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EVALUATION OF MIDDLE SCHOOL STUDENTS' ATTITUDES TOWARDS STEM EDUCATION

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Abstract:
The aim of this study is to evaluate the attitudes of secondary school students towards STEM education. For this purpose, screening method, one of the quantitative research methods, has been used. Of the 384 students who participated in the research, 50.5% are female and 49.5% are male. Data has been obtained through STEM training attitude scale. The data has been analyzed by means of SPSS 21.0 software with average, standard deviation, t test and correlation techniques. As a result of the study, it has been concluded that the participants have positive attitudes towards the fields that make up STEM. It has been observed that there is no correlation between the participants' attitudes towards STEM and their gender. However, there is a significant positive correlation between their attitudes towards STEM and their success in science and general courses.

Keywords: STEM, attitude, success

1. Introduction

One of the most important indicators of development for a country is its advancement in science and technology. The fact that the integration of the fields such as science, technology, engineering and mathematics is required for the solution of many of the problems we face in an increasingly globalized world is the natural reflection of this situation (Moore et al., 2014). The countries, especially the developed ones, are constantly striving to improve the quality of science and technology education (Ministry of National Education (MoNE), 2005). The science curriculum updated in 2018 allows students to identify a daily need or problem which is related to the issues covered by the content within the scope of science, engineering and entrepreneurship applications, to select the appropriate criteria by comparing the alternative ways of solution, and finally to come up with an appropriate solution by way of proper planning. The students are expected to make trials, to record the qualitative and

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quantitative data and their observations that they have had at the end of these trials, and to evaluate them with their graphic reading or creating skills. (MEB, 2018). Students should have the abilities of creative, innovative, designer and critical thinking to solve the problems that they have faced with, and this is the direct result of the technological developments in the 21st century and the emergent requirement for these abilities to apply this technology. (National Research Coucil, (NRC), 2011). In the 21st century, STEM education is seen as a solution in obtaining similar expected outcomes (Ostler, 2017).

STEM is an interdisciplinary approach that connects academic content with real-world situations within the scope of science, technology, engineering and mathematics, includes the school, community, business and global issues in this content, and leads to the development of new economic competitive conditions with STEM literacy (Tsupros et al. (2009). STEM education should provide students with research and inquiry experiences within the scope of the courses it consists of (Lark, 2015). The aim of STEM education as an approach is to make students think analytically, be innovative, inventor and self-confident, and have logical thinking and STEM literacy (Morrison, 2006). STEM education aims to develop the students' existing skills and lead them to get the 21st century skills by way of STEM programs, which are prepared for the continuation of post-secondary education and for providing workforce (Becker & Park, 2011; Bybee, 2010; NRC, 2011). 21st century skills are also considered to include cognitive skills (eg, critical thinking, problem solving, creativity), interpersonal skills (communication skills, social skills, teamwork, cultural sensitivity, coping with challenges), and intrapersonal skills (self-management, self-regulation, time management, personal development, lifelong learning, compliance) (Kylonen, 2012; Soland, Hamilton & Stecher, 2013).

It is stated that girls in developing countries have the same or more interest and tendency as boys (Sjøberg & Schreiner, 2005). Considering the TIMSS 2011 results in our country, 8th grade female students' success average in science is 491 while it is 475 for male students. The difference between the genders in this field is seen to be 16 points, which is in favor of female students. It is observed that the average success scores of both genders for the science field in our country are higher than the average of TIMSS international success scores (MEB, 2011). According to TIMMS 2015 data, the science achievement of female students is higher than that of male students. In addition, there is an increase in science achievement scores by 12 points for female students and 9 points for male students, and the scores have become 503 and 484 points respectively. According to TIMSS 2015 results, this difference which is in favor of female students is statistically meaningful (MEB, 2015). Turkey STEM Education Report (2015) shows that among the science department students who are in the first 1000 according to OSYM (SSPC) student placement results, male students have a proportion of 71,42% and female students 28,58% for the placements in STEM fields (including the medical faculties). Considering the OECD (2017) data, however, the proportion of women working in STEM fields in Turkey is 50%, which is above the average of OECD. It is clear that some urgent measures should be taken in the choice of profession in STEM

fields and reveals the need of promoting STEM careers in Turkey (STEM Education Turkey Report, 2015).

