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The Relationship between Emotional Intelligence Levels, Problem Solving Skills and Academic Achievements of Engineering Students

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Abstract

Emotional intelligence is the ability of people to understand the complex emotions they have in themselves and to analyse the emotional expressions of the people towards them. Problem-solving is a cognitive process for converting a particular situation into a resulting state when there is no clear solution method for the problem solver. University students can cope with their problems more easily if they are able to use their emotional intelligence to show rational and appropriate approaches. This is especially important for engineering students who are transitioning from education to business life. The aim of this study is to examine the relationship between emotional intelligence levels and problem-solving skills of engineering students in terms of gender, grade, department, university and academic achievement variables. The study group consisted of 491 university students (155 females, 336 males) enrolled in Istanbul Technical University and Yıldız Technical University Engineering Programs in 2018-2019 academic year. In the data analysis of this study, which was designed in a relational screening model, ANOVA and T-test were used for data with normal distribution in sub-dimensions, and h tests such as Mann Whitney U and Kruskal Wallis were used for data with abnormal distribution. Pearson correlation test was used to determine the relationship between variables. According to the findings, it was seen that there was a moderate uphill (negative) correlation between the emotional intelligence level and problem-solving skill of the engineering students and there was a weak uphill (positive) correlation between emotional intelligence and academic achievement. In addition, there was a weak uphill (negative) correlation between problem-solving skill and academic achievement of engineering students. The results indicate that the level of emotional intelligence and problem-solving skills of engineering students predict the academic achievement with a low rate.

Keywords: Emotional Intelligence Level, Problem-Solving Skills, Academic Achievement, Engineering

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Introduction

Engineering is not just a design process, but also the process of effectively solving problems that people face. The engineering design process is related to real situations (Kilgore et al., 2007). In the past, engineering was only considered as a profession that puts forward technical knowledge and skills. Today, however, these criteria are not sufficient for the engineering profession. In addition to the technical knowledge and skills for a better engineering, the person needs to be able to renew himself continuously, adapt to the changing conditions, communicate effectively with the people, adapt to teamwork and adapt to the environment, evaluate the contribution of the solutions made to the environment and contribute to the development of civilization (Payzin, 2009). Thanks to these skills, engineers can find new ideas for industry and technology and change the living conditions of humanity by making decisions (Dinçer et al., 2003). At the beginning of the knowledge and skills that modern engineers need to acquire in their learning process is problem-solving skills. In this way, engineers can apply their knowledge and skills to similar situations and produce solutions to the problems they face (Huntzinger et al., 2007). At the same time, competencies that provide superior performance in business life are emotional competencies beyond cognitive abilities. When we look at the high performers, these are not high ones with high cognitive intelligence or technical knowledge, they are able to communicate with their colleagues, are prone to teamwork, and are emotionally mature (Baltaş, 2006). According to the results of a national survey on what employers are looking for at the beginner (Goleman, 2010), certain technical skills are less important than the ability to learn at baseline. According to the rankings of the employers, the following skills are wanted:

(1) listening and verbal communication,

(2) adaptability and creative responses to defeats and obstacles,

(3) personal management, trust, motivation to work in line with the objectives, to develop the career and to be proud of the work achieved,

(4) intragroup and interpersonal effectiveness, tendency to cooperation and teamwork, ability to solve conflicts,

(5) efficiency in organization, willingness to contribute, leadership potential.

More and more companies have begun to see that encouraging emotional intelligence skill is a vital element in the management philosophy of each organization (Goleman, 2010).

Research on student-learning outcomes revealed that university graduates did not necessarily develop the skills required by the industry. The research suggested that there is a shortfall in important skills being developed among university students, such as communication, decision making, problem-solving, leadership, emotional intelligence and social ethics. The research pointed to a mismatch between graduate skills developed during university studies and the skills needed in the workplace (Patil, 2005; Radcliffe, 2005; Wellington et al., 2002). Research further highlighted that in a globalized work environment, university graduates tended to be ill-prepared in their ability to work with people of different cultural backgrounds (Wellington et al., 2002). Engineering students entering the labour force must not only be technically competent but also have the ability to work with other people. The opportunity to develop emotional intelligence and problem-solving skills is limited to the teaching process. Due to the high technical focus

of the engineering curriculum, these features are often a shortcoming for newly graduated engineering students. The main purpose of this study is to investigate the emotional intelligence levels and problem-solving skills of engineering students in terms of gender, department, grade, and academic achievement variables. Accordingly, the following questions were consulted:

1. Do the engineering students differ in their levels of emotional intelligence and problem solving skills in terms of gender, grade, department, university and academic achievement variables?
2. Is there a relationship between
    a) the emotional intelligence levels and problem solving skills of engineering students?
    b) the emotional intelligence levels and academic achievements of engineering students?
    c) the problem solving skills and academic achievements of engineering students?

