EXAMINATION OF PROBLEM SOLVING SKILLS OF UNIVERSITY STUDENTS ACCORDING TO PERSONAL VARIABLES

ÜNİVERSİTE ÖĞRENCİLERİNİN PROBLEM ÇÖZME BECERİLERİNİN KİŞİSEL DEĞİŞKENLERE GÖRE İNCELENMESİ

Öznur TULUNAY ATEŞ[1]
Özlem AKIN MART[2]

Abstract

The aim of this research is to examine the change in university students' problem-solving skills and perceptions of problem-solving skills according to their gender, the success ranking of their departments in University Enterance Exam, their willingness to choose the department, and their satisfaction with the department. The study was carried out with 347 university students. The data of the research were collected with the Problem Solving Inventory and the personal information form. Using the SPSS program in the analysis of the data ; arithmetic mean and t test were performed. As a result of the analysis ; it has been determined that university students often think that they have problem-solving skills. In addition, it was determined that the problem solving skills of the students did not differ according to gender, being in departments with high or low University Enterance Exam success rankings, but differed according to their willingness to choose their departments and to be satisfied with having chosen their departments. This finding draws attention to the fact that university students' studying in a department that they have chosen voluntarily and that they are satisfied with, differentiates their problem-solving skills.

Keywords : Problem solving, problem solving skills, university students.

[1] Assoc. Prof. Dr., Burdur Mehmet Akif Ersoy University, https://orcid.org/0000-0003-17847227, otates@mehmetakif.edu.tr

[2] Doctorate Student, Burdur Mehmet Akif Ersoy University, https://orcid.org/0000-000215971200, oakin2409@gmail.com

Özet

Bu araştırmanın amacı, üniversite öğrencilerinin problem çözme becerilerini ve problem çözme becerilerine ilişkin algılarının cinsiyetlerine, bölümlerinin YKS'deki başarı sıralamasına, bölümü seçmekteki istekliliklerine ve bölümden memnuniyetine göre değişimini incelemektir. Çalışma 347 üniversite öğrencisi ile gerçekleştirilmiştir. Araştırmanın verileri: Problem Çözme Envanteri ve kişisel bilgi formu ile toplanmıştır. Verilerin analizinde SPSS programı kullanılarak; aritmetik ortalama ve t testi yapılmıştır. Yapılan analiz sonucunda; üniversite öğrencilerinin problem çözme becerilerine sıklıkla sahip olduklarını düşündükleri tespit edilmiştir. Ayrıca öğrencilerin problem çözme becerilerinin: cinsiyete, yüksek ya da düşük YKS başarı sıralamasına sahip bölümlerde olmalarına göre farklılık göstermediği fakat bölümlerini isteyerek seçme ve bölümlerini seçmiş olmaktan memnun olma durumlarına göre farklılık gösterdiği belirlenmiştir. Elde edilen bu bulgu, üniversite öğrencilerinin isteyerek seçtikleri ve bu seçimden memnun oldukları bir bölümde öğrenim görmelerinin problem çözme becerilerini farklılaştırdığına dikkat çekmektedir.

Anahtar Kelimeler: Problem çözme, problem çözme becerileri, üniversite öğrencileri.

INTRODUCTION

Mankind has had to struggle with problems of various degrees and types in order to survive from every period of history to the present day. For this reason, it can be said that problem solving skills were important in the past, but the definition of problem and problem solving concepts are not very old.

The problem is the conflict situation in which the individual encounters frustration while reaching a goal. After such a situation is perceived as a problem, the individual starts to think about problem solving (Morgan, 2019). Problem solving, on the other hand, is a subject that educators have focused on, especially in recent years. Because students need creative problem-solving skills in addition to the academic field in order to be more successful and perfect today (Hu, Su, & Shieh, 2017; Leisian & Tatiana, 2015). For this reason, among the basic skills that students should develop in the 21st century; it is frequently stated that features such as critical thinking, problem solving, creativity, innovation, cooperation and communication are included (Kay, 2010 as cited in Wismath, Orr, & Zhong, 2014).

According to Çam and Tümkaya (2006), problem solving is related to an individual's purpose, need, value, belief, courage, desire, sense of self-confidence, skills, habits and attitudes. For this reason, the success of the individual in problem solving depends on some personal factors rather than the characteristics of the problem. These include: intelligence, motivation, habit and setup (habitual handling of the problem) and function obsession (obsession with the way the object generally works) (Morgan, 2019). However, when the literature is examined, it is seen that different results have been reached on the relationship between problem solving skills and personal variables. For example, while some studies draw attention to the relationship between problem solving skill level and interpersonal relationships (Chang, 1998) and academic achievement (Chang, 1998; Stadler, Becker, Schult, Niepel, Spinath, Sparfeldt, & Greiff, 2018), other studies do not find strong relationships between problem solving and intelligence measures and academic ability. However, it has been concluded that there are relations with variables such as career planning and decision making (Heppner, Witty, & Dixon, 2004).