Attitudes are affective behaviors and psychological structures, and thus they cannot be directly observed (Aşkar, 1986). Attitudes affect success and vice versa (Aiken, 1980). Attitudes are partly intellectual and spiritual, but never innate, and they are always acquired (Ersin, 1981). Research on attitudes reveals that attitudes are acquired at an early age and do not change easily unless that person experiences very important things on that subject (Kocabaş, 1997). When we talk about the attitudes towards STEM education, we can talk about integrated structures or separated structures.

When the attitude studies carried out on STEM-forming contents are examined; Neale (1969) described attitudes towards mathematics as a love or a dislike of mathematics, a belief in being good or bad in mathematics, being interested in mathematical activities or a tendency for keeping away from them, and a belief that mathematics is useful or useless. Zan and Di Martino (2007) described them as behaviors and beliefs that shape the positive or negative tendency towards mathematics. Studies show that students' attitudes towards science courses are negative and attitudes towards this course tend to decrease as classes progress. However, creating a positive attitude towards science courses should be one of the important objectives of science courses (Uyanık, 2017), because the studies aimed at revealing the importance of the attitudes towards science courses in terms of science education show that attitudes affect the students' academic achievement, formation of scientific attitudes and orientation in science fields (Özdemir, 2012). Students' attitude towards the technological tools and software that they use is an important variable (Keçeci, Alan and Zengin, 2016). It is argued that learning processes with STEM integration and engineering design can create positive attitudes towards STEM fields and careers in these fields (Atkinson & Joyce, 2010; Osborne et al., 2009)

After they studied and examined the effects of an engineering design-based program on science students' attitudes towards science, Bethke-Wendell & Roger (2013) found that there is very little difference in the control and experimental groups' attitudes towards science. Ricks (2006) found a meaningful increase in the attitudes of the science students receiving STEM education in the science camp. When they compared the STEM attitudes of the students in STEM-oriented schools to the attitudes of those in non-STEM-oriented schools, Güzey, Harwell & Moore (2014) found that there is a meaningful difference in favor of the students in STEM-oriented schools. In his study, Kutch (2011) observed that there is a positive effect on the attitude and career of the experimental group receiving STEM education. In their research on "The effect of STEM integration on the perception and attitudes of the 5th grade students", Gülhan and Şahin (2016) argues that the occupations related to the subjects should be mentioned in the classroom in order to improve the students' perceptions of career in STEM fields. The ages between 10 and 14 are critical for students to participate in STEM activities (Christensen & Knezek, 2013) and to develop attitudes and beliefs about career options in the STEM fields (Super, 1969). Therefore, in this period, it should be

ensured that students gain experiences related to STEM fields through in-class and out-of-class applications. The researches carried out on the nature of STEM and the interest in STEM fields is still insufficient (Falk, Staus, Dierking, Penuel, Wyld & Bailey, 2016).

Engineering education, which is an important factor in STEM education, has been included in science education programs by Ministry of National Education, which is already in force in Turkey (MEB) (MOE, 2018). This field, which is referred to as engineering and design skills, enables students to integrate science into mathematics, technology and engineering; to reach a level at which they can make inventions and innovations with an interdisciplinary point of view, to create products by using their knowledge and skills, and to develop some strategies about how to create added value for these products. The number of the studies made in STEM education in Turkey and all around the world have been increasing day by day.

It is known that there is a strong link between attitude and success when it comes to science education. The shortages in this field can be made up by examining the link between the sub-units of STEM and 21st century skills and their effects on students' attitude and success.

The aim of this study is to determine the attitudes of secondary school students towards STEM Education. For this purpose, an answer has been sought to the following sub-problems;

1) What are the attitudes of secondary school students towards science, mathematics, technology mathematics and 21st century skills?
2) Is there any difference between students' attitudes towards STEM Education in terms of their gender?
3) Is there any difference between students' attitudes towards STEM Education in terms of their success in science courses?
4) Is there any difference between students' attitudes towards STEM Education in terms of their overall success in courses?

2. Method

In this research, screening model, which is one of the quantitative research methods, has been used. Item averages, standard deviation, t-test and correlation have been used in the analyses.

