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EXAMINATION OF THE RELATIONSHIP
BETWEEN ENGINEERING FACULTY
STUDENTS' ACADEMIC
PROCRASTINATION BEHAVIORS AND
PROBLEM SOLVING SKILLS

MÜHENDİSLİK FAKÜLTESİ
ÖĞRENCİLERİNİN AKADEMİK ERTELEME
DAVRANIŞLARI VE PROBLEM ÇÖZME
BECERİLERİ ARASINDAKİ İLİŞKİNİN
İNCELENMESİ

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Abstract: Academic procrastination, a concept that prevents students from participating in teaching processes efficiently and effectively, can be considered as a problem that they need to solve. Academic procrastination, which is the problem of all individuals, is especially important for engineers who focus on problem solving abilities in education and business life. This research aims to examine the relationship between engineering faculty students' academic procrastination behaviours and problem-solving skills in terms of gender, grade, department, graduated high school type, the region of birth and perceived income level. The data of survey research designed a model of Turkey's largest and reputed engineering school of seven engineering faculty of Istanbul Technical University 400 (152 females and 248 males) were obtained from the participants. As data collection instruments; demographic information form, academic procrastination scale (APS) and problem-solving skills inventory (PSI) were used to the individuals who participated in the research. The findings indicated that the relationship between academic procrastination and problem solving scores is negative and low. In addition, students

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showed significant differences in problem solving skill levels according to grade and department variables.

Key Words: Academic procrastination, problem solving, engineering education.

Öz: Akademik erteleme, önceden planlanmış akademik görevlerin rasyonel gerekçe olmaksızın en son tarihe veya daha sonrasına ertelenmesidir. Diğer yandan, problem çözme, bir hedefe ulaşmada karşılaşılan zorlukların üstesinden gelme sürecidir. Öğrencilerin öğretim süreçlerine etkin ve etkili bir şekilde katılmalarını engelleyen bir kavram olan akademik erteleme, çözmeleri gereken bir sorun olarak düşünülebilir. Tüm bireylerin sorunu olan akademik erteleme hem eğitim hem de iş yaşamında problem çözme becerilerine odaklanan mühendisler için özellikle önemlidir. Bu çalışmanın amacı mühendislik fakültesi öğrencilerinin akademik erteleme davranışları ve problem çözme becerileri arasındaki ilişkinin cinsiyet, sınıf, bölüm, mezun olunan lise türü, doğduğu bölge ve algılanan gelir düzeyi açısından incelenmesidir. Bu çalışma betimsel tarama modeli olarak tasarlanmıştır. Araştırma verileri, Türkiye'nin en büyük ve tanınmış mühendislik üniversitesi olan İstanbul Teknik Üniversitesi'nin yedi mühendislik fakültesinden 400 (152 kadın ve 248 erkek) katılımcıdan elde edilmiştir. Veri toplama aracı olarak; Araştırmaya katılan bireylere demografik bilgi formu, akademik erteleme ölçeği ve problem çözme becerileri envanteri uygulanmıştır. Araştırma sonucunda akademik erteleme ile problem çözme puanları arasındaki ilişki negatif ve düşük düzeyde bulunmuştur. Öğrencilerin akademik erteleme davranış düzeyleri ile araştırma değişkenleri arasında anlamlı bir fark bulunamamıştır. Ancak öğrencilerin problem çözme beceri düzeyleri sınıf ve bölüm değişkenlerine göre anlamlı farklılıklar göstermiştir.

Anahtar Kelimeler: Akademik erteleme, problem çözme, mühendislik eğitimi.

Introduction

Engineering; is defined as the science that contributes to the development of civilization by directing economic and social forces in line with the wishes of humanity (Dinçer, et al. 2003). According to the definition of the "Engineering and Technology Accreditation Board (ABET)" (2003), the purpose of engineering education is to maintain an efficient engineering career and train graduates open to professional development, while Crawley et al. (2014) the aim is to prepare students for a wide range of engineering science with both professional engineering skills and deepen their knowledge of technical foundations. However, Ertepinar (2000), makes the aim of engineering education more specific by defining as "educate individuals who are equipped with fundamental knowledge and skills in their field, have gained breadth in various subjects as deep as they are concerned, have the ability of analysis, synthesis, design, written and oral expression in English and Turkish languages and have acquired the habit of lifelong learning. Regardless of the field, it is expected in our country from engineers who have undergone a four-year undergraduate education, to be equipped with certain skills". Ernst (1989) in his research named "Engineering Education Development Program" putting in order the most important aims of engineering education, he takes first place to solve the problems of analytical

solutions and alternatives (cited: Gencoglu & Cebeci, 1999). ABET's (2003) ranking of the criteria of engineering programs, "the ability to identify, model, solve engineering problems item clearly emphasizes that individuals in this area should have improved problem solving skills. In our age, educational philosophies, which are fundamental to education systems, attach importance to educating engineers who can solve the technical problems as well as solve problems as a whole and understand the solution (Baran & Kahraman, 2004). Procrastination is generally defined as leaving a task, avoiding to take responsibility or delaying to make decisions to another time (Akbay, 2009; Haycock et al, 1998; Kachgal, et al, 2001; Milgram, Mey-Tal & Levison, 1998). Klein (1971) states that the term "procrastination", which refers to postpone the work or decision in English, comes from the Latin word "procrastinus". The word 'pro' means advanced, while the 'crastinus' means tomorrow (Steel, 2007). Procrastination is an automated problem due to unnecessary delay of an activity that must be completed by another day and time (Knaus, 2011). Academic procrastination is the last minute attendance of all tasks related to academic activities such as attending classes, carrying out homework assignments, and working on exams (Burka&Yuen, 1983; cited in Düşmez, 2013). The academic procrastination behaviour, which we can describe as a type of postponement behaviour, consists of tasks that are generally of academic origin and can be defined as retarding the academic works due to some reasons. Senécal, Koestner & Vallerand (1995) define the academic procrastination behavior as the individual's not starting to bring these tasks to a high level of stress due to the fact that she did not fulfill her academic duties on time. Solomon and Rothblum (1984) also define as preparing for the exam, preparation of term paper, school-related administrative work, participation task, delaying basic academic tasks for certain reasons (cited in Akbay, 2010). Procrastination behaviour has an effect on psychological factors. Self-efficacy, self-reliance with academic procrastination (Van Erde, 2000); self-esteem (Ferrari, 2000); and internal motivation (Senecal et al., 1995; Lee, 2005) was found to be negatively related; Öksüz and İçli (2012) concluded that there is a negative relationship between adherence to organization and procrastination behaviour. Fear of failure and dismissal (Solomon and Rothblum, 1984), inability to orientate success orientation (Howell and Watson, 2007; Pfister, 2002), lack of motivation (Franziska, et al., 2007), inadequacy of the individual in managing time (Burns, et al., 2001), depression, irrational beliefs and anxiety, such as negative mental disorders (Bridges & Roig, 1997; Steel, 2007; Watson, 2001) and self-perception (Ferrari, et al., 2007 cited in Çetin & Ceyhan, 2017) are among the factors that cause procrastination.

