

Analysis of the Relationship between Secondary School Students' Hope Levels, Their Motivation toward Science Learning and Academic Success Levels

*Belgin Bal İncebacak ** Süleyman Yaman ***Aslı Sarışan Tungaç

*Research Assistant Ondokuz Mayıs University,
Faculty of Education, Primary Education Department

belginbal33@gmail.com

**Associate Professor

Ondokuz Mayıs University, Faculty of Education

Mathematics and Science Education

Department of Science Education

***Research Assistant

Ondokuz Mayıs University

Faculty of Education, Mathematics and Science Education

Department of Science Education

Abstract

The present study is based on a comparative analysis of hope, motivation toward science learning and academic success levels of secondary school students; and focuses on the relationship between these variables. It was conducted by applying correlational survey method. Data was collected from 229 secondary (public) school students from three different cities in Black Sea Region (Turkey) during 2016-2017 Education Year. Three data collection tools were used in the research. The collected data was analyzed by using descriptive and exploratory statistical analysis. Parametric techniques were used because it was found out that data was normally distributed. The statistical analysis indicated a statistically significant correlation between hope and motivation toward science learning levels. However, there was no correlation between academic success levels of secondary school students and two other variables. The study concluded that hope and motivation toward science learning are not predictors of academic success.

Keywords: Motivation toward science learning, Hope, Academic success, Science course

Introduction

Among the most significant aims of education, the foremost one is to teach students social- life skills and raise them as individuals, who are aware of their duties and responsibilities. The most effective and well-

known way to achieve this aim relies on the quality of education at schools. Academic success of students is the primary focus of education at schools. Academic success is a structure which involves knowledge and competences of a student related to a subject (Baykul, 2000). Success is a complex skill which is affected by a variety of situations. While individuals learn, they are affected by many situations such as their network, people around them, social environment, in-class situations and personal responsibilities. These skills which affect individuals are divided into three categories: Cognitive (know), affective (feel) and psychomotor (do) (Tekin, 1991). Academic success is a cognitive skill (Bloom, Englehart, Furst, Hill and Krathwohl, 1956) and it is highly affected by affective skills. Motivation is a significant affective skill which is assumed to have an effect on academic success.

Motivation can be defined as the ‘act of focusing on the process for conducting goal-oriented activities’ (Pintrich and Schunk, 2002). Woolfolk (2004) defines it as an internal state which arouses, directs and maintains a behavior. Motivation affects not only academic success at school, but also social adaptation and all kinds of school activities. This effect can be either positive or negative. On one hand, competitiveness in classrooms increases some students’ academic performance and their self-efficacy beliefs; on the other hand, this situation reduces some students’ motivation levels (Meece, Anderman and Anderman, 2006). It is believed that students will become academically unsuccessful when their motivation level is low (Karagüven, 2012). When literature is reviewed, it is seen that a large number of studies indicate that there is a significant relationship between motivation and academic success. However, Akbaba (2006) claims that motivation cannot be always directly related to academic success because factors such as praise, students’ perceptions, teacher’s attitude and behaviors, reward and competition affect students’ motivation levels either in a positive or negative way. Additionally, Anderson and Draper (1991) state that motivation has no effect on academic success by itself alone; there are other factors affecting success rather than motivation (as cited in Başdaş, 2007).

Motivation and hope serve as a push factor in individuals’ life. Both concepts are crucial for the process which ends in success. According to Wolters and Rosenthal (2000), motivation – is a multidimensional concept- might affect both learning and success. Motivation has an effect on students’ participation levels during in-class activities. It has been found in some studies that participation during in-class activities contributes to academic success (Karagöz, Tezel and Özabacı, 2009). Students have expectations (hope) related to their courses. If their amount of expectation and the effort they make for their expectations are close to each other, in other words if there is a coherent

relationship between these two factors, students experience no trouble; however if there is no coherence, they lose their motivation (Main, 1993, cited in Çakır, 2006). Lastly, these qualities discussed in detail indicate that motivation is a multidimensional concept (Greene, Miller, Crowson, Duke and Akey, 2004) and it is interrelated to a variety of concepts such as hope, academic success, anxiety, future expectations (Brickman and Miller, 2001; Mensch, Miller and Brickman, 2004).