The attitude towards STEM scale, which was developed by the Friday Institute for Educational Innovation (2012) and took its final form with the study of Unfried et al. (2015), consists of 37 items and it is a 5-point Likert scale. The Turkish version of the scale was prepared by Özcan and Koca (2018). The items in the scale are rated between “Strongly Agree (5)” and “Strongly Disagree (1). The scale has a structure with a maximum score of 185 and a minimum of 37 points. The scale has a four-factor structure: Mathematics, Science, Engineering and Technology and 21st century skills. Items "1, 2, 3, 4, 5, 6, 7 and 8" represent the mathematical factor; "9, 10, 11, 12, 13, 14, 15, 16 and 17" represent the science factor; "18, 19, 20, 21, 22, 23, 24, 25 and 26" represent the engineering and technology factor; and "27, 28, 29, 30, 31, 32, 33, 34, 35, 36 and 37"

represent the 21st century skills factor. The internal consistency coefficients of the factors forming the scale were found by the researcher as follows; Mathematics, α = .90; Science, α = .89; Engineering and Technology, α = .90; 21st century skills, α = .92.

Table 1: Reliability Coefficient Values of the Scale

Dimensions	Number of items	Reliability coefficient of scale (α)	Reliability coefficient of Turkish version (α)	Reliability coefficient (α)
Mathematics	8	0.90	0.86	0.80
Science	9	0.89	0.87	0.80
Engineering and technology	9	0.89	0.86	0.85
21st century skills	11	0.91	0.88	0.86

In the adapted version of the scale, Cronbach Alpha internal consistency coefficient was calculated as .86 for mathematics factor, .87 for science factor, .86 for engineering and technology factor and .88 for 21st century skills. The Cronbach's reliability coefficient of Alpha calculated for the whole scale was found to be .91. In this study, however, it is 0.80 for mathematics and science, 0.85 for engineering and mathematics and 0.86 for 21st century skills. The reliability coefficient of the whole scale was found to be 0.91. In this study, the scale was applied to the secondary school students with the permission of the authors who adapted the scale to Turkish.

2.1 Population and Sample

The population of the study consists of the students studying in Muş province. The sample is composed of the students studying at a public school. Of these students, 50.5% (f = 194) are female and 49.5% (f = 190) are male. 26.8 (f = 103) of the students are 5th grade students, 25.3 (f = 97) are 6th grade students, 27.9 (f = 107) are 7th grade students and 20.1 (f = 77) are 8th grade students. There are 384 students in total.

2.2 Data Analysis

First of all, normality test was used to predict the sub-problems of the study.

2.3 Normality Test

Table 2: Normality Test values

	Kolmogorov-Smirnov[a]			Shapiro-Wilk			Skewness and Kurtosis	
	Statistic	df	Sig.	Statistic	df	Sig.	Skewness	Kurtosis
Overall grade point average	,050	384	,024	,974	384	,000	-0,456	-0,220
Science grade point average	,098	384	,000	,955	384	,000	-0,636	0,408
STEM Attitude	,092	384	,000	,974	384	,000	-0,372	-0,044

Table 2 shows the results of the normality test for the overall grade point average, science grade point average and STEM Attitudes. According to Kolmogorov-Smirnova test, overall grade point average is (p = 0.024 <0.05), science grade point average is (p = 0.000 <0.05) and STEM attitude distribution is (p = 0.000 <0.05); According to Shapiro-

Wilk test, general grade point average is ($p = 0.000 < 0.05$), science grade point average is ($p = 0.000 < 0.05$) and STEM attitude distribution is ($p = 0.000 < 0.05$). These values indicate that the data are not normally distributed, however, Hair, Black, Babin, Anderson and Tatham (2013) state that the skewness and Kurtosis values of the data are between +1.0 and 1.0 and this means the presence of a normal distribution.

Since the data were assumed to be normally distributed, average, standard deviation, t-test and correlation test were used in the analysis of the data. Item averages and standard deviation values were examined in order to determine the students' attitudes towards Science, Mathematics, Technology-Mathematics and 21st century skills, which is the first sub-problem. As for the second sub-problem, t-test was used to determine the differences between the students' attitudes towards STEM Education depending on their genders. Correlation was applied in order to examine the differences between the students' attitudes towards STEM Education depending on their success in Science courses, which is the third sub-problem, and also to determine the differences between students' attitudes towards STEM education depending on their overall success in courses, which is the fourth sub-problem.

3. Results

In this section, you can see the findings which in line with the sub-problems of the research.