The problem is the inability to respond effectively to one or more obstacles, in-person or out-of-person, in a situation that needs to be overcome (D'Zurilla, et al., 2004, p.12). Problem-solving consists of adapting pre-owned information to new and unknown situations, applying, recognizing the problem, identifying the problem, producing problem-oriented solutions and testing the accuracy of these solutions (Alver, 2005; Budak, 2000; Şahin, et al., 2017). While problem solving ability is a concept that includes cognitive and behavioral skills, it expresses the ability to apply information to a solution and apply it to a solution of a problem (Çetinkaya, 2013; Kantek, et al., 2010; cited in Kantek & Yeşilbaş, 2019).

Significance and Purpose of Research

One of the best ways to make a society healthy in every aspect is to help individuals overcome the problems they are experiencing at critical times in their lives. It is necessary to determine the individual differences, which are the factors that have the power to influence this qualification, as well as the quality of the education received by the engineer candidates who transition from education to professional life. Academic procrastination behaviour, which is a variable that shows individual differences, is a factor that negatively affects problem solving which is an important skill especially in engineering profession. Therefore, the expected result of the study is to find a negative relationship between academic procrastination behaviour and problem solving skills. The literature on university students shows that researching student problems can have a positive effect, especially in recognizing educational environments and identifying individual differences in the university. In addition, study data are expected to enrich the subject literature.

Considering all the above explanations, the aim of this study is to examine the academic procrastination behaviors and problem solving abilities of the students of engineering faculties and the relationship between them in terms of some demographic features. For this purpose, the following questions were asked:

1. What are the level of the academic procrastination behaviours and problem solving abilities of the Faculty of Engineering students?
2. Do the Faculty of Engineering students' academic procrastination behaviours and problem solving abilities differ in terms of gender, grade, department, perceived income level, graduated high school type, and region of the birth?
3. Is there a significant relationship between the Faculty of Engineering students' academic procrastination behaviours and problem solving skills?

Method

Research Model

In this study the survey model was used. The survey model is used to investigate the existence of a change between two or more variables with a sample taken from the universe in order to make a statement about the universe. In case of relationship between variables, the degree of this relationship is tried to be determined (Karasar, 2014).

Universe-Sample

The study group was selected by convenience sampling method. This sample was preferred because it contains easily accessible and applicable units due to time, money and labor limitations (Büyüköztürk et al. 2015, p.92). The participants consisted of 400 university students studying at Istanbul Technical University in the 2018-2019 spring semester. General information and percentages of the study group are shown in Table.1.

Table 1

The distribution of the students in the study group

Description	Number of Respondents	Percentage of Total Sample
<i>Gender</i>		
Female	152	38
Male	248	62
Total	400	100
<i>Grade</i>		
First year	55	13.85
Second year	71	16.15
Third year	104	26
Fourth year	172	43
Total	400	100
<i>Department</i>		
Mechanical Engineering	70	17.5
Management Engineering	50	12.5
Electrical Engineering	40	10
Naval Engineering	60	15
Computer Engineering	60	15
Textile Engineering	60	15
Astronautical Engineering	50	12.5
Total	400	100
<i>Graduated High School Type</i>		
Anatolian	226	56.5

Science	81	20.25
Social Sciences	2	0.5
Vocational and Technical Anatolian	10	2.5
Anatolian İmam Hatip	3	0.75
Private Foreign	7	1.75
Private	42	10.5
Other	7	0.75
Total	400	100
<i>Region of the birth</i>		
Mediterranean	54	13.5
South Anatolian	25	6.25
Marmara	170	42.5
Black Sea	36	9
Central Anatolia	57	14.25
South East Anatolia	11	2.75
Aegean	38	9.5
Other	9	2.05
Total	400	100
<i>Perceived Income Level</i>		
Low	42	10.5
Middle	298	74.5
High	60	15
Total	400	100

The results in Table 1 indicate that participants 38% are female and 62% are male and 13.85% are at in first class, and 16.15% are at second class, 26% are at third class and 43% are at forth class. In addition to this, 17.5% of the participants are at mechanical engineering depart-

ment, 12.5% are at management engineering department, 10% are at electrical engineering department, 10% are at naval engineering department, 15% are at computer engineering department, 15% are at textile engineering department and 12.5% are at astronautical engineering department. 56.5% of the students are graduated from Anatolian High School, 20.25% are graduated from Science High School, 0.5% are graduated from Social Sciences High School, 2.5% are graduated from Vocational and Technical Anatolian, 0.75% are graduated from Anatolia İmam Hatip High School, 1.75% are graduated from Private Foreign High School, 10.5% are graduated from Private High School and lastly 0.75% are from other schools. It is seen in the table that 13.5% the region of birth of participants are Mediterranean Region, 6.25% the region of birth of participants are South Anatolian Region, 42.5% the region of birth of participants are Marmara Region, 9% the region of birth of participants are Black Sea Region, 14.25% the region of birth of participants are Central Anatolia Region, 2.75% the region of birth of participants are South East Anatolia Region, 9.5% the region of birth of participants are Aegean Region, 2.05% the region of birth of participants are other region. It is indicated in the table that participants 10.5% have low income level, 74.5% have middle income level, 15% have high income level.

Data Collection Tools

The data of the research were collected with three measurement tools. These are described below.

Demographic information form: The participants were asked questions related to gender, grade, department, graduated high school types, perceived income level and birth region variables in the demographic information form.

Academic procrastination scale (APS): The Scale was developed in order to determine the procrastination levels of students in academic areas such as preparing for examinations, exams and projects by Çakıcı (2003). Likert type scale contains 19 items; 12 of them are negative (2, 3, 5, 6, 8, 10, 12, 14, 15, 16, 18, 19) and 7 of them are positive (1, 4, 7, 9, 11, 13, 17). The cronbach alpha reliability coefficient of the Scale was calculated as.92. In this context, "internal consistency coefficient" was calculated as.89.

Problem solving abilities inventory: The inventory, developed by Heppner and Peterson (1982) consists of 35 items and is graded from 1 to 6. A Turkish adaptation of the PSI was made by Şahin, et al (1993). The internal consistency coefficient of the PSI was found. 88 and in a split-half reliability study, its correlation coefficient was found. 81 (cited in Çelikkaleli,2014).

Data Analysis

Since the data set does not show normal distribution, nonparametric tests were analyzed by h tests such as Mann Whitney U and Kruskal Wallis. The effect values of the distributions, which are a significant difference in the analysis results, were calculated and interpreted. To answer the research questions about differences in means, descriptive statistics "mode, median, mean, skewness and kurtosis values" of all variables were examined and histogram graphics were drawn. Table 2 can be examined for the specified values of the gender, department, grade, graduated high school type, region of the birth, perceived income level variables.