Problem solving skills, communication skills of university students, assertiveness and destructive aggression behaviors (Koç & Büyükgöze Kavas, 2015), self-efficacy perceptions, metacognitive self-regulation strategies (Alcı, Erden, & Baykal, 2008), resilience levels (Diker-Coşkun, Garipoğlu, & Tosun, 2014), affecting many aspects such as daily life, psychological adaptation, and academic success (Çapri & Gökçakan, 2008) and helping one to adapt more actively to her/his environment (Deniz, Arslan, &

Hamarta, 2002). In a study conducted by Heppner, Reeder, and Larson (1983) on university students, it was determined that students who perceived problem-solving skills as effective enjoyed cognitive activities more than others, while their self-perceptions were high and their self-criticism levels were low.

Problem-solving ability is a critical quality that university students should acquire, as it is closely related to personal characteristics and facilitates the process of defining the problem (Diker-Coşkun et al., 2014). In other words, the most basic way for university students to increase their knowledge and specialize in their field is to further develop professional skills by using critical thinking and scientific problem solving skills. University students, who are tried to be trained in line with their interests, talents and abilities, should not only be employees who do their job well, but also individuals who are sensitive to society and social problems. For these reasons, problem solving is an important and necessary skill for university students who are starting to stand on their own feet and step into the adult world.

When the studies on problem solving skills of university students in Turkey are examined, it is seen that the samples are selected from different faculties (Alcı et. al, 2008; Alver, 2005; Bilge & Arslan, 2000; Çam & Tümkaya, 2006; Diker et al., 2014; Durmuş & Okanlı, 2018; Koç & Büyükgöze Kavas, 2015; Koç, Terzi, & Gül, 2015; Sardoğan, Karahan, & Kaygusuz, 2006, as well as from the faculty of education (Aslan & Uluçınar Sağır, 2012; Çapri & Gökçakan, 2008; Otacıoğlu, 2007; Saracaloğlu, Yenice, & Karasakaloğlu, 2009; Şirin & Güzel, 2006), students from the faculty of economics (Dündar, 2009), and students studying health sciences such as nursing (Akın, Güngör, Mendi, Şahin, Bizat, & Durna, 2007; Başar, Akın, & Durna, 2015; Durmaz, Kaçar, Can, Koca, Yeşilova, & Tortumluoğlu, 2007; Elkin & Karadağlı, 2015; Keskin & Yıldırım, 2008; Olgun, Öntürk, Karabacak, Aslan, & Serbest, 2010; Özyacıoğlu, Aydınoğlu & Aytekin, 2009; Tezel, Arslan, Topal, Aydoğan, Koç, & Şenlik, 2009; Yılmaz, Karaca & Yılmaz, 2009; Yılmaz-Karabulutlu, Yılmaz, & Yurttaş, 2011). The reason for this situation affecting the sample group is the expectation that midwives and nurses, who are health professionals, should have problem-solving skills (Durmaz, et al. 2007; Oermann, Truesdall & Ziolkowski, 2000). However, it can be said that this situation is valid for education and engineering faculties and there is a need for research conducted in different sample groups. This research aimed to determine the problem solving skills of university students selected from different departments; it is a descriptive study aiming to examine according to their gender, the success ranking of the department in University Entrance Exam, their willingness to choose the department, and their satisfaction with the department.

METHOD

Model of the research

Problem solving skills of university students; relational screening design, one of the quantitative research methods, has been used in the study to examine according to their gender, the success ranking of the department in University Enterance Exam, their willingness to choose the department and their satisfaction with the department. Gorard (2017) expresses it as determining the relationships between two or more variables and the measure of the interdependent changes of the variables and aims at relational survey research. In this context, it can be said that the aim of the research is to determine how the problem-solving skills of university students differ according to personal variables.