Emotional Intelligence (EI)

Emotional intelligence (EI) refers to the ability to identify and manage one's own emotions, as well as the emotions of others (Goleman, 2016). In the past two decades, EI has become a popular and often-used construct in the study of psychology and other social sciences (Bajerski, 2016). In 1990, two psychologists, (Salovey & Mayer, 1990) first described the concept of emotional intelligence as the ability to deal with the emotions of individuals (Konakay, 2013; Topaloglu, 2014). According to Bar-On (2006), there are five areas of EQ, each consisting of a number of competencies, namely - Intrapersonal (emotional self-awareness, self-regard, assertiveness, independence and self-actualization);

- Interpersonal (empathy, social responsibility and interpersonal relations);
- Adaptability (reality testing, flexibility and problem solving);
- Stress management (stress tolerance and impulse control); and
- General mood (happiness and optimism) (Bar-On, 2006).

Furthermore, Goleman (1998) reformulated EQ on a theory of organizational and job effectiveness. All these models share a common core of basic concepts, including self-awareness, self-management, social awareness, and relationship management (Shah et al., 2018). A person with good emotional intelligence before the start of a job, the belief in achieving the job is also high. At the same time, this person can have a good quality of life by minimizing the negative feelings experienced by him such as stress, anxiety, fear and concern by revealing his ability to control his feelings (Yıldız, 2016). People with a higher level of emotional intelligence can better understand the feelings of oneself and other people so they can be happier and productive than the other people (Topaloglu, 2014). Brandenburg, et al. (2011) propose that engineering students should have advanced technical skills. However, only these skills will not be sufficient to be better in their field. From these perspectives, Zhou (2010) offers two possible reasons for the importance of EI in engineers' success. First, "EI is significantly related to cognitive capability, with markedly strong effects on high scholastic achievement". As cited in Riemer (2003), the second one is communication. Students' communication

skills could be increased based on industry and improvement of EI elements. Additionally, Riemer (2003) emphasized that engineering graduates with high EI will indicate more honest functioning in their business life (cited in; Tekerek and Tekerek, 2017).

Problem Solving (PS)

Problem solving is defined by Heppner (1978) as directing cognitive and effective actions such as behavioural responses to a target in order to comply with internal/external requests or calls; by D'Zurilla (1988) as a cognitive-affective-behavioural process involving finding the effective ways of coping with daily-life problems; and by Altun (2003) as a response to an important and difficult situation requiring critical thinking for solution. Individuals need to have the problem solving skill in order to solve the problems they encounter (Berkant & Eren, 2013; Temur, 2012). Problem solving is one of the 21st century skill that students are required to possess. "21st century science" is a widespread condition in education nowadays (DuFour & DuFour, 2010). They include abilities that students need to develop in today's universe. Problem solving is one of the most important skill and it frequently calls for working collaboratively (Care & Griffin, 2014). Nearly all jobs require collaboratively working skill, high problem solving skill, communication science, and using technology effectively in this century (Gore, 2013). High-level problem solving skills which are enforced in the outcome competencies such as design, synthesis and analysis, draw on skills within an individual which are not always explicitly taught such as the ability to reason which is critical for evaluation. On the other hand, successful execution of innovative solutions to complex problems relies on the existence of a bit of inherent capabilities within the problem solver such as the different courses of 'know that', 'know why' and 'know how' (Winch, 2013). Modern engineers should be fitted with several sorts of knowledge and skills to handle the ambiguities and adapt their knowledge to novel positions. Creative problem solving skill is the first in the list of that kind of knowledge. Thanks to creative problem solving skills, engineers can adjust their knowledge to similar sites and develop results for urgent technical cases. (Huntzinger et al., 2007).

