conducted in order to increase students' motivation.

According to the findings of the study, "Learning Control Belief" sub-component of "Expectation" dimension has the highest mean score while "Exam Anxiety" sub-component of "Affective" dimension has the lowest mean score. Literature review in the field reveals that Higgins's study (2000) overlaps the findings of this study in that students' exam anxiety levels are low. On the other hand, another study carried out with students getting pedagogical formation training and with those studying at the Faculty of Education found students' motivation levels high (Ömür and Nartgün, 2013). This result does not overlap the findings of this study. Considering that finding a job, particularly in the favourite field, increases an individual's motivation positively (Vero and Puka, 2017), it may well be maintained that Ömür and Nartgün's findings are natural results. Considering the results of this study, it can be thought that students have a perception regarding learning school subjects, they have belief in being able to perform it, and that they do not suffer from exam anxiety.

Results of the study reveal that there is no meaningful difference between high school students' motivation levels total scores and gender variable; nevertheless, female students' motivation levels were found higher than males' only in "learning control belief" sub-component of the scale. As literature review in the field also shows, findings of a number of relevant studies (Ömür and Nartgün, 2013; Saracaloğlu, Karasakaloğlu, and Yenice, 2008) point out that gender does not affect students' motivation levels. On the other hand, some other studies found that female students' motivation levels are higher than male students' (Al Khatib, 2010; Aydın, 2011; Eroğlu, 2012; İflazoğlu-Saban and Tümkaya 2008; Lepper, Corpus, and Iyengar, 2005). There are still other studies which reveal that male students' motivation levels are higher than females' (Higgins, 2000; Pajares and Valiante, 1999). The finding that there is no difference between participant students in terms of gender can be regarded as a positive result, but it is thought-provoking that their motivation levels are slightly higher than average.

Findings of the study reveal that there is no meaningful difference between high school students' grades and their motivation levels. Literature review in the field shows that there are studies whose findings do not overlap with this finding (Kılıç-Cakmak, Erkan, Karadeniz, Büyüköztürk, and Demirel, 2008; Lepper, Corpus, and Iyengar, 2005). In their study, Kılıç-Cakmak et al. (2008) found that motivation levels of students in the 9th and 11th grades are higher than students in the 10th grade. Considering that in education system students need to develop themselves in affective domain as well

as in cognitive domain, motivation levels can be expected to become higher as students' grades get higher. However, further studies should reveal the reason for there being no difference between grades.

Findings of the study reveal that frequency of high school students' using learning strategies is at medium level; they use "Time and Study Environment" sub-component of Resource Management dimension at the highest level while they use "Elaboration" sub-component of Cognitive Strategies dimension at the lowest level. Literature review about the frequency of using learning strategies show that there are studies whose findings overlap with those of this study (Çelikkaya and Kuş, 2010; Karakış and Çelenk, 2007; Öztürk, 1995; Toy, 2007). For example, in his study Aydın (2011) found that students use different learning strategies at different levels. Findings of this study make one think that students effectively use the time spared for studying, do homework in time, join the classes regularly, but they cannot sufficiently use behaviours such as summarizing, paraphrasing important information, making connection between new information and their previous knowledge. Details of the learning strategy which is most frequently used reveal that students show behaviour / effort at information stage of cognitive field the most while comprehension stage of learning strategy is used at the lowest level. In fact, results of the analyses of the study about gender show that female and male students use critical thinking behaviour equally and slightly over the average. This is thought-provoking in that students have high-level behaviour/effort and it may result from the program applied (Özer, 2002; Tekin, 1980) or teaching style of the teachers (Geçer ve Deryakulu, 2004; Özer, 2002; Şen ve Erişen, 2002). Another reason could be that students may not be knowledgeable enough in different strategies or they may not be motivated enough.

It was found in the study that there is meaningful difference between high school students' learning strategies total scores and gender variable. Analysis of sub-components of the scale reveals that female students use learning strategies more than male students do in "Repetition" and "Regulation" sub-components of cognitive strategies and "Panning, Monitoring and Regulation" sub-components of Metacognitive dimension. Literature review in the field shows that there are many studies which have similar findings (Aydın, 2011; Çelikkaya and Kuş, 2010; Ellez, 2004; Hamurcu, 2002; İflazoğlu-Saban and Tümkaya, 2008; Karakış and Çelenk, 2007; Toy, 2007). According to these findings it could be maintained that female students use key words when learning a subject, they revise the subjects, list main topics and sub-topics in order to remember the subjects, use simple table-schema, figures, ask themselves questions about the subjects.

Findings of the study reveal that there is no meaningful difference between female and male students in "Elaboration" sub-component of Cognitive strategies, in "Time and Study Environment", "Effort Management", "Peer Collaboration" and "Seeking Help" sub-components of Resource Management dimension. It was found that female and male students only use "Critical Thinking" strategy of Cognitive Strategies dimension equally. Thus, it can be put forth that female and male students use equally the behaviours of questioning the accuracy of information they learn, do research on whether there are proofs confirming true information, trying to improve their views in the light of the knowledge they gained. This can be related to the fact that today students improve their thoughts and behaviours thanks to technology (smart phones, convenience of internet connection, etc.) (Çalık and Çınar 2009; Madden, Ford, Miller and Levy, 2006; Şerefoğlu-Henkoğlu, Mahiroğlu, and Keser, 2015).