Universe-Sample

The population of the research consists of students studying at the four-year faculties of a university. The departments to be sampled in the research were determined by dividing them into clusters according to the success rank of those who settled in the university where the research was conducted. Higher education input indicators of 2018 were used to determine the success rankings in University Enterance Exam (Higher Education Institution, 2018). According to the success order of the last person who settled, departments below 300000 were considered as high-achievement departments and

departments above 600000 were considered as low-achievement departments, and two clusters were obtained. Then, with the simple random sampling method, 30% of each cluster was determined as the number of students to whom the research would be conducted. For this purpose, sections with high settlers; departments with low placement rank, such as pre-school teaching, guidance and counseling, mechanical engineering, civil engineering, architecture; political science and public administration, economics, sociology, sports management. The study group in the research consists of 347 university students studying at these faculties and agreeing to participate voluntarily in the research. Of the students, 190 (54.8%) were female and 157 (45.2%) were male. Of these students, 164 (47.3%) are studying in departments with high rank, and 183 (52.7%) are studying in departments with low rank. While 261 (75.2%) of the students stated that they chose their departments voluntarily, 86 (24.8%) stated that they did not choose voluntarily. In addition, 239 (68.9%) of the students stated that they were satisfied with their department, while 108 (31.1%) stated that they were not satisfied.

Data collection tool

The data collection tool used in the research is the Problem Solving Inventory developed by Heppner and Petersen (1982) and adapted into Turkish by Şahin, N. H. Şahin and Heppner (1993). This inventory is in the 6-point likert type. It is stated that the Cronbach Alpha internal consistency coefficient of the scale was .88 during its adaptation to Turkish. In this study, it has been determined as .82. The high total scores obtained from the scale indicate that the individuals perceives themselves as inadequate in terms of problem solving skills

Data analysis

SPSS Program has been used in the analysis of the data in the research. Before data analysis; maximum and minimum values were checked and incorrectly entered data was corrected. Afterwards, the data were analyzed in terms of normal distribution. The distribution of the data was evaluated with measures of central tendency, skewness kurtosis coefficient and normal Q-Q plot. The data obtained in the analyzes made for this purpose are given in Table 1 and Figure 1.

Table 1

Normality Test Results of Measurement Tools used in the Study

	Motivation
Mean	2.96
Median	3.03
Mode	3.19
Skewness	-0.27
Kurtosis	-0.63

When Table 1 is examined, it is seen that the arithmetic mean, median and mode values in the motivation scale are close, and the skewness and kurtosis coefficients are between +1 and -1.
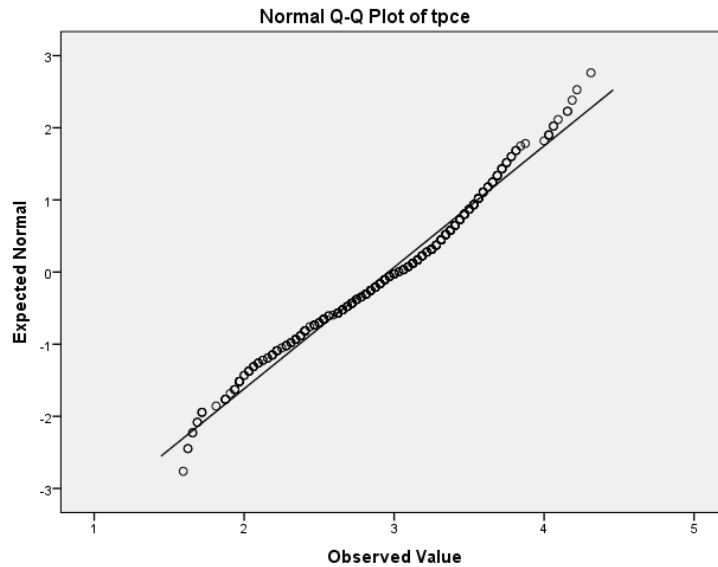
Figure 2 *Problem Solving Skills Scale Normal Q-Q Chart*

In Figure 2, it is seen that the points are close to the 45-degree line on the normal Q-Q graph of the problem solving inventory. In analysis, since the arithmetic mean, mode and median values are close to each other, the skewness and kurtosis values are between ± 1.96, and it is understood that the normal Q-Q graph has a normal distribution feature, it can be said that the data show a normal distribution (Can, 2018). For this reason, it has been decided to use parametric statistics in analyzes related to problem solving.

Since the data collection tool used in the research is a Likert-type six-point rating scale, the arithmetic mean ranges used in the evaluation of arithmetic means; the 1.00-1.82 range is "always", the 1.83-2.66 range is "mostly", the 2.67-3.50 range is "often", the 3.51-4.34 range is "occasionally", and the 4.35-5.17 is "rarely", and the 5-18-6.00 range is "never".

FINDINGS

Findings Related to University Students' Perceptions of Problem Solving Skills

In order to determine the perceptions of university students about problem solving skills, arithmetic mean and standard deviation values were calculated. The data obtained are given in Table 2.