Method

Research Model

In this study, the relational screening model was used to identify the correlation between the university students' intended use of emotional intelligence levels, their problem solving skills and academic achievements. The purpose of the single screening model was to determine the type and level of the variables individually, whereas relational screening model was aimed to determine whether there was an increasing or a decreasing relationship between two or more variables and if there was a change, to identify the degree of this said change (Karasar, 2015). The survey sample was determined using convenience sampling. Convenience sampling consists of the selection of convenient and volunteering participants and not sufficient to represent the whole universe, but would provide useful information for possibilities (Creswell, 2014; Fraenkel, Wallen and Hyun, 2015).

Participants

This study was conducted in the 2017-2018 academic year with the participation of 491 volunteer students studying at Istanbul Technical University and Yildiz Technical

University. The appropriate method was employed in the field. During the application, students were informed verbally about the research, explanations were given about how they could resolve the scale and their verbal permissions were received. Students were free to participate in research or not to participate in the principle of volunteering, information about themselves to be explained to the principle of confidentiality was promised that the data will not be divulged to others. Students' universities, departments, grades and genders are given in Table 1 in terms of frequency and percentage.

Table 1. The distribution of the research group with respect to gender, grade, department and university

Description	Number of Respondents	Percentage of Total Sample
Gender		
Female	155	31.6
Male	336	68,.4
Total	491	100
Grade		
Second Year	100	21.30
Third Year	241	48.20
Fourth Year	150	31.50
Total	491	100
Department		
Textile Engineering	60	12
Mechanical Engineering	61	14
Electrical Engineering	50	10
Control and Automation Engineering	50	10
Computer Engineering	40	8
Mining Engineering	30	6
Industrial Engineering	50	10
Naval Architecture and Marine Engineering	80	16
Manufacturing Engineering	70	14
Total	491	100
University		
Istanbul Technical University	295	60
Yildiz Technical University	196	40
Total	491	100

Data Collection Instruments

In the study, as data collection ınstruments, a personal information form, the Emotional Intelligence Scale (Schutte et, al.1998) and Problem Solving Inventory were used (Heppner & Petersen, 1982).

Personal Information Form

The researchers prepared a list of questions to gather information about the socio-demographic characteristics of the students. The questions aimed to extract answers about the student's gender, department, grade, university and academic achievement.

Emotional Intelligence Scale (EIS)

In order to define the emotional intelligence levels of students, Emotional Intelligence Scale (EIS), developed by Schutte et al. (1998) and revised by Austin et al. (2004) and adapted to Turkish by Tatar et al. (2011), was used as the data collection instrument. An EIS was made applicable after constructing and content validity and reliability analyses. Cronbach-Alpha internal consistency coefficient of the scale was found to be 0.82 for the whole and 0.75, 0.39 and 0.76 for the sub-dimensions. The test-retest reliability coefficient for the whole scale was found to be r = 0.49 at one week intervals (n = 88) and r = 0.56 at two weeks intervals (n = 85). EIS consists of 41 items in all of which 20 are positive and 21 are negative affirmations that have Likert type grading as follows: (1) Definitely disagree, (2) Disagree, (3) Not sure, (4) Agree, (5) Definitely Agree. In addition, the scale has three factors which are "Optimism/Mood Regulation", "Utilization of Emotions" and "Appraisal and Expression of Emotions" and these three factor measures general emotional intelligence.

Problem Solving Inventory (PSI)

The Problem Solving Inventory (PSI) was developed by Heppner and Petersen (1982) and adapted to Turkish by Sahin, Sahin and Heppner (1993) to measure people's perceptions of their personal problem solving behaviours and attitudes. It is a scale consisting of 35 points. The PSI is composed of thirty-two, Likert type points, ranging from strongly agree (1) to strongly disagree (6). Lower scores indicate an assessment of oneself as a relatively effective problem solver, whereas higher scores indicate an assessment of oneself as a relatively ineffective problem solver. In the study conducted on 244 university students, the Cronbach's alpha validity coefficient of the scale was .88, and the reliability coefficient obtained by halving technique was r = .81.

Data Analysis

Data were analyzed using SPSS (Statistical Package for Social Sciences) 25.0 program. In the data analysis of this study, ANOVA and T test were used for normal distribution data. Nonparametric equivalents of these tests, such as Man Whitney U and Kruskal Wallis, were used for data showing abnormal distribution. A significant difference was found in the results of the analysis, impact values were calculated and interpreted. Pearson correlation test was used to determine the relationships between variables.