Table 2

Descriptive statistics of the variables (gender, department, grade, graduated high school type, region of the birth, perceived income level)

	Gender	Department	Grade	Graduated high school type	Region of the birth	Perceived income level
Mean	1.38	4.00	2.99	2.58	3.67	2.04
Median	1.00	4.00	3.00	1.00	3.00	2.00
Mode	1.00	1.00	4.00	1.00	3.00	2.00
Skewness	.49	-.10	-.63	1.32	.61	.09
Kurtosis	-1.76	-1.29	-.89	.04	-.19	.96

Mode, median and mean values of department and graduated high school type are not close to each other. So, it can be clear that the normality of the distribution of these variables are not achieved. In addition to this, the skewness and kurtosis coefficient values are not at ideal range for normal distribution (-1 and 1). The histogram graphics (see: Image 2 and 4) support these results. If we talk about gender and perceived income level; values are closer to each other for both of them. But gender variable has only two and perceived income level variable is only three categories. So this closeness may not be very meaningful. Kurtosis coefficient value is not at ideal range for gender variable. The histogram graphic (see: Image 1) support this result. The skewness and kurtosis coefficient values are close the limits of the ideal range for normal distribution, it can be decided according to the histogram chart. If we come to the grade and region of the birth variables, the mode, median and mean values are not very similar but do not look very different from each other. In addition, although the skewness coefficient value is in the appropriate range, the kurtosis coefficient is close to the limit value. Therefore, it may be appropriate to decide according to the graph.

Image 1. Histogram graphic in terms of gender.

The skewness coefficient of gender is .49, the kurtosis coefficient of gender is -1.76, so this distribution is skewed right and short tailed. The skewness and kurtosis is considered with the histogram graphic, it can be said that the distribution is not normal.

Image 2. Histogram graphic in terms of department.

The skewness coefficient of department is -.10, the kurtosis coefficient of department is -1.29, so this distribution is skewed right and short tailed. The skewness and kurtosis is considered with the histogram graphic, it can be said that the distribution is not normal.

Image 3. Histogram graphic in terms of grade.

The skewness coefficient of grade is $-.63$, the kurtosis coefficient of department is $-.89$, so this distribution is skewed left and short tailed. The skewness and kurtosis is considered with the histogram graphic, it can be said that the distribution is not normal.

Image 4. Histogram graphic in terms of "graduated high school type".

The skewness coefficient of grade is 1.32 , the kurtosis coefficient of department is $.04$, so this distribution is skewed right and long tailed. The skewness and kurtosis is considered with the histogram graphic, it can be said that the distribution is not normal.

Image 5. Histogram graphic in terms of region of the birth.

The skewness coefficient of grade is .61, the kurtosis coefficient of department is -.19, so this distribution is skewed right and short tailed.

Image 6. Histogram graphic in terms of perceived income level.

The skewness coefficient of grade is .10, the kurtosis coefficient of department is .96, so this distribution is skewed left and long tailed. The skewness and kurtosis is considered with the histogram graphic, it can be said that the distribution is not normal.

After deciding on the distribution of variables before the difference tests, in order to determine which correlation analysis must be done for the relationships between the variables problem solving abilities and academic procrastination, descriptive statistics of these two variables were examined. Because the normalities of the distribution of the problem solving abilities

and academic procrastination scores are as in the Table 3, pearson correlation test was used.

Table 3

Descriptive statistics of problem solving abilities and academic procrastination

	Mean	Median	Mode	Skewness	Kurtosis
Students' problem solving skills	94.04	98.00	102	.12	.24
Academic procrastination levels	55.91	56.00	54	.00	1.00

Mode, median and mean values of students' problem solving abilities variable is not close to each other. So, it can be said that the normality of the distribution of this variable is not achieved. But, although the skewness and kurtosis coefficient values are not ideal value (zero) for normal distribution, they are in the range of minimum and maximum values (-1 and 1). If we talk about academic procrastination variable; mode, median and mean values are closer. When the skewness and kurtosis coefficient values are examined to make decisions, it can be said to be at limit values for normal distribution. Because of the variation between the measures of central tendency and skewness&kurtosis values for both problem solving abilities and academic procrastination levels variables, histogram graphics can also be examined for considering about the normality of distributions.

Image 7. Histogram graphic in terms of “problem solving skills”.

The skewness coefficient of grade is .12, the kurtosis coefficient of department is .24, so this distribution is not strongly skewed aside and tailed. The skewness and kurtosis is considered with the histogram graphic, it can be said that the distribution is close to normal.

Image 8. Histogram graphic in terms of academic procrastination.

The skewness coefficient of grade is .00, the kurtosis coefficient of department is 1.00, so this distribution is not strongly skewed aside and tailed. The skewness and kurtosis is considered with the histogram graphic, it can be said that the distribution is close to normal.

Results

The findings of the first research question have been shown below.

Table 4

“The level of the ‘problem solving abilities and academic procrastination of the university students’”

	N	X	s	Minimum	Maximum
Students' problem solving skills	400	94.09	16.31	44	148/155
Academic procrastination levels	400	55.91	10.31	22	93/95

The results in Table 4 indicate that the standard deviation of students' problem-solving skills is 16.29 and the average of the same variable is 94.09 ($s=16.31$, $X=94.09$). In addition to this result, the standard deviation of academic procrastination levels is 10.31 and the average of the same variable is 55.91 ($s=10.31$, $X=55.91$). It could be said that the results of two average scale scores are not similar; the scores of academic procrastination are approximately on average but the scores of problem solving abilities are above the average. The highest possible value of problem solving abilities is 155 when the highest score of the study group is 148 and the lowest possible value is 35 when the lowest score of the study group is 44. The highest possible value of procrastination level is 95 when the highest score of the study group is 93 and the lowest possible value is 19 when the lowest score of the study group is 22.

The findings of the second research question have been shown below.

Table 5

Man Whitney U scores of students' academic procrastination behaviours' by gender

Gender	N	Mean Rank	Rank Sum	U
Male	248	198.62	49258.50	18382.50 ^a
Female	152	203.56	30941.50	

^a $p > .05$

According to the data in Table 5 academic procrastination levels of students do not differ significantly in terms of gender. $U = 18382.50$. $p > .05$.

Table 6

Kruskal-Wallis results of academic procrastination behaviours by department

Department	N	Mean Rank	SD	X ²
Mechanical Engineering	70	193.74	6	10.856 ^a
Management Engineering	50	185.51		
Electrical Engineering	40	240.79		
Naval Engineering	60	177.39		
Computer Engineering	60	223.43		
Textile Engineering	70	199.50		
Astronautical Engineering	50	194.34		
Total	400			

^a $p > .05$

As seen in Table 6 academic procrastination levels of students do not differ significantly in their department variable. X^2 (SD=6, n=400) =10.856. $p > .05$.

Table 7

Kruskal-Wallis results of academic procrastination behaviours by grade

Grade	N	Mean Rank	SD	X ²
First year	50	211.99	3	1.987 ^a

Second year	73	185.90
Third year	105	197.74
Fourth year	172	205.04
Total	400	

^a $p > .05$

The results of Table 7 do not indicate that there is a significant difference in academic procrastination levels in terms of students' grade variable. X^2 (SD = 3, n = 400) = 987. $p > .05$.