3.1 Findings related to the first sub-problem: "What are the attitudes of secondary school students towards science, mathematics, technology-mathematics and 21st century skills?"

Table 3: Average and Standard Deviation Values of the Scale Dimensions

Dimensions	N	X	Ss
Mathematics	384	3,4150	,99811
Science	384	3,9074	,87085
Engineering and Technology	384	3,8119	,93270
21st Century Skills	384	3,9823	,83716
STEM	384	3,7991	,68952

Table 3 shows the average and standard deviation values of all STEM attitude scale and its dimensions. In mathematics, the average is 3.99 and standard deviation is 0.99. In science, the average is 3.90 and standard deviation is 0.87. In engineering and technology, the average is 3.81 and standard deviation is 0.93. In the 21st century skills, the average is 3.98 and standard deviation is 0.83. In the entire STEM attitude scale, the average is 3.79 and standard deviation is 0.68. It is seen that mathematics average is below the STEM average. The highest average belongs to the 21st century skills.

Table 4: The averages and standard deviation values in Mathematics

Mathematics Dimension	N	X	Ss
Mathematics has been my worst subject.	384	3,6016	1,54653
I would think of a Math-related job.	384	3,1328	1,60305
Mathematics is too difficult for me.	384	3,3594	1,52131
I am a good student in Math lessons.	384	3,3177	1,43914
Although I am good at most of the subjects, I am not good at Mathematics.	384	3,5391	1,50319
I am sure I can make advanced studies in Mathematics.	384	3,2656	1,46402
I can get good grades in Mathematics.	384	3,6458	1,36521
I am good at Mathematics.	384	3,4583	1,42097

Table 4 shows the averages and standard deviation values in mathematics depending on the students' answers to the items. Based on the average value of 3.41 in the Table 3, the values below this value are considered as negative and those above this value are considered as positive. The average of the statement "Mathematics has been my worst subject" is 3.60. Because the root of the sentence is negative, it has a positive meaning. Participating students do not think that mathematics is their worst subject. It seems that they do not intend to choose a career in mathematics. Participating students do not think that mathematics is difficult for them. Although the students are not good at most other subjects, they state that they are not good at mathematics. Students state that they are not sure if they can do advanced studies in mathematics. The participant students believe that they can get good grades in mathematics and that mathematics lesson is good.

Table 5: Average and Standard Deviation Values of Science

Science Dimension	N	X	Ss
I am confident when dealing with science.	384	4,1068	1,22701
I can think of a Science-related career.	384	3,7109	1,38333
I think I can use Science outside of the school.	384	3,7214	1,40791
Having knowledge of Science will help me make my living.	384	4,0833	1,24046
I will need Science in my future working life.	384	3,8958	1,37093
I know I can do well in Science.	384	4,1302	1,18464
Science will be important for my working life.	384	3,9844	1,27017
I am good in most subjects but I am not good in Science.	384	3,8776	1,43005
I am sure I can make advanced studies in Science.	384	3,6562	1,29533

Table 5 shows the average and standard deviation values of the science. In Table 3, the average of science was calculated as 3.90. Therefore, it can be said that the items above this average are positive. Participating students stated that they are confident when dealing with science. Students think that their knowledge of science will help them to earn their living. The students believe that they will do well in science lessons and think that science will be important for them in their working life. Participating students do not intend to pursue a career in science and state that they do not expect to use it outside of the school. The students think that they will not need science in their future work. Although they are good at most lessons, they think they are not good at science lessons. The students are not sure if they will make advanced studies in science.

Table 6: Average and Standard Deviation Values of Engineering and Technology

Engineering and Technology Dimension	N	X	Ss
I enjoy dreaming of creating new products.	384	4,1094	1,30815
If I learn engineering, I can develop what people use in every day life.	384	3,8620	1,31042
I am good at repairing.	384	3,3776	1,43460
I wonder how machines work.	384	3,9974	1,33344
Designing new products is important for my future working life.	384	3,6771	1,41970
I wonder how electric devices work.	384	3,9063	1,41109
I want to use creative applications in my future working life.	384	3,8411	1,35318
Having knowledge of how Math and Science is used will help me invent useful things.	384	3,8620	1,36889
I believe I can be successful in Engineering.	384	3,6745	1,36375

Table 6 shows the average and standard deviation values of Engineering and Technology. In Table 3, the average of engineering and technology was calculated as 3.81. Participating students express that they like to dream of creating new products, wondering how machines work, and if they learn engineering, people can improve what they use in everyday life. Students state that they are curious about how machines and electronic devices work. The students think that they want to use creative applications in their working life and that knowing how to use math and science together will help them invent useful things. However, the students also state that they are not good at fixing something, and do not believe that they can be successful in engineering.