Findings

In this section, the findings of the study are given in tables. Table 2 summarizes emotional intelligence levels of university students in terms of gender.

Table 2. T-test results of Emotional Intelligence scores in terms of gender variable.

Gender	N	$\bar{X}$	S	sd	t	p
Male	336	142,8423	19,90610	489	.770	.077
Female	155	144,2839	17,82154			

As seen in table 2, emotional intelligence levels of students do not differ significantly according to gender ($t_{(489)}$ = .770, p> .05).

Table 3. ANOVA results of Emotional Intelligence scores in terms of grade variable.

Intergroup	**Sum of Squares**	**SD**	**Mean Square**	**F**	**p**
Between groups	2130,355	2	1065,177	2,892	,056
Within-group	179746,232	488	368,332		
Total	181876,587	490			

The results of the current study indicate that there is no significant difference in the students' emotional intelligence levels (F (2, 488) = 2,892, p> .05).

Table 4. Kruskal-Wallis results of Emotional Intelligence scores in terms of department variable

Department	N	Mean rank	SD	X^2	P	Significant Difference	d
Textile Engineering	59	244,14	8	26.136	.001	Textile-Manufacturing	0,18
Mechanical Engineering	69	274,09				Mechanical-Mining	0,26
Electrical Engineering	49	248,87				Mechanical-Manufacturing	0,34
Control and Automation Engineering	50	240,28				Electrical-Manufacturing	0,22
Computer Engineering	39	268,42				Control and Automation-Manufacturing	0,20
Mining Engineering	29	192,52				Computer-Mining	0,25
Industrial Engineering	50	277,16				Computer-Manufacturing	0,31
						Mining-Industrial	0,95
Naval Architecture and Marine Engineering	79	268,27				Mining-Manufacturing	0,22
						Industrial-Manufacturing	0,36
Manufacturing Engineering	67	181,47				Naval Architecture and Marine -Manufacturing	
Total	491						

As seen in table 4 analysis indicate that emotional intelligence levels differ significantly according to students' department (X^2 (SD= 8, n= 491) = 26,136, p <.05). Considering the mean ranks of the groups, the highest emotional intelligence is obtained by the students of the department of industrial engineering. This score is followed by the students of mechanical, computer, naval architecture and marine, electrical, textile, control and automation, mining and finally manufacturing engineering departments. When the effect size of the differences is examined, the lowest impact size is between 0,18 and textile and manufacturing engineering, while the highest effect size is between 0,95 and mining and industrial engineering.

Table 5. Man Whitney-U results of Emotional Intelligence scores in terms of university variable

University	**N**	**Mean Rank**	**Rank Sum**	**U**	**p**
Istanbul Technical University	295	249,41	73576,00	27904,000	.513
Yildiz Technical University	196	240,87	47210,00		

The results of the current study analysis indicate that students' emotional intelligence levels do not differ significantly according to the university they study, (U = 27904.00, p>.0).

Table 6. Man Whitney-U results of Problem solving scores in terms of gender variable.

Gender	N	Mean Rank	Rank Sum	U	p
Male	336	241,24	81057,50	24441,500	.274
Female	155	256,31	39728,50		

As seen in table 6, the problem solving levels of the students do not differ significantly in terms of gender (U = 24441,50, p> .05).

Table 7. ANOVA results of Problem solving scores in terms of grade variable.

Intergroup	Sum of Squares	SD	Mean Square	F	p
Between Groups	1527,931	2	763,965	2,775	,063
Within-group	134326,668	488	275,260		
Total	135854,599	490			

The results of the current study analysis do not indicate that there is a significant difference in the problem solving level of the students in terms of the grades (F (2, 488) = 2,775, p> .05).

Table 8. Kruskal-Wallis results of Problem solving scores in terms of department variable.