The concept of hope is defined as the process which arouses one to derive pathways to achieve desired goals and agency of thinking to use those pathways (Snyder, Harris, Anderson, Holleran, Irving, Sigmon et al., 1991). Dilbaz and Seber (1993) claim that hope is created by positive expectations for ideas which are desired to come true in future, and despair is created by negative expectations. Hope is one of the greatest powers for individuals in struggle of life. Individuals need hope for coping with problems in life (Konukbay, 2005:14). The more hopeful individuals are, the more strong-minded they are for actualizing a hard mission (Snyder, 2002). Moulden and Marshall (2005) express that individuals with high levels of hope make plans for actualizing their goals and rely on their own capabilities. Wroblewski and Snyder (2005) claim that individuals with high levels of hope know themselves better and use their motivations more effectively during the process. It is acknowledged that hope and despair might affect motivation in either positive or negative way. Researchers claim that hope increases tolerance on optimism (Snyder, 2005), develops coping strategies for problem-based issues (Snyder et al., 1991), makes feel good (Magalleta and Oliver, 1999), creates a positive effect on mental health symptoms (Snyder et al., 1991) and students' expectations for the upper class (Rand, 2009). It is also claimed that hope constantly continues (Pettit, 2004); but it is affected by current situations and then changes (Cheavens, Feldman, Gum, Michael and Snyder, 2006). Kenny, Walsh-Blair, Blustein, Bempechat and Seltzer (2010) express that hope has a crucial role on affecting an individual's behavior by feeding his/her motivation including achievement motivation.

Students' cognitive levels and their strategies in process affect their learning motivations. According to Elliott (1999), motivation is affected by success goals, however according to Miller and Brickman (2004), it is affected by success at schools and future goals. Miller and Brickman make a list of situations which have effect on success in Figure 1:

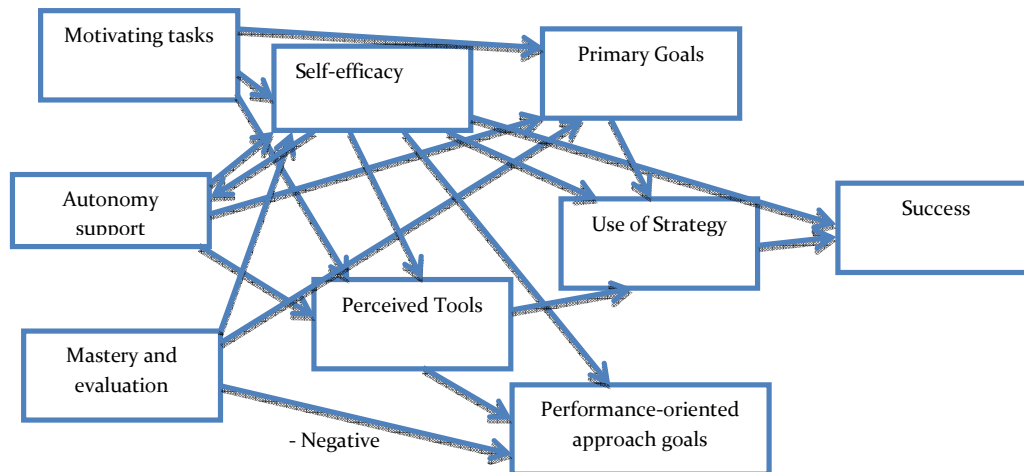


Figure 1. Factors affecting success according to Miller and Brickman (2004)

Figure 1 shows the relationship between success and other variables depending on perceptual situations in classrooms. Personally valued goals affect short term success goals adopted by students. For instance, a person who wants to make an independent research would perceive the course of statistics different from another one who views the same course as only an obstacle. Some individuals tend to get just enough to pass the course and they would have tendency of getting the appropriate grade for their knowledge and skills in their courses (Greene, Miller, Crowson, Duke and Akey, 2004).