Table 7: Averages and Standard Deviation Values in 21st Century Skills

21st Century Skills Dimension	N	X	Ss
I am sure I can lead others to achieve their goals.	384	3,6250	1,41237
I am sure I can encourage others to do everything they can.	384	3,6719	1,30540
I am sure I can do high quality work.	384	3,9766	1,17501
I am sure to respect the differences of my friends.	384	4,2396	1,16067
I am sure I can help my friends.	384	4,2448	1,12761
I am sure I will take into account the opinions of others when making decisions.	384	4,1120	1,19637
I am sure I can make changes when things don't go as planned.	384	3,9974	1,22101
I can set my own learning goal.	384	4,0599	1,23865
I can use my time wisely when I am working alone.	384	3,9167	1,25302
When I have lots of things to do, I can choose which one I have to do first.	384	3,9792	1,26804
I can work well with students whose past experiences are different from mine.	384	3,9792	1,26804

Table 7 shows the averages and standard deviation values in 21st Century Skills. In Table 3, the average of 21st century skills was calculated as 3.98. Participating students state that they are confident that they will be able to do high quality work, that they are sure to respect the differences of their friends and that they can help their friends. Students state that they are confident that they will take into account the opinions of others when making decisions; they can make changes when things don't go as

planned, and they can set their own learning goals. Participants state that they are confident that they can use their time wisely when they are working alone, they can choose which one they have to do first, and they can work well with students whose past experiences are different from theirs. However, students think that they are not sure if they can lead others to achieve a goal, and if they can encourage others to do everything they can.

3.2 Findings related to the second sub-problem: "Is there any difference between students' attitudes towards STEM Education in terms of their gender?"

Table 8: Differences Between Students' Attitudes Towards STEM Education in terms of their Gender

	Gender	N	X	Ss	t	p
Mathematics Dimension	female	194	3,3402	,96359	-1,487	0,138
	male	190	3,4914	1,02910		
Science Dimension	female	194	3,9404	,83892	,751	0,453
	male	190	3,8737	,90327		
Engineering and Technology Dimension	female	194	3,6478	,97704	-3,537	0,000
	male	190	3,9795	,85566		
21st Century skills Dimension	female	194	3,9925	,82739	,248	0,804
	male	190	3,9713	,85037		
STEM Attitude	female	194	3,7549	,64177	-1,292	0,197
	male	190	3,8458	,73395		

Table 8 shows that there is a difference between students' attitudes towards STEM education depending on their genders. In the mathematics dimension, there is not any meaningful difference between the attitudes of the students in connection with their genders (t = -1,487, p> 0.05). The students' attitudes in the science dimension do not show any meaningful difference depending on their genders. (t =, 751, p> 0.05). It is seen that there is a significant difference between students' attitudes in terms of engineering and technology (t = -3,537, p <0.05). The average scores of male students (X = 3.97) are higher than the average of female students (X = 3.64). As for the 21st century skills, it is not seen that there is a meaningful difference between the attitudes of students depending on their genders (t =, 248, p> 0.05). For the STEM attitude dimension, the attitudes of the students do not show any meaningful difference according to gender (t = -1,292, p> 0.05).

3.3 Findings related to the third sub-problem: "Is there any difference between students' attitudes towards STEM Education in terms of their success in science courses?"

Table 9: Correlation between students' attitudes towards STEM education in terms of their success in science courses

Variable	N	r	p
Science Success STEM Attitude	384	0,430	0,00

As it can be seen from Table 9, as a result of the Pearson Product-Moment Correlation analysis conducted to find a correlation between students' attitudes towards STEM Education in terms of their success in science courses, it is clear that there is a statistically positive meaningful correlation between the points, which is at the level of $p<.01$.

3.4 Findings related to the fourth sub-problem: "Is there any difference between students' attitudes towards STEM Education in terms of their overall success in courses?"