Department	N	Mean rank	sd	X^2	P	Significant difference	d
Textile Engineering	59	291,31	8	29.564	.000	Textile-Manufacturing	0,19
Mechanical Engineering	69	235,66				Mechanical-Mining	0,24
Electrical Engineering	49	259,85				Mechanical-Manufacturing	0,24
Control and Automation Engineering	50	245,62				Electrical-Manufacturing	0,32
Computer Engineering	39	216,46				Control and Automation-Manufacturing	0,19
Mining Engineering	29	282,03				Computer-Mining	0,23
Industrial Engineering	50	219,35				Computer-Manufacturing	0,25
Naval Architecture and Marine Engineering	79	193,46				Mining-Industrial	0,27
Manufacturing Engineering	67	290,34				Mining-Manufacturing	0,26
Total	491					Industrial-Manufacturing	0,34
						Naval Architecture and Marine - Manufacturing	

The results of the current study analysis indicate that the problem solving levels differ significantly according to the students' department (X2 (SD = 8, n = 491) = 29,564, p <.05). Considering the mean ranks of the groups, it is seen that the students of the textile-engineering department follow the highest emotional intelligence. Manufacturing, mining, electrical, control and automation, mechanical, industrial, computer and finally naval architecture and mechanical engineering departments follow this. When the effect size of the differences is examined, it is between Textile and

Mechanical Engineering and Mechanical and Manufacturing Engineering with a low effect size of 0.19, while the highest impact size is between 0.27 and medium Mining and Naval Architecture Engineering.

Table 9. T-test results of Problem-solving scores in terms of university variable.

University	N	X̄	S	SD	t	p
Istanbul Technical University	295	106,5627	16,98765	489	1,630	,305
Yildiz Technical University	196	104,0663	16,05729			

As seen in table 9, the problem solving levels of the students do not differ significantly from universities at which they are studying (t (489) = 1,630, p> 0,05).

Table 10. Correlation results between Emotional Intelligence and Problem-Solving scores.

		Emotional Intelligence	Problem solving
Emotional Intelligence	Pearson Correlation (r)	1	-,307**
	Significance (p)		.000
	N	491	491
Problem solving	Pearson Correlation (r)	-,307**	1
	Significance (p)	.000	
	N	491	491

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

In table 10 results indicate that there was a moderate uphill relationship between emotional intelligence and problem solving.

Table 11. Correlation results between Emotional Intelligence and Academic Achievement scores.

		Emotional Intelligence	Academic achievement
Emotional Intelligence	Correlation Coefficient	1,000	0,25
	Sig. (2-tailed)	.	,580
	N	491	491
Academic achievement	Correlation Coefficient	0,25	1,000
	Sig. (2-tailed)	,580	.
	N	491	491

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

As table 11 indicated, there was a weak uphill positive correlation between emotional intelligence and academic achievement.

Table 12. Correlation results between Problem solving and Academic Achievement scores.

		Problem solving	Academic achievement
Problem solving	Correlation Coefficient	1,000	-,176**
	Sig. (2-tailed)	.	,000
	N	491	491
Academic achievement	Correlation Coefficient	-,176**	1,000
	Sig. (2-tailed)	,000	.
	N	491	491

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

As table 12 indicated there was a weak uphill negative correlation between problem solving and academic achievement.

Results and Discussion

The results indicate that emotional intelligence levels of students do not differ significantly according to gender. As Girgin (2009), Deniz (2018), Mavruk Özbiçer & Atıcı (2018) have concluded in their research there was no significant difference between gender and emotional intelligence level. However, Zahedi et al. (2015) and Tekin & Gündoğan (2017) found that emotional intelligence indicated a significant difference according to gender. At Zahedi's (2015) research the participants are from a high school and at Tekin & Gündoğan's (2017) participants are employees at a hotel. The difference of the age of the participants may explain the reason for this different result. The results of the current study indicate that there is no significant difference in the students' emotional intelligence levels. In a similar way the results of the research conducted by (Deniz & Yılmaz, 2004; Aydın, 2010; Kızıl, 2012), indicated that emotional intelligence did not indicate a significant difference according to the grade level. The results indicate that emotional intelligence levels differ significantly according to students' department. Unlike the results of the research conducted by Alper, 2007; Gürol, 2008; Kizil, 2012; Mammadow, 2015; Ozdemir & Dilekmen, 2016 there is no significant difference between the emotional intelligence and department. At Alper's (2007) and Gürol's (2008) researches the participants are the teachers and at Kizil's (2012) and Ozdemir & Dilekmen's (2016) researches the participants are the students at education faculties; lastly at Mammadow's (2015) research the participants are the students at tourism faculty. The difference of the faculty of the participants may explain the reason for these different results. The results indicate that students' emotional intelligence levels do not differ significantly according to the university they study. Mammadow (2015), in parallel with the results of the study with university students, found no significant difference with the emotional intelligence and university variables.