Table 8

Kruskal-Wallis results of academic procrastination behaviours by graduated high school type

Graduated High School Type	N	Mean Rank	SD	X^2
Anatolian	222	204.16	7	6.867 ^a
Science	82	192.77		
Social Sciences	2	236.00		
Vocational and Technical Anatolian	10	234.65		
Anatolian İmam Hatip	4	129.00		
Private Foreign	8	172.69		
Private	43	179.33		
Other	29	229.09		
Total	400			

^a $p > .05$

According to the results of Table 8, academic procrastination levels do not indicate a significant difference in terms of the high school type of students. X^2 (SD = 7, n = 400) = 6.867. $p > .05$.

Table 9

Kruskal-Wallis results of academic procrastination behaviours by region of the birth

Region of the Birth	N	Mean Rank	SD	X^2
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Mediterranean	48	201.97	7	10.172 ^a
South Anatolian	26	187.12		
Marmara	171	206.02		
Black Sea	37	221.14		
Central Anatolia	58	206.00		
South East Anatolia	11	199.14		
Aegean	40	150.44		
Other	9	230.39		
Total	400			

^a $p > .05$

As seen in Table 9, academic procrastination levels do not show a significant difference in terms of the region of students' birth. X^2 (SD = 7, n = 400) = 10.172. $p > .05$.

Table 10

Kruskal-Wallis results of academic procrastination behaviours by perceived income level

Perceived income level	N	Mean Rank	SD	X^2
Low	41	183.39	2	2.355 ^a
Middle	299	199.28		
High	60	218.29		
Total	400			

^a $p > .05$

Table 10 does not show a significant difference in academic procrastination levels in terms of perceived income levels of students. X^2 (SD = 2, n = 400) = 2.355. $p > .05$.

Table 11

Man Whitney U scores of students' problem solving abilities according to gender

Gender	N	Mean Rank	Rank Sum	U
Male	248	248	196.92	17959.00 ^a
Female	152	152	206.35	
Total	400			

^a $p > .05$

According to the data in Table 11 problem solving abilities of students do not differ significantly in terms of gender, $U=17959.00$, $p>.05$.

Table 12

Kruskal-Wallis results of problem solving abilities according to department

Department	N	Mean Rank	SD	X ²	Significant difference	d
Mechanical Engineering	70	163.86	6	19.53*	Mechanical- Astronautical	0.38
Management Engineering	50	212.19		1	Electrical- Ast- ronautical	0.26
Electrical Engineering	40	183.88			Na- val-	0.30
Naval Engineering	60	184.18			Astronautical	
Computer Engineering	60	205.47				
Textile Engineering	70	212.91				
Astronautical Engineering	50	249.65				
Total	400					

* $p<.05$

Table 12 results show that the problem solving levels differ significantly according to the students' departments, X^2 ($SD = 6$, $N = 400$) = 19.531, $p <.05$. When the order averages of the groups are taken into consideration, it is seen that the students of the department of astronautical engineering have the highest problem solving abilities after the application. This is followed by the departments of textile, management, computer, naval, electrical and mechanical engineering. Tukey test was used to determine the difference between the groups where homogeneity of variance was not provided. As a result of this analysis, it can be said that there is a significant difference between astronautical engineering department and mechanical, electrical and naval engineering in favour of astronautical engineering. The effect size for all three groups is high.

Table 13

Kruskal-Wallis results of problem solving abilities according to grade

Grade	N	Mean Rank	SD	X ²	Significant difference	d
First year	50	155.17	3	9.436*	Third grades- First grades	0.21
Second year	73	206.78				
Third year	105	214.17				
Fourth year	172	202.67				
Total	400					

* $p<.05$

Table 13 results show that the problem solving levels differed significantly according to the students' grades, X^2 ($SD = 6$, $N = 400$) = 9.436, $p <.05$. Considering the order averages of the groups, it is seen that the third-grade students have the highest problem solving abilities after the application. It is seen that second grade, fourth grade and first-year students follow this. As homogeneity of variance was not achieved, the Tukey test was performed to determine the dif-

ference between the groups. As a result of this analysis, it can be said that there is a significant difference between the third classes and the first grades in favour of third classes. The effect size of the difference is moderate.

Table 14

Kruskal-Wallis results of problem solving abilities by graduated high school type

Graduated High School Type	N	Mean Rank	SD	X ²
Anatolian	222	191.71	4	5.867 ^a
Science	82	215.61		
Social Sciences	2	288.00		
Vocational and Technical Anatolian	10	233.75		
Anatolian İmam Hatip	4	266.38		
Private Foreign	8	189.69		
Private	43	204.74		
Other	29	195.16		
Total	400			

^a p>.05

According to the results of Table 14, problem solving abilities do not show a significant difference in terms of the high school type of students, X² (sd=7, n=400) =, 5,867, p>.05.

Table 15

Kruskal-Wallis results of problem solving abilities by region of the birth

Region of the Birth	N	Mean Rank	SD	X ²
Mediterranean	48	187.90	7	4.240 ^a
South Anatolian	26	235.87		
Marmara	171	202.04		
Black Sea	37	200.97		
Central Anatolia	58	196.25		
South East Anatolia	11	176.05		
Aegean	40	192.70		
Other	9	226.39		
Total	400			

^a p>.05

As seen in Table 15, problem solving abilities do not show a significant difference in terms of the region of students' birth, X^2 (sd=7, n=400) =4.240, $p>.05$.

Table 16

Kruskal-Wallis results of problem solving abilities by perceived income level variable

Perceived income level	N	Mean Rank	SD	X ²
Low	41	233.78	2	3.882 ^a
Middle	299	195.86		
High	60	200.88		
Total	400			

^a $p>.05$

Table 16 does not indicate a significant difference in problem solving abilities in terms of perceived income levels of students, X^2 (sd=2, n=400) =3.882, $p>.05$.

The findings of the third research question have been shown below.

Table 17

The results of the relationship between students' academic procrastination behaviour and problem solving skills

		Academic Procrastination	Problem Solving
Academic Procrastination	Pearson correlation	1,000	-,241**
	Sig. (2-tailed)	.	,000
	N	400	400
Problem Solving	Pearson correlation	-,241**	1,000
	Sig. (2-tailed)	,000	.
	N	400	400

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

As seen in Table 17, the relationships between academic procrastination score and problem solving skill scores are significant, negative and low ($r=-.241$; $p<.05$).