Studies indicate that a variety of variables (apart from the ones noted above) have effect on academic success. Especially, students' class level, their ages and gender are the most frequently analyzed variables in those studies. Anderman and Midgley (1997) and Güvercin, Tekkaya, and Sungur (2010) specify that class level has direct or indirect effect on learning motivation. They also state that grade is a variable which has effect on students' motivation. Patrick, Mantzicopoulos, Samarapungavan and French (2008) emphasize that motivation of students at young ages is much more important because it is easier to change negative beliefs and thoughts at a young age; however, it gets much harder as students grow. The effect of gender on motivation is one of the most important

research subjects. Britney and Pajares (2006) express that female and male students have different motivations. Jones, Howe, and Rua (2000) state that while females are more interested in biology and social sciences; males are more interested in physics. Cleary and Chen (2009) in their study claim that both gender and class levels are the variables which have effect on students' motivations.

Meece, Glienke, and Burg (2006) remarked that gender's role is crucial in learning goals of students and this difference is closely associated with areas preferred by students. However, in study of Tang and Neber (2008) on gifted students, it is found out that both class level and gender do not make a significant effect on students' motivation.

Students' perceptions are really important in their learning goals. Courses become more meaningful when teachers arrange their teaching in accordance with students' perceptions, goals and aims (Greene et al., 2004). Self-perception of an individual directly affects academic success; however it is unclear whether goals and aims have direct effect on motivation (Sedaghat, Abedin, Hejazi and Hassanabadi, 2011). As seen in literature view, there is a complex and multiple correlation between those variables. This study aims to analyze the relationship between motivation, hope and academic success. In this way, it will be identified whether there is a relationship between students' hope and their motivation towards science learning, and also relationship of these two variables with academic success. Also, subproblems include whether there is a significant difference in variables analyzed in this study (separately and together) according to class level and gender.

Method

This study was conducted with correlational survey method. Survey studies aim to identify specific characteristics of a group and describe the current situation with its present and past condition (Karasar, 1999:77). In the study, the data were conducted to identify the level of relationship between more than two variables. Thus, this study aimed to reveal whether there was a consistent variability between variables.

Study sample:

Data in this study were obtained from 229 secondary school (public) students in three different cities in Central Black Sea Region during 2016-2017 Education Year. For sample selection, three different secondary schools were chosen from each city and then 5th, 6th, 7th, and 8th graders in those schools were selected with convenience sampling. This sampling type includes selection of

participants which are easily accessible. Convenience sampling is frequently preferred in survey studies because it is practical and economical (Tekbiryk, 2015:107).

Data Collection Tools:

Three different data collection tools were used in this study. The first tool was 'The Hope Scale' which was developed by Snyder et al. (1991). This scale was adapted into Turkish by Akman and Korkut (1993). The Hope Scale includes Likert-type 12 items and two subscales. Each subscale consists of four items. These items are related to two dimensions: planning of ways to meet goals and goal-oriented determination. One item reflects the past, two items reflect the present and one item reflects the future. Last four items have been expressed as fillers which are not relevant with hope. Items for two dimensions have been written in positive words; however, fillers have been written in negative words. Fillers were not included into calculation and did not affect the mean; measurement was done with only eight items. Additionally, the scoring ranges from 1 to 4, therefore the lowest score was 8 and the highest score was 32. Cronbach Alfa coefficient correlation of the scale was found to be 0.85. Arithmetic mean was used in analysis of scale in this study.

The second scale is Motivation toward Science Learning Scale which was developed by Dede and Yaman (2008). This scale consists of Likert-type 23 items. This likert scale is scored between 1 and 5. As the scores increase, it is a sign of the situation that students' participation level is high. In measurement, negative sentences were reversed and then scored. Cronbach Alpha correlation coefficient was found to be 0.80. The scale was developed including five factors.

The third group of data included students' academic success scores in science course. In calculation of students' academic success scores, students' grades in Science Course during 2016-2017 Education Year were taken into consideration. The researchers reached the teachers of all students in order to learn students' grades from e-school system and teachers were also asked for students' exam papers. The questions teachers use in their exams were analyzed by three field experts and it was found out that their questions were valid in terms of content validity. Analysis was done depending on scores obtained from these exams and students' scores in e-school systems.