The results of the study indicate that the problem-solving levels of the students do not differ significantly in terms of gender. In parallel with the results of the study, Saracaloğlu, Serin & Bozkurt (2002), Güler (2006), Yüksel (2008) and Kasımoğlu (2013) reported that the problem-solving skills did not change according to gender as a result of their research. However, Arslan, Hamarta, Arslan & Saygin (2010) and Karabulut & Ulucan (2011) found that the problem-solving skills differed significantly according to gender variable. At Arslan, Hamarta, Arslan & Saygin's (2010) research, the participants are from high school and problem-solving skills is limited as intrapersonal problem solving. At Karabulut & Ulucan's (2011) research, the participants are students in orphanages. The difference of the ages of the participants and the limitation of problem-solving definition may explain the reason for this different result. The results of the current study analysis do not indicate that there is a significant difference in the problem-solving level of the students in terms of the grades. Kasımoğlu (2013) also found results in parallel with the results of the study. The results of the current study analysis indicate that the problem-solving levels differ significantly according to the students' departments. In parallel with the results of the research, there are also studies indicating that there is a significant difference between problem solving skills and the department variable. Unlike the results of the research (Kuru & Karabulut (2009); Basmaci (1998); Katkat (2001), Guven & Akyuz (2001), university students as a result of their study did not indicate a significant difference between problem solving

skills according to the department. At all of these researches, the participants are selected from faculties except for the engineering students, this may explain the reason for this different result.

The results indicate that the problem-solving levels of the students do not differ significantly from universities at which they are studying. In table 10, there is a moderate uphill relationship between emotional intelligence and problem solving. In Tunca (2004), the results of the research also indicated that there is a negative relationship between emotional intelligence and problem solving. However, Karabulutlu, Yılmaz and Yurttaş (2011) found that students' problem-solving skills increased as their emotional intelligence level increased. In addition, Deniz (2013) found a relationship between emotional intelligence and problem-solving skills in a study with university students.

According to the results, there is a moderate uphill relationship between emotional intelligence and problem solving. In Tunca (2004), the results of the research also indicate that there is a negative relationship between emotional intelligence and problem solving. However, Karabulutlu, Yılmaz and Yurttaş (2011) found that students' problem-solving skills increased as their emotional intelligence level increased. In addition, Deniz (2013) found a relationship between emotional intelligence and problem-solving skills in a study with university students.

The results indicate that there was a weak uphill positive correlation between emotional intelligence and academic achievement. In parallel with the results of the study, Yılmaz (2007), Kavcar (2011), Mohzan, Hassan and Halil (2013), and Baba (2012) stated that there was a strong uphill relationship between emotional intelligence and academic achievement in their studies conducted on university students. The results indicate that there was a weak uphill negative correlation between problem solving and academic achievement. However, unlike the research data, Özyazıcıoğlu et al. (2009), Arlı, Altunay and Yalçınkaya (2011) reported a positive relationship between academic achievement and problem-solving skills.

Concluding Remarks

In this study, the relationship between emotional intelligence levels, problem solving skills and academic achievement of engineering students was examined. According to the results of the study, there was no significant difference between the emotional intelligence level and gender, grade and university variables of the engineering students. However, it is seen that there is a significant difference between the emotional intelligence level and department variable. Again, research results indicate that there is no significant difference between students' problem-solving skills and gender, grade and university variables. On the other hand, there is a significant difference between problem solving skills and the department variable.

While there is a negative correlation between emotional intelligence level and problem-solving skill of engineering students, there is a weak uphill positive correlation between emotional intelligence level and academic achievement. In addition, there is a significant negative correlation between problem solving skill and academic achievement of engineering students. The results indicate that the emotional intelligence level and problem-solving skill of engineering students predict the academic achievement with a low rate.

According to the findings of the research, the following suggestions can be given:

When the researches about emotional intelligence and problem solving are examined, it is observed that the studies related to the fields of medicine and education are studied intensively, but studies related to engineering and science are limited. Therefore, it may be advisable to conduct research in these areas. Colourful and interesting course content, psychological counselling services and symposium events can be included to improve engineering problem solving skills and emotional intelligence competencies of engineering students. This study is designed as a quantitative study and can be supported by qualitative and mixed design studies.

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