Discussion, Conclusion and Recommendations

As indicated by the discoveries, academic procrastination behaviours of students try not to contrast altogether as per sexual orientation. The examination discoveries are in line with the studies (Alexander & Onwuegbuzie, 2007; Cumaoğlu & Coşkun, 2012; Çetin & Odacı, 2015; Kachgal, et al., 2001; Onwuegbuzie, 2004; Uzun Özer, 2009). The results of the study do not show that there is a huge distinction between the scholarly hesitation practices of understudies as far as their department. The research findings are in line with the studies (Cumaoğlu & Coşkun, 2012). However, Arikan (2016), Ekşi & Dilmaç (2010) ; Gunciali & Celik (2013); Gün, et al. (2019); Yesil & Sahan (2012) found that students' academic procrastination behaviours differed significantly according to the department. The aftereffects of the examination do not show that there is a critical distinction between academic procrastination behaviours in terms of students'

grades. On the other hand, Çelikkaleli & Akbay (2013) found that the 4th grade students exhibited less academic procrastination behaviour compared to the 2nd and 3rd grade students. The results of the study do not show that there is a huge contrast between the scholastic stalling practices of the understudies. Çelikkaleli & Akbay (2013) found no critical contrast between secondary school type and scholarly stalling inclinations. The two studies have supporting that study results. However, Demir & Kösterelioğlu (2015) a huge contrast between the sort of high school graduation and academic procrastination.

The academic procrastination tendencies of the imminent instructors who were moved on from Anatolian High School were higher than the scholarly dawdling inclinations of the prospective teachers of general high school. In the study of Sarioglu (2011), academic procrastination of Anatolian secondary school graduate understudies was higher than the academic procrastination of other high school graduates. According to the results of the research, it does not show that there is a significant difference between academic procrastination behaviours in terms of the region of birth and perceived income levels.

According to the findings, students' problem solving abilities did not differ significantly according to gender. Bağçeci & Kınay (2013); Başar (2011); Elkin & Karadağlı (2015); Erdem & Genç (2014); Özkütük et al. (2003); Saracaloğlu, et al. (2009), in a similar way in their studies, revealed that the critical thinking abilities didn't contrast as indicated by gender. In addition, the results of the research show that there is no noteworthy distinction in the critical thinking aptitudes of the understudies as far as the type of high school, the region of birth, and perceived income levels. It may be advisable for researchers who wish to determine which variables are affected by problem solving abilities to work on features other than the specified variables.

The results of the study show that critical thinking levels vary fundamentally as indicated by the students' departments. Astronautical engineering department have the highest problem solving abilities score. That score is followed by the departments of textile, management, computer, naval, electrical and mechanical engineering. Tukey test was utilized to decide the contrast between gatherings since homogeneity of variance was not achieved. Because of this investigation, it very well may be said that there is a noteworthy contrast between the astronautical engineering department and mechanical, electrical and naval engineering in favour of astronautical engineering. The results for finding differences between the departments are similar to some other studies. In their studies, Genç & Kalafat (2007) found that the critical thinking abilities of the understudies at a college differ in terms of their departments. Saracaloğlu, Serin and Bozkurt (2001) also found that the problem solving abilities of understudies in a staff of instruction contrasted essentially as indicated by their departments. However, with the students of the faculty of education, Bağçeci & Kınay (2013); Özkütük et al. (2003) found that problem solving abilities of the college students did not contrast fundamentally as per the department variable. In the study of Elkin & Karadağlı (2015), it wasn't discovered a noteworthy contrast as far as department in a school of health sciences.

Research results show that problem solving levels contrast altogether as indicated by the students' grade levels. Considering the order averages of the groups, it is seen that the third grade students have the most elevated problem solving abilities after the application and se-

cond grade, fourth grade and first-year students follow this. Genç & Kalafat (2007) discovered a huge distinction for third grade educator competitors in their examination. Tmkaya & İflazoğlu (2000); Hatay Polat & Tmkaya (2010) discovered that problem solving abilities contrasted essentially as per the evaluation level variable in their investigation. It is significant that in all the referenced investigations, including this examination, there was a distinction as far as evaluation level. As problem solving abilities vary as indicated by grade level, it could be thought that all or some of the courses the students took, have an effect on the ability of solving the problem. Research on grade may explain clearly the reason for the difference.

As indicated by the consequences of the examination, the connections between academic procrastination behaviours and problem solving abilities of university students are significant. The negative relationship between academic procrastination score and problem solving skill score is low. There are some studies on the variables that academic procrastination is related to. Academic procrastination was positively related with unreasonable convictions and the dread of negative assessment (Çelik & Odacı, 2015), poor time management skills, inability to concentration, negative attitude towards study and learning (Balkis, Duru, Bulus & Duru, 2006). In addition to these result, academic procrastination was negatively related with self-efficacy belief, self-perception (Çelik & Odacı, 2015), motivation, and academic achievement (Balkis, et al., 2006). The relationship between problem solving and academic procrastination could be compatible with the negative correlation with these variables. What's more, the negative connection between's problem solving and academic procrastination could explain with the fear of failure and/or laziness. Because they avoid being labeled as unsuccessful or lazy, students with low performance or away from target orientation, exhibits more procrastination behavior. (Özer and Altun, 2011).

As a result, the academic procrastination was negatively related with the problem solving skills. This is a foreseen result. However, low degree of relationship is a below expected. This may be due to positive reinforcement for students' procrastination behaviour. However, it may be possible to reveal the underlying conditions through scientific research. In-service training about the effect of academic procrastination on student behaviours and problem solving abilities can be provided to the instructor of the engineering faculties. So as to build up the problem solving abilities of the engineer candidates, it is essential to know both the processes for the development of this skill and the factors affecting this skill.

It is known that students with low academic procrastination are more successful than students with high academic procrastination. The findings of the research also concretize this fact. When students fail, they experience depression, anxiety, and self-efficacy problems. The way to eliminate failure can be provided by eliminating procrastination behavior. Individuals who do not make academic procrastination solve their problems more quickly and succeed. The relationship between the two variables confirms this opinion. Research findings should be considered as significant feedback about students for academic advisors, engineering faculties, university administrations, curriculum designers and teachers. A learner-centered curriculum can be designed to help students cope with academic procrastination, which is one of the principle purposes behind low scholastic accomplishment. Assuming that each student is unique, the targets, substance, procedure and assessment periods of the educational plan ought to be

inspected according to individual differences. It is important to carry out a curriculum evaluation study considering the research data. Therefore, academic procrastination behaviours that cause failure should be determined by examining the curriculum stages. Curriculum development studies can be carried out according to the deficiencies identified in the curricula. The results of the developed curriculum can be submitted to the Ministry of National Education by university administrations. Again, in collaboration with the ministry, conferences on academic procrastination and problem solving can be held at high school level. These conferences will be useful to raise awareness of academic procrastination behaviour and problem-solving skills and to prevent student failure before university education.

This study, which is related to these concepts, which are related to each other and affect each other, is aimed to contribute to the people who will make scientific studies in this field. It is recommended that the researchers do more research on the concepts and applications of academic procrastination and problem solving in our country, and that academic achievement is considered as a variable in these studies as it may increase the explicability of the studies. The quantitative study should be supported by qualitative and experimental research. These findings also make it essential to organize both individual and group guidance activities to be held within the scope of the psychological counselling centres of universities.