Data Analysis:

Descriptive analysis was used in analysis of data collected from three different data collection tools. Parametric statistical techniques were preferred for the analysis because data were normally distributed. Skewness and kurtosis values were reviewed for normality test and it was identified that scores obtained from scales ranged from -1.00 to +1.00. Parametric analysis techniques used in this study included; Pearson Product-Moment Correlation Coefficient, Regression Analysis, T-Test for Independent Groups and One-Way Variance Analysis. This analysis was aimed at identifying relationship between variables and also the difference between groups. Confidence interval was accepted as 95% in analysis.

Pearson Product-Moment Correlation Coefficient is a type of analysis which identifies whether there is a significant correlation between two variables. The Pearson correlation coefficient values are interpreted as in the following lines. r value indicates the linear relationship between two variables. If r value is between (0,00-0,25), it is too weak; between (0,26-0,49), it is weak; between (0,50-0,69), it is moderate; between (0,70-0,89), it is high; and between (0,90-1,00), it is very high (Kalaycı, 2010:116).

Scheffé test was used for identifying between-groups variance. Scheffé test is a post-hoc method which is accepted as a strong method in complex comparisons. Cramer and Howitt (2004), recommended Scheffé test for pairwise comparisons. Regression analysis includes statistical operations which are used for revealing cause and effect relationship between two or more variables (Kalaycı, 2010:201).

Findings

Table I shows the result of statistical analysis which is done for relationship between secondary school students' hope levels, their motivation toward science learning levels and academic success scores.

Table1. *The Relationship between Secondary School Students' Hope Levels, Motivation towards Science Learning Levels and Success Scores*

Variable	2	2.1	2.2	2.3	2.4	2.5	3
1. Hope Level	.70**	.59**	.69**	.57**	.32**	.60**	.08
2. Motivation Toward Science Learning		.87**	.89**	.84**	.59**	.79**	.12*
2.1.SubScale1. Conducting Research			.77**	.62**	.34**	.55**	.08
2.2.SubScale2. Performance				.67**	.39**	.64**	.13*
2.3.SubScale3. Communication					.43**	.66**	.11*
2.4.SubScale4. Collaborative work						.44**	.09
2.5.SubScale5. Participation							.08
3. Academic Success Scores							

*significance level of 0,05 **significance level of 0,01

According to Table I, it is found out that there is a high level of correlation between motivation towards science learning scale and hope scale in terms of both mean scores and subfactors. Also, it appears that each scale has a high correlation with its own subscales. There is a high correlation between scores obtained from Hope Scale and Motivation toward Science Learning Scale ($r=.70$). The highest correlation between mean scores of Motivation towards Science Learning and its own subscales is found to be .89; and the lowest is to be .59. Also, there is a low but significant level of correlation between students' academic success and motivation toward science learning ($r=.12$), however, hope is not significantly correlated with academic success ($r=.08$). It is also observed that there is a low but significant level of correlation between academic success scores and two subscales of motivation but not between other subscales; namely performance and communication. Table II

shows the ANOVA results related to difference between hope levels and motivation toward science learning levels according to secondary school students' class levels.

Table II. *The ANOVA Results Related to Difference between Hope Levels and Motivation toward Science Learning Levels according to Secondary School Students' Class Levels.*

Variables	Class Level	N	\bar{X}	S	Sum of Squares	Mean Squares	df	F	p
Hope	5thGrade	138	3.82	0.75	0.75	0.25	3-330	0.39	.76
	6thGrade	79	3.73	0.88					
	7thGrade	72	3.74	0.79					
	8thGrade	45	3.86	0.87					
	Total	334	3.79	0.80					
Motivation Toward Science Learning	5thGrade	138	3.87	0.63	4.77	1.59	3-330	3.20	.02
	6thGrade	79	3.72	0.87					
	7thGrade	72	3.80	0.64					
	8thGrade	45	3.50	0.70					
	Total	334	3.77	0.71					

When Table II is reviewed, it is identified that motivation toward science learning differs significantly according to secondary school students' class levels ($F(3-330)=3.20$; $p<.05$). Students' motivation levels do not display a specific direction depending class levels, however it is the lowest at 8th grade level. According to result of Scheffé analysis -one of the post hoc methods which is done for revealing the direction of variance-, it is observed that there is difference between 5th grades and 8th grades and this difference is in favor of 5th graders. Hope levels do not significantly differ depending on students' class levels ($F=0.39$; $p>.05$). It is found out that 5th and 8th graders' hope levels are high; while 6th and 7th graders' hope levels are low. Table III shows the findings in which the scale scores are compared depending on students' genders.