Table 10: Differences between Students' Attitudes towards STEM Education depending on their Overall Success in Courses

Variable	N	r	p
Overall success in courses STEM Attitude	384	0,404	0,00

As it can be seen from Table 10, as a result of the Pearson Product-Moment Correlation analysis conducted to find a correlation between students' attitudes towards STEM education in terms of their overall course achievement, it is clear that there is a statistically positive meaningful correlation between the points, which is at the level of $p<.01$.

4. Conclusions, Discussion and Recommendations

In this study in which the attitudes of secondary school students towards STEM education are evaluated, the four dimensions of STEM have been evaluated separately and the results have been reached within the framework of sub-problems. Attitudes play a major role in students' success or failure in mathematics and their approach to mathematics (Çoban, 1989). The fact that the participating students do not think mathematics is difficult for them, and they think they can get good grades in mathematics can be interpreted as an indicator of their positive attitude towards mathematics. These results coincide with Neale's (1969) statements. Zan and Di Martino (2007) state that it is the feelings, behaviors and beliefs that shapes the positive or negative tendency towards mathematics. In this study, the students state that they are not sure if they can carry out advanced studies in mathematics and have a career in this field. The positive attitude of the students will affect their future career plans positively. According to Uyanık (2017), creating positive attitude towards science courses should be one of the important objectives of science courses. Although the participating

students have positive attitudes in many fields, they do not intend to pursue a career in science and state that they do not expect to use them outside the school. The students think that they will not need science in their future working life, and state that although they are good in most lessons, they are not good in science, and also they are not sure if they will make advanced studies in science classes. Studies aimed at revealing the importance of attitude in terms of science education have shown that the attitudes towards science courses have an effect on the students' academic success, creation of scientific attitudes and direction in science (Özdemir, 2012). The content that will enable them to form positive attitudes towards science and STEM should be developed. The participating students are curious about how machines and electronic devices work. They want to use creative applications in their future working life and state that knowing how to use math and science together will help them invent useful things. According to these findings, students have knowledge that STEM fields are related to each other. However, students state that they are not good at fixing something, and do not believe that they can be successful in engineering. It is seen that the students have a negative attitude towards making a career in mathematics, science and engineering. Many students lose their interest in science and mathematics when they reach secondary school (Museus, Palmer, Davis & Maramba, 2011; Turner & Ireson, 2010).

Unfortunately, many students who have the ability to become engineers do not pursue a career in engineering because they do not know what they do or do not have the skills and interest to become an engineer (NRC, 2012). For this reason, it is seen that some precautions should be taken for students to make a career in science, technology, engineering and technology fields and necessary information should be given to them about making a career in these fields. According to Kylonen, 2012; Soland, Hamilton & Stecher, 2013, the demand for intrapersonal skills (self-management, self-regulation, time management, personal development, lifelong learning and compliance) is higher in terms of 21st century skills. However, it is seen that the leadership skills of the participants fall behind. As for the attitudes towards STEM, there is not any meaningful difference between students' attitudes according to gender, except the engineering and technology dimension. This result is similar to what Sjøberg & Schreiner, (2005) points out: girls in developing countries have the same or greater interest and tendency as boys. Although Turkey STEM Education Report (2015) proposes that there should be some precautions to make girls more interested in STEM fields, Turkey is above the average of OECD with the proportion of 50% according to the TIMSS (2011) and TIMSS (2015) reports. The fact that there is a meaningful difference in favor of boys in the dimension of engineering and technology can be interpreted as the fact that girls do not have enough information in these fields. As Hirsh, Carpinelli, Kimmel, Rockland, & Bloom (2007) state, many women are reported to have no knowledge of engineering, and many are thought to be more interested in careers in which they will serve for the society.

It has been found that when students have positive attitudes towards science, their success is positively affected (Altınok, 2005; Şişman, Acat et al., 2011). Similar results have also been obtained in this study, and a meaningful correlation has been

found between STEM attitudes and science achievement. By developing positive attitudes towards science, students' interest in science can be increased and therefore they can have a STEM-related profession in the future (Mattern and Schau, 2002). In the following studies, the correlation between success, gender, grade level, self level and self-efficacy levels and attitudes can be examined in STEM integration classes. The concept of STEM attitude can be examined in terms of cognitive, affective and behavioral characteristics.

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