References

- The Accreditation board for engineering and technology [ABET] (2003). *Criteria for accrediting programs*. Web: http://www.abet.org/criteria_eac.html adresinden 21.07.2019 tarihinde erişilmiştir.
- Akbay, S. E. (2010). *Cinsiyete göre üniversite öğrencilerinde akademik erteleme davranışı: akademik güdülenme. Akademik özyeterlik ve akademik yükleme stillerinin rolü*. Mersin Üniversitesi Sosyal Bilimler Enstitüsü, Mersin.
- Alexander, S. E. ve Onwuegbuzie, J. A. (2007). Academic procrastination and the role of hope as a coping strategy. *Personality and Individual Differences*, 42, 1301-1310.
- Alver, B. 2005. Üniversite öğrencilerinin problem çözme becerileri ve akademik başarılarının çeşitli değişkenlere göre incelenmesi. M. Ü. *Atatürk Eğitim Fakültesi Eğitim Bilimleri Dergisi*, 21,75-88.
- Arıkan, H. E. (2016). *Öğretmen adaylarının öğrenilmiş güçlülük düzeyleri ile akademik erteleme eğilimleri arasındaki ilişkinin incelenmesi*. (Yayımlanmamış yüksek lisans tezi). Cumhuriyet Üniversitesi, Eğitim Bilimleri Enstitüsü, Sivas.
- Bağçeci, B. ve Kınay, İ. (2013); "Öğretmenlerin Problem Çözme Becerilerinin Bazı Değişkenlere Göre İncelenmesi". *Elektronik Sosyal Bilimler Dergisi*, 12(44). Gaziantep. 2. Ulusal Eğitim Programları ve Öğretim Kongresi"nde bildiri olarak sunulmuştur.
- Balkis, M., Duru, E., Bulus, M. and Duru, S. (2006). Üniversite Öğrencilerinde Akademik Erteleme Eğiliminin Çeşitli Değişkenler Açısından İncelenmesi. *Ege Eğitim Dergisi*, 7/2: 57-73.
- Baran, T. ve Kahraman, S. (2004). Mühendislik Eğitiminde Probleme Dayalı Öğrenme Modelleri. I. *Ulusal Mühendislik Kongresi Bildiriler Kitabı*.

- Başar, G. (2011); "*Hemşirelerde ve hemşirelik öğrencilerinde problem çözme ve iletişim becerilerinin değerlendirilmesi*". (Yüksek lisans tezi). İstanbul Bilim Üniversitesi Sağlık Bilimleri Enstitüsü. İstanbul.
- Budak, S (2000) "*Psikoloji Sözlüğü*." Bilim ve Sanat Yayınları. Ankara.
- Büyükoztürk, Ş., Kılıç Çakmak, E., Akgün, Ö. E., Karadeniz, Ş. ve Demirel, F. (2015). *Bilimsel araştırma yöntemleri*. Ankara: Pegem Akademi Yayınevi
- Crawley, E.F. Malmqvist, J., Östlund, S., Brodeur, D.R., and Edström, K. (2014) *Rethinking Engineering Education*. Cham: Springer International Publishing.
- Cumaoğlu, G. K., and Coşkun, Y. D. (2012). Öğretmenlerin akademik erteleme davranışı ile teknoloji kullanım durumları arasındaki ilişki. *Electronic Turkish Studies*, 7(4).
- Çakıcı, D.Ç. (2003). *Lise ve üniversite öğrencilerinde genel erteleme ve akademik erteleme davranışının incelenmesi*. (Yayınlanmamış yüksek lisans tezi). Ankara Üniversitesi. Enstitü Bilgisi. Ankara.
- Çelik, Ç. B. ve Odacı, H. (2015). Akademik erteleme davranışının bazı kişisel ve psikolojik değişkenlere göre açıklanması. *Hacettepe Üniversitesi Eğitim Fakültesi Dergisi [Hacettepe University Journal of Education]*. 30(3). 31-47.
- Çelikkaleli, Ö., Akbay, E. S. (2013). Üniversite öğrencilerinin akademik erteleme davranışı. Genel yetkinlik inancı ve sorumluluklarının incelenmesi. *Ahi Evran Üniversitesi Kırşehir Eğitim Fakültesi Dergisi*. 14 (2). 237-254.
- Çelikkaleli, Ö. (2014). Bilişsel esneklik ölçeği'nin geçerlik ve güvenilirliği. *Eğitim ve Bilim*, [S.İ.], v. 39, n. 176, dec. ISSN 1300-1337. Erişim adresi:<<http://eb.ted.org.tr/index.php/EB/article/view/3466/874>>. Erişim Tarihi: 20 Dec. 2019 doi:<http://dx.doi.org/10.15390/EB.2014.3466>.
- Çetin, N. ve Ceyhan, E. (2017). Lise öğrencilerinin akademik erteleme davranışlarının sürekli kaygı, akılcı olmayan inanç, öz düzenleme ve akademik başarı ile ilişkisi. *Hacettepe Üniversitesi Eğitim Fakültesi Dergisi*. (32). 2. 1-20.
- Davis, D. M. and Hayes, J. (2011). What Are the Benefits of Mindfulness? A Practice Review of Psychotherapy-Related Research. *Psychotherapy*. 48(2).198-208.
- Demir, F. ve Kösterelioğlu, İ. (2015). Öğretmen adaylarının akademik erteleme eğilimlerinin incelenmesi. *Uluslararası Sosyal Araştırmalar Dergisi*. 8 (39). 595-603.
- Dinçer, H., Dinçer, P., Burdurlu, B., Hacivelioglu, İ. (2003). *Türkiye'de EEB Mühendislik Eğitimi*. Web: <http://emo.org.tr/> adresinden 21.07.2019 tarihinde erişilmiştir.
- Düşmez, İ. (2013). *Akılcı duygusal davranışçı yaklaşıma dayalı akademik erteleme davranışını önleme eğitim programının üniversite öğrencilerinin akademik erteleme davranışları üzerine etkisi*. (Yayınlanmamış yüksek lisans tezi). Ondokuz Mayıs Üniversitesi. Eğitim Bilimleri Enstitüsü, Rehberlik ve Psikolojik Danışmanlık Ana Bilim Dalı, Samsun.
- Ekşi, H. ve Dilmaç, B. (2010). Üniversite öğrencilerinin genel erteleme, karar vermeyi erteleme ve akademik erteleme düzeylerinin sürekli kaygı açısından incelenmesi. *Uludağ Üniversitesi Eğitim Fakültesi Dergisi*. 23 (2). 433-450.