Table III. *t-Test Results for Independent Samples for Difference between Hope Levels and Motivation toward Learning Levels Depending on Secondary School Students' Genders*

Variables	Gender	N	\bar{X}	S	df	t	p
Hope	Female	134	3.81	0.81	332	0.39	0.70
	Male	200	3.77	0.81			
Motivation toward science learning	Female	134	3.86	0.69	332	2.04	0.4
	Male	200	3.70	0.72			
Subscale1	Female	134	3.91	0.89	332	2.27	0.2
	Male	200	3.68	0.90			
Subscale2	Female	134	3.95	0.89	332	2.25	0.3
	Male	200	3.72	0.93			
Subscale3	Female	134	3.86	0.81	332	1.75	0.8
	Male	200	3.70	0.85			
Subscale4	Female	134	3.58	0.80	332	1.11	0.27
	Male	200	3.49	0.72			
Subscale5	Female	134	4.01	0.92	332	0.02	0.99
	Male	200	4.01	0.98			

When Table III is reviewed, it is found out that secondary school students' hope levels do not significantly differ depending on genders ($p > .05$); however, motivation toward science learning levels significantly differ ($t(332) = 2.04$; $p < .05$). Also, it is observed that there is a significant difference between two subscales of motivation toward science learning; namely conducting research subscale and performance subscale. This difference is in favor of females in terms of both skills. There is no difference depending on gender in scores of other subscales of motivation scale; namely Communication, Collaborative Work and Participation ($p > .05$). When examined in general, it is seen that scores of female students in motivation scale are higher than males except for fifth subscale; however, males and females have equal scores in participation subscale. Examining the standard deviations of students' scores, it is recognized that male and female students' scores have a homogeneous distribution. Table IV shows the results of multiple regression analysis which aim to reveal whether other variables of study predict students' academic success in science course.

Table IV. Multiple Regression Analysis Results Related to Students' Academic Success in Science Courses

Variables	B	B	t	p	R	R ²	ΔR ²	F
Mixed	79.22		8.54	0.00	0.21	0.04	0.03	3.79
Hope	0.73	0.03	0.41	0.69				
Motivation	1.80	0.07	0.87	0.38				
Gender	-3.84	-0.10	1.83	0.07				
Class Level	-2.43	-0.14	2.52	0.01				

Via multiple regression, the predictive power of multiple variables -motivation toward science learning, hope, gender and class level- on students' academic success levels in science course have been examined. There is found a significant predictive correlation between variables according to R² ($F(4-329)=3.79$; $p<.05$). Students' predicted success scores are equalized to $79.22+0.73+1.80-3.84-2.43$ value. These findings show that hope levels of students have very low effect on their academic success ($\beta=0.03$), but an increase in motivation toward science learning ($\beta=0.07$) scores has slightly more effect on model than hope level. Class level emerges as the variable which has the most effect on students' academic scores ($\beta=-0.14$)(5th grade is coded as 5; 6th grade as 6; 7th grade as 7; 8th grade as 8); and an increase in class level results in a decrease in predicted success scores. Then it appears that this is followed by gender variable ($\beta=-0.10$)(Female 1; Male 2). It is found out that this variable has more effect on decrease in male students' academic success scores than female students' scores. Correlation analysis results in Table II support these findings, too.

Discussion and Result

This study -which aims to investigate the effect of hope and motivation toward science learning on academic success in science course- indicates that there is a positive linear correlation between students' hope levels and their motivation levels. Also, it is found out that there is a correlation between students' motivation level and their academic success; and this correlation is at moderate level. Although it appears that there is a low correlation between hope levels of students and their academic success, students with high level of hope become more successful than students with low level (Snyder et al., 2002). DeCharms and Dave (1965) state that individuals with high level of hope and academic success are more successful in risk-taking. Moreover, it is claimed by these researchers that individuals with low levels of both fear and hope of success are scared of taking risks. Hope of

success and fear of failure result in different risk-taking attitudes of individuals for success and they affect their motivations differently. Uysal and Ayten (2009:327) conclude that decrease in despair brings about decrease in future anxiety and increase in motivation in life. As the hope level of students increases, their motivation will do so; and thereby their academic success. In other words, loss of motivation is viewed as subscale of despair (Oğuztürk, Akça and Şahin, 2011:181). According to these results, it is possible to claim that -even if it is low- there is a correlation between hope and motivation.