Results of the study reveal that there is no meaningful relationship between high school students' learning strategies and their grades at school. In literature while there are studies supporting these findings of the study (Karakış and Çelenk, 2007; Yüksel and Koşar, 2001), there are others which do not support the findings of this study (Aydın, 2011; Toy, 2007; Hamurcu, 2002). Possible reasons of this finding could be that students in the 9th, 10th and 11th grades plan learning process very well and use it effectively, set realistic goals, arrange the study environment and create a quiet study environment at least partly away from audio-visual distractors.

According to the findings of the study, there is a medium-level, positive and meaningful relationship between high school students' motivation levels and their learning strategies. However, the results make it clear that the motivation level is not at the desired level and learning strategies are not used. It is thought-provoking that the result is positive, meaningful and medium-level. In fact, it is known that an individual who is highly motivated and uses learning strategies effectively will experience quality learning. High school students are expected to have proficiency in learning strategies and use them. An individual who uses effective learning strategies becomes successful and the individual who becomes successful tries to learn more and develop himself/herself, has high level of energy for it, has high performance and self-confidence, in other words, he/she is highly motivated. It is pointed out by experts (Pintrich and Smith Garcia and McKeachie, 1991; Zimmerman and Martinez-Pans, 1990) that students' motivation levels and their using appropriate learning strategies in appropriate places play a key role in being successful both at school and in their future lives.

Results of the study show that there is a medium-level, positive and meaningful relationship between students' "intrinsic purpose orientation" motivation levels and their learning strategies. Considering that intrinsic purpose orientation is students' beliefs and interests in the importance of their goals and tasks, students use learning strategies at medium-level although they are motivated to learn the subjects. In her study, Şengül (2017) found that learning strategies used by students in the 6th, 7th and 8th grades are weaker than their motivation and that majority of students need help in learning strategies. It is observed that curriculum of primary, secondary and high school education in Turkey gives little and irregular place to the importance of learning strategies (Özer, 2002). Findings of this study reveal that students need to be supported by their teachers and school managers in learning strategies.

According to the findings of the study, there is a low-level, positive and meaningful relationship between high school students' "task value" motivation level and Peer Collaboration learning strategy while there is a medium-level, positive and meaningful relationship between their "task value" motivation level and all other strategies they use. The finding that students' task values are high is one of the factors which will help students to participate in learning more. One of the reasons for the results of the research being at medium-level can be that curriculum is conducted in line with the philosophical principle of perennialism. On the other hand, the reason for task value motivation level and peer collaboration strategy being low could be that students may be unwilling to participate in the learning process in collaboration with peers.

Another finding of the study is that there is a medium-level, positive and meaningful relationship between students' motivation about "Learning Control Belief" and their "Repetition", "Regulation", "Critical Thinking", "Planning, Monitoring and Regulation", "Time and Study Environment" strategies while there is a low-level, positive and meaningful relationship between students' motivation about "Learning Control Belief" and their "Elaboration", "Effort Management", "Peer Collaboration" and "Seeking Help" strategies. It is thought that while students tend to use very basic learning strategies such as memorizing, classifying, problem-solving, setting goals and planning time because they believe that effort to learn will bring positive results, students prefer "integrating information", "maintaining attention and effort", "collaboration" and "seeking help" strategies less. The reason for this could be that they tend to prefer the strategies they are used to and that they are not determined in challenging processes which require much longer time.

Results of the study show that there is a medium-level, positive and meaningful relationship between high school students' "Self-efficacy Perceptions regarding Learning and Performance" and all their learning strategies except "seeking help" strategy; there is a low-level, positive and meaningful relationship between high school students' "Self-efficacy Perceptions regarding Learning and Performance" and their "seeking help" strategy. Successful students are aware of what they do not know and they can find somebody to help them. There are a number of studies which reveal that peer collaboration, peer work and getting help individually from the teacher enhance students' success. The reason for students' using "seeking help" strategy at low levels may be that they cannot decide when they need to get help.

According to the findings of the study there is no meaningful relationship between high school students' "Exam Anxiety" and their learning strategies. Pintrich (1989) maintains that there is no relationship between using appropriate cognitive strategies and high or low level of exam anxiety. Further studies in which students' views can be obtained are needed in order to discuss this finding.

In the light of these findings, hidden curriculum (social responsibilities, publishing newspapers etc.) can be applied in class and at school in order to increase high school students' motivation levels. Studies can be carried out to increase the diversity of learning strategies. In order to do this, students' learning strategies can be identified, training and courses can be offered accordingly to help students to develop their learning strategies. In addition, studies can be conducted to define the learning strategies that teachers are familiar with and use. Research can be done to identify students' inefficacies regarding applying learning strategies and educational guidance can be applied in schools in order to help students to acquire learning strategies. Activities can be organized to support peer collaboration. Considering that today's students are very interested in digital tools and online connections, online and digital applications/activities can be integrated in class to increase students' motivation and develop their learning strategies.

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