- Elkin, N. ve Karadağlı, F. (2015); Üniversite Öğrencilerinin Problem Çözme Becerilerinin Değerlendirilmesi. *Adıyaman Üniversitesi. Sağlık Bilim Dergisi*. Sayı 1(1). s. 11-18.
- Erdem, A. R. ve Genç, G. (2014); Lise öğrencilerinin problem çözme becerilerine ilişkin görüşleri. *Turkish Journal of Educational Studies (TURK-JES)*. Sayı 1(2). s. 1-21.
- Ertepinar, A. (2000). *Nasıl bir üniversite mezunu istiyoruz? Panel konuşmaları, bilimsel toplantı serisi* 2. Ankara: Türkiye Bilimler Akademisi Yayınları.
- Genç, S. Z. ve Kalafat, T. (2007); Öğretmen adaylarının demokratik tutumları ile problem çözme becerilerinin çeşitli değişkenler açısından incelenmesi. *Pamukkale Üniversitesi Eğitim Fakültesi Dergisi*. Sayı 22. s. 10-22.
- Gençoğlu, M.T ve Cebeci. M. (1999). Türkiye'de mühendislik eğitimi ve öneriler. Mühendislik-Mimarlık Eğitimi Sempozyumu'nda sunulmuştur.
- Hatay Polat, R. ve Tümkiye, S. (2010); Sınıf öğretmenliği öğrencilerinin düşünme ihtiyacına göre problem çözme becerilerinin incelenmesi. *İlköğretim Online (Elementary Education Online)*. Sayı 9(1). s. 346-360.
- Heppner, P. P. and Petersen, C. H. (1982). The development and implications of a personal problem solving inventory. *Journal of Counselling Psychology*. 29(1). 66-75.
- Howell, A.J., Digdon, N.L., Buro, K., Sheptycki A.R. (2007) Relations among mindfulness. Well-being, and sleep. *Pers Individ Dif*. 2008; 45: 773-7.doi: 10.1016/j.paid.2008.08.005.
- Isık, U., Harmandar, Demirel D., Gumusgul, O., Ustun, U.D., Demirel, M. (2013) *Beden eğitimi ve spor yüksekokulu öğrencilerinin girişimcilik eğilimlerinin araştırılması*. Atatürk Üniversitesi Spor Bilimleri Fakültesi. 15 (3). 9-18.
- Kachgal, M. M., Hansen, L. S. and Nutter, K. J. (2001). Academic procrastination prevention/intervention: Strategies and recommendations. *Journal of Developmental Education*. 25. 14-21.
- Kantek, F. and Yeşilbaş. H. (2019). Türkiye'deki hemşirelik öğrencilerinin problem çözme düzeylerine cinsiyetin etkisi: Bir meta analiz çalışması. *Journal of Human Sciences*. 16(1). 134-142. doi:10.14687/jhs. v16i1.5451
- Karasar, N. (2014). *Bilimsel araştırma yöntemi*. (26. baskı). Ankara Nobel Yayınevi.
- Onwuegbuzie, A. J. (2004). Academic procrastination and statistics anxiety. *Assessment ve evaluation in higher education*. 29 (1). 3-19.
- Özkütük, N. Silkü, A., Orgun, F. ve Yalçınkaya, M. (2003); Öğretmen adaylarının problem çözme becerileri. *Ege Eğitim Dergisi*. Sayı 3(2). s. 1-9.
- Özer, A. and Altun, E. (2011). The Reasons for academic procrastination among university student. *Mehmet Akif Ersoy Üniversitesi Eğitim Fakültesi Dergisi*, 21, 45 – 72.
- Saracaloğlu, A. S., Serin, O. ve Bozkurt, N. (2001); Dokuz eylül üniversitesi eğitim bilimleri enstitüsü öğrencilerinin problem çözme becerileri ile başarıları arasındaki ilişki. *M.Ü. Atatürk Eğitim Fakültesi Eğitim Bilimleri Dergisi*. Sayı 14. s. 121-134.

- Saracaloğlu, A. S., Yenice, N. ve Karasakaloğlu, N. (2009); Öğretmen adaylarının iletişim ve problem çözme becerileri ile okuma ilgi ve alışkanlıkları arasındaki ilişki. *Yüzüncü Yıl Üniversitesi Eğitim Fakültesi Dergisi*. Sayı VI (II). s. 187-206.
- Sarioğlu, A. F. (2011). Öğretmen adaylarının akademik erteleme eğilimi ile mükemmeliyetçilik düzeyleri arasındaki ilişkinin incelenmesi. (Yayınlanmamış yüksek lisans tezi). İstanbul Üniversitesi Sosyal Bilimler Enstitüsü. İstanbul.
- Senécal, Caroline, Koestner Richard & Vallerand Robert J. (1995) Self-Regulation and Academic Procrastination, *The Journal of Social Psychology*, 135:5, 607-619.
- Şahin, S, İbili, E, Uluyol, Ç. (2017). Öğretmen adaylarında problem çözme eğilimi ve internet bağımlılığı ilişkisinin incelenmesi. *Afyon Kocatepe Üniversitesi Sosyal Bilimler Dergisi*, 19 (1) , 1-21. Retrieved from <https://dergipark.org.tr/en/pub/akusosbil/issue/31874/347006>
- Şahin, N., Şahin, N., H. and Heppner, P. P. (1993). Psychometric properties of the problem-solving inventory in a group of Turkish university students. *Cognitive Therapy and Research*. 17(4). 379-396.
- Tabancalı, E. and Çelik, K. (2013). Öğretmen adaylarının akademik öz-yeterlikleri ile öğretmen öz-yeterlilikleri arasındaki ilişki. *International Journal of Human Sciences*. 10(1). 1167- 1184.
- Tümkiye, S. ve İflazoğlu, A. (2000); Ç.Ü. sınıf öğretmenliği öğrencilerinin otomatik düşünce ve problem çözme düzeylerinin bazı sosyo-demografik değişkenlere göre incelenmesi. *Sosyal Bilimler Dergisi*. Çukurova Üniversitesi. Sosyal Bilimler Enstitüsü. Sayı 6(6). s. 143-158.
- Uzun Özer, B. (2009). Academic procrastination in group of high school students: frequency. Possible reasons and role of hope. *Turkish Psychological Counseling and Guidance Journal*. 4(32). 12-19.
- Yeşil, R. and Şahan, E. (2012). Öğretmen adaylarının akademik işlerini erteleme nedenleri. *Abant İzzet Baysal Üniversitesi Eğitim Fakültesi Dergisi*. 12(2). 219-236.

GENİŞLETİLMİŞ ÖZ

Mühendislik; ekonomik ve sosyal güçleri insanlığın istekleri doğrultusunda yönlendirerek medeniyetin gelişmesine katkıda bulunan bilim olarak tanımlanmaktadır. Alandan bağımsız olarak, ülkemizde dört yıllık lisans eğitimi almış mühendislerden belli becerilerle donatılmış olmaları beklenmektedir.