Snyder et al. (2002) make a suggestion for asking the question “Can we teach hopeful thoughts for students” and making it on our agenda while investigating the relationship between hope and academic success. Davidson, Feldman and Margalit (2012) improve this by suggesting that there should be made activities which promote their goal-oriented internal motives in order to raise hopeful individuals. Shade (2006) emphasizes that students should be supported for their personal thoughts and be encouraged for overcoming the obstacles. It is also supported by findings of this study that there is a high level of correlation between hope and motivation toward science learning. Atkinson (1957) puts forth that individuals with high motivations of success prefer more risky behaviors; however, individuals with low motivations of success prefer less risky behaviors. He puts emphasis on the issue that individuals with high success motivations prefer either less risky, safe and confidential tasks or extremely hard and special tasks.

The results of both this study and other studies indicate that there is a correlation between academic success and motivation. Atkinson and Litwin (1960); Birney, Burdick and Teevan (1964) in their studies imply that fear of failure is a general characteristics of individuals with low level of motivation. On the contrary, deCharms and Dave (1965) point out that fear of failure is important for hope of success. In other words, individuals with high level of success motivation study hard and their behavior is driven by fear. They explain their thoughts by using goal-oriented and fear-driven motivation principle suggested by French and Chadwick (1956). It is asserted that it should be put more emphasis on motivation because it helps taking away failure.

According to findings of this research, there is found no significant relationship between academic success and three subscales of motivation toward science learning: conducting research, participation and collaborative work; however, there is a moderate relationship between academic success and two subscales of motivation, namely performance and communication factors. According to Schunk and Zimmerman (1994), there exists no conclusive evidence which indicates that students

with high academic success are more motivated because competitive ideas, social comparisons, external evaluations prevent students from getting better scores. Current studies fail to make a clear explanation of the relationship between success motivation, hope of success and fear of failure. Schunk and Zimmerman (1994) conducted a study by making three groups of students for purpose of analyzing the effect of students' success motivations on their hope and failure. Groups were created by identifying students who have high, moderate and low success motivation. It is found out there exists a significant difference in hope levels and fear of failure levels between high and moderate success motivation. There is no significant difference between low and high success motivation groups. It is possible to claim that tension might underlie the reason for this because the higher hope of success means higher tension and higher tension results in an increase in the number of obstacles which prevent from achieving goals which are set in mind; therefore, individuals must work harder to suppress this feeling (Clark, Teevan and Ricciuti, 1956). Atkinson (1957) made a study to compare students' hope and fear of failure levels and designed a process which aimed to compare the hope of success and fear of failure created in mind. As a result of study, fear of failure served as a motivation tool for individuals with high success motivations to achieve their goals (Atkinson,1957). Hope level should be increased in order to prevent failure or increase academic success.

According to Greene and Miller (1996), social aims, external gains or punishments, strategies and variables such as self-control activities -which are not included in current precautions- can make a significant contribution to cognitive participation and academic success. Likewise, it is observed in this study that there is low but significant level of correlation between academic success and two subscales of motivation -performance and communication-; but correlation of academic success with other subscales is not statistically significant. In this study, it is possible to claim that communication and performance motivation provides academical motivation for course; however, conducting research, collaborative work and participation do not contribute to academic success and motivation at the same extent. Also, high perception of competency affects motivation in a positive way as expressed in study of Sedaghat et al. (2011).

When examined the hope levels of students depending on class level, it is found out that as class level increases, there occurs no change in a specific direction; in other words, hope level does not display a specific direction depending on class level. In general, 8th graders have the highest level of hope and 6th graders have the lowest level of hope. Likewise, Güngören and Sungur (2009) claim that

motivation increases as the class level decreases. Also, motivation toward science learning does not display a specific direction depending on class level as it is the case with hope. 7th graders have the highest motivation, and 6th graders have the lowest motivation. Anderman and Midgley (1997) and Güvercin, Tekkaya and Sungur (2010) emphasize that class level directly affects students' motivation. Patrick, Mantzicopoulos, Samarapungavan and French (2008) state that learning motivation is a quality which should be paid more importance at young ages; and it is necessary to make more effort in order to increase students' motivation as class level increases. Also, they conclude that 7th grade students have higher level of hope than 8th grade students.

Research results show that there is no significant difference in students' hope levels depending on their gender; but motivation toward science learning scores significantly differ in favor of female students. When the subscales of motivation are examined, it appears that there is a significant difference in favor of females in subscales of conducting research and performance; however, there is no significant difference in collaborative work and communication subscales. In the participation subscale of motivation, male and female students have equal scores. Uysal and Ayten (2009:325) in their study on hope and despair find out that female and male students' general hope and despair levels are low. Also, males have higher tendencies in subscales except for loss of willingness subscale. However, this difference between males and females is not statistically significant. Likewise, there is found no significant difference between male and female students in some other studies like Üngören and Ehtiyar (2009: 2110) and Yapıcı (2007:298). Additionally, they conclude that loss of motivation in males is lower than females. On the other hand, some studies show that female students have higher level of motivation than males and this situation affects their hopes. Güvercin (2008), Uzun and Keleş (2010), Yaman and Öner (2006); Yılmaz and Huyugüzel Çavaş (2007) find out that there is a significant difference in favor of females in scores of motivation toward science learning. In other words, female students are more motivated towards science learning than male students. However, in study of Aydın (2007), there is found no significant difference between female and male students. Similarly, the result of this study shows there is a significant difference between female and male students and this difference is in favor of females.

According to regression analysis results, it appears that an increase in class level has negative effect on explaining students' academic success. In other words, increase in students' class levels predict academic success at a significant level. According to this finding, an increase in class level

leads to a decrease in predicted success scores. The gender of students can not be used as an explanatory variable for predicting academic success. Regression analysis results show that the predictive power of gender is not at significant level and female students have higher level of academic success.

Azizoğlu and Çetin (2009) and Uzun and Keleş (2010) collected data from 6th and 7th graders in order to identify motivation levels in science courses; however, there is found no statistically significant difference. On the contrary, Güvercin (2008) state that class level has effect on motivation toward science learning at a significant level; Aydın (2007) and Eccles, Wigfield, Harold and Blumenfeld (1993) claim that students' motivation levels decrease as their class level increases. In this study, it is identified that as the class level increases, hope level decreases but it is on the rise again at 8th grade.

According to regression analysis, it is found out that hope and motivation levels are not variables which predict students' academic success at a significant level. Also, it is possible to claim that students' academic success cannot be predicted by using the common effect of these four variables (hope, motivation, class level, gender). In a study conducted by Snyder et al. (2002), it is emphasized that as students with high level of hope are already successful in their courses and they probably do not experience much trouble in their past life, their hope of success will continuously be high.

Davidson, Feldman and Margalit (2012) have conducted a study which aims to increase hope levels of students for a month by conducting relevant activities. At the end of month, it shows up that both groups – in other words students with high and low motivation- get higher academic scores. As a result of this finding, it is possible to assert that students' academic success will increase when there is an increase in their hope levels.

Suggestions

This study investigates the correlation between students' academic success, motivation toward science learning and their hope levels. Identifying to what extent other variables have effect on academic success -except from those in this study- will be an important data source for developing curriculum programs and course materials.

Both hope and motivation level are among affective skills, but academic success is one of the cognitive skills. Research results show that affective skills' correlation with each other is high; but their correlation with academic success is low. A detailed and longitudinal study should be conducted for analyzing the reasons which underlie this situation. This will presumably contribute to revealing the relationship of variables with each other as well as the explained variance.

The results of this study indicate that class level is much more effective than motivation and hope on students' academic success. Using qualitative research methods to reveal the reasons for this situation will help understanding why motivation decreases as class level increases.

Research findings show that there is no significant change in hope levels of the students, but it shows that there is a tendency to fall first, and then increase. Explaining the reasons for this situation by using different research designs will be beneficial for practitioners.

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