Ertelme, başka bir gün ve saatte tamamlanması gereken bir etkinliğin gereksiz gecikmesi nedeniyle oluşan bir sorundur. Akademik ertelme, derslere katılma, ödevlerin verilmesi ve sınavlar üzerinde çalışma gibi akademik faaliyetlerle ilgili tüm görevlerin son dakika katılımıdır. Ertelme davranışı olarak tanımlayabileceğimiz akademik ertelme davranışı, genellikle akademik kökenlidir ve bazı nedenlerden dolayı akademik çalışmaları geciktirmek olarak tanımlanabilir. Akademik ertelme, önceden planlanmış akademik görevlerin rasyonel gerekçe olmaksızın en son tarihe veya daha sonrasına ertelenmesidir. Öğrencilerin öğretim süreçlerine etkin ve etkili bir şekilde katılmalarını engelleyen bir kavram olan akademik ertelme, çözmele-

ri gereken bir sorun olarak düşünülebilir. Diğer yandan, problem çözme, bir hedefe ulaşmada karşılaşılan zorlukların üstesinden gelme sürecidir. Problem çözme, önceden sahip olunan bilgileri yeni ve bilinmeyen durumlara uyarlamak, uygulamak, problemi tanımak, problemi tanımlamak, probleme yönelik çözümler üretmek ve bu çözümlerin doğruluğunu test etmekten oluşur. Problem çözme yeteneği bilişsel ve davranışsal becerileri içeren bir süreç olmasına rağmen, bilgiyi bir çözüme uygulama ve bir sorunun çözümüne uygulama becerisini ifade eder. Tüm bireylerin sorunu olan akademik erteleme hem eğitim hem de iş yaşamında problem çözme becerilerine odaklanan mühendisler için özellikle önemlidir.

Bir toplumu her yönüyle sağlıklı hale getirmenin en iyi yollarından biri, bireylerin hayatlarında kritik zamanlarda yaşadıkları sorunların üstesinden gelmelerine yardımcı olmaktır. Bu yeterliliği etkileme gücüne sahip faktörler olan bireysel farklılıkların yanı sıra eğitimden profesyonel yaşama geçiş yapan mühendis adaylarının aldığı eğitimin kalitesinin belirlenmesi gerekmektedir. Bireysel farklılıkları gösteren bir değişken olan akademik erteleme davranışı, özellikle mühendislik mesleğinde önemli bir beceri olan problem çözme olumsuz etkileyen bir faktördür. Bu nedenle, araştırmanın beklenen sonucu akademik erteleme davranışı ile problem çözme becerileri arasında negatif bir ilişki bulunmasıdır. Üniversite öğrencileri ile ilgili literatür, öğrenci sorunlarının araştırılmasının, özellikle eğitim ortamlarının tanınmasında ve üniversitedeki bireysel farklılıkların belirlenmesinde olumlu bir etkiye sahip olabileceğini göstermektedir. Ayrıca, araştırma verilerinin saha literatürüne katkıda bulunması beklenmektedir. Bu çalışmanın amacı mühendislik fakültesi öğrencilerinin akademik erteleme davranışları ile problem çözme becerileri arasındaki ilişkiyi cinsiyet, sınıf, bölüm, mezun olunan lise türü, doğduğu bölge ve algılanan gelir düzeyi açısından incelenmesidir. Bu amaçla aşağıdaki sorular aranmıştır:

1. Mühendislik Fakültesi öğrencilerinin akademik erteleme davranışları ve problem çözme becerileri düzeyi nedir?
2. Mühendislik Fakültesi öğrencilerinin akademik erteleme davranışları ve problem çözme becerileri cinsiyet, sınıf, bölüm, algılanan gelir düzeyi, mezun lise türü ve doğduğu bölge açısından farklılık gösteriyor mu?
3. Mühendislik Fakültesi öğrencilerinin akademik erteleme davranışları ile problem çözme becerileri arasında anlamlı bir ilişki var mı?

Bu çalışma tarama modeli olarak tasarlanmıştır. Çalışma grubu rastgele olmayan örnekleme yöntemlerinden biri olan uygunluk örnekleme yöntemi ile seçilmiştir. Uygun örneklemede örnekleme, zaman, para ve işçilik sınırlamaları nedeniyle kolay erişilebilir ve uygulanabilir birimlerden seçilir. Araştırma verileri, Türkiye'nin en büyük ve tanınmış mühendislik üniversitesi olan İstanbul Teknik Üniversitesi'nin yedi mühendislik fakültesinden 400 (152 kadın ve 248 erkek) katılımcıdan elde edilmiştir. Veri toplama aracı olarak; araştırmaya katılan bireylere demografik bilgi formu, akademik erteleme ölçeği ve problem çözme becerileri envanteri uygulanmıştır. Veriler parametrik olmayan testler, Man Whitney U ve Kruskal Wallis testleri ile analiz edildi çünkü veri seti normal olarak dağılmadı. Analiz sonuçlarında anlamlı bir fark bulunmuştur; etki değerleri hesaplanmış ve yorumlanmıştır. Akademik erteleme ve problem çözme becerisi değişkenleri arasındaki ilişkileri belirlemek için dağılım normalliği sağlandığından

Pearson korelasyon testi kullanıldı. Araştırma sonucunda akademik erteleme ile problem çözme puanları arasındaki ilişki negatif ve düşük düzeyde bulunmuştur. Öğrencilerin akademik erteleme davranış düzeyleri ile araştırma değişkenleri arasında anlamlı bir fark bulunamadı. Ancak öğrencilerin problem çözme beceri düzeyleri sınıf ve bölüm değişkenlerine göre anlamlı farklılıklar göstermiştir.

Araştırma bulguları, akademik danışmanlar, mühendislik fakülteleri, üniversite idareleri, eğitim programcıları ve öğretmenler için öğrenciler hakkında önemli geri bildirim olarak değerlendirilmelidir. Düşük akademik başarının temel nedenlerinden biri olan öğrencilerin akademik erteleme ile baş etmelerine yardımcı olmak için öğrenci merkezli bir eğitim programı tasarlanabilir. Her öğrencinin benzersiz olduğu varsayılarak, eğitim programının amaçları, içeriği, süreci ve değerlendirme aşamaları bireysel farklılıklara göre gözden geçirilmelidir. Araştırma verilerini dikkate alarak bir program değerlendirme çalışması yürütmek önemlidir. Bu nedenle, başarısızlığa neden olan akademik erteleme davranışları eğitim programı aşamaları incelenerek belirlenmelidir. Program geliştirme çalışmaları, eğitim programında belirtilen eksikliklere göre yapılabilir. Geliştirilen programın sonuçları üniversite idareleri tarafından Millî Eğitim Bakanlığı'na sunulabilir. Yine bakanlıkla iş birliği içinde lise düzeyinde akademik erteleme ve problem çözme konferansları yapılabilir. Bu konferanslar akademik erteleme davranışı ve problem çözme becerileri hakkında farkındalığı artırmak ve üniversite eğitiminden önce öğrenci başarısızlığını önlemek açısından faydalı olacaktır. Birbirleriyle ilişkili ve birbirini etkileyen bu kavramlarla ilgili olan bu çalışmanın, bu alanda bilimsel çalışmalar yapacak araştırmacılara katkı sağlaması amaçlanmaktadır. Ülkemizde akademik erteleme ve problem çözme kavram ve uygulamaları üzerine araştırmacıların daha fazla çalışma yapmaları ve bu çalışmalarda akademik başarının değişken olarak kabul edilmesi önerilmektedir. Nicel çalışma olan bu çalışma nitel ve deneysel araştırmalarla desteklenmelidir. Bu bulgular ayrıca üniversitelerin psikolojik danışma merkezleri kapsamında hem bireysel hem de grup rehberlik faaliyetlerinin düzenlenmesini zorunlu kılmaktadır.