Table 2

Arithmetic Mean and Standard Deviation Values for University Students' Perceptions of Problem Solving Skills

	$\overline{X}$	SS
Hasty approach	3.30	0.87
Thinking approach	2.75	1.06
Avoidant approach	2.69	1.02
Evaluative approach	2.80	1.15
Self-confident approach	2.97	0.70
Planned approach	2.73	1.06
Total problem solving	2.96	0.59

When Table 2 is examined, it is seen that university students think that they often have total problem solving skills ($\bar{X}$ =2.96).

Since all independent variables consist of two groups, t-test was used to determine whether university students' perceptions of problem solving skills differ significantly according to their gender, the success ranking of their departments in University Enterance Exam, their willingness to choose the department and their satisfaction with the department.

Problem Solving Skills of University Students According to Their Gender

The t-test findings, which were conducted to determine the problem-solving skills of university students according to their gender, are shown in Table 3.

Table 3

Mean Scores of University Students on Problem Solving Skills by Gender and T-Test Results

	Gender	N	$\bar{X}$	ss	df	t	P
Problem Solving Skills	Male	157	3.02	0.55	345	1.724	.086
	Female	190	2.91	0.62			

When the data in Table 3 are examined, there is no significant difference between the mean score of male students regarding problem solving skills ($\bar{X}$ =3.02) and the mean score of female students ($\bar{X}$=2.91) [t(345)= 1.72, p>0.05].

Problem Solving Skills of University Students According to the Success Ranking f Their Departments in University Enterance Exam

The t-test findings, which were conducted to determine the problem-solving skills of university students according to the success ranking of their departments in University Enterance Exam, are given in Table 4.

Table 4

Mean Scores of University Students on Problem Solving Skills and T-Test Results According to the Ranking of Their Departments in University Enterance Exam

	University Enterance Exam Success Ranking	N	$\bar{X}$	Ss	df	t	P
Problem solving skills	High	164	2.95	0.58	345	-0.437	.066
	low	183	2.97	0.60			

When the data in Table 4 is examined, there is no significant difference between the problem solving skill average score of the students in the departments with high University Enterance Exam success ranking ($\bar{X}$=2.95) and the average score of the students in the departments with low University Enterance Exam success ranking ($\bar{X}$ =2.97) [t(345)= -0.44] , p>0.05].

Problem Solving Skills According to University Students' Willingness to Choose Their Departments

The t-test findings, which were conducted to determine the problem-solving skills of university students according to their willingness to choose their departments, are given in Table 5.

Table 5

Mean Scores of University Students on Problem Solving Skills According to Their Willingness to Choose Their Departments and T-Test Results

	Willingness	N	$\bar{X}$	Ss	df	t	P
Problem Solving Skills	Being willing	261	2.90	0.59	345	-3.200	.001*
	Being unwilling	86	3.14	0.56			

When the data in Table 5 are examined, it is seen that there is a significant difference between the problem solving skills average of the students who voluntarily chose their departments ($\bar{X}$=2.90) and the average score of the students who chose their departments unintentionally ($\bar{X}$=3.14) [t(345)= -3.20, p<0.05].

Problem Solving Skills of University Students According to Their Satisfaction with Choosing Their Departments

The t-test findings, which were conducted to determine the problem-solving skills of university students according to their satisfaction with choosing their departments, are given in Table 6.

Table 6

Mean Scores of University Students on Problem Solving Skills and T-Test Results According to Their Satisfaction with Choosing Their Departments

	Satisfaction	N	$\bar{X}$	Ss	df	t	P
Problem Solving Skills	Being satisfied	239	2.88	0.59	345	-3.626	.000*
	Being dissatisfied	108	3.13	0.56			

When the data in Table 6 are examined, it is seen that there is a significant difference between the problem solving mean score of the students who are happy to have chosen their department ($\bar{x}$=2.88) and the mean score of the students who are not satisfied ($\bar{x}$=3.13) [t(345)= -3.63, p<0.05].

DISCUSSION AND CONCLUSION

In the study, it was determined that university students often thought that they had total problem-solving skills. When the researches are examined, it is seen that different results have been reached regarding the perceptions of university students about problem solving skills. As an example of these studies, the problem solving perceptions of university students are moderate (Diker-Coşkun et al., 2014; Durmaz et al., 2007; Durmuş & Okanlı, 2018; Olgun et al., 2010; Özyacıoğlu et al., 2009; Tezel et al., 2009; Yılmaz et al., 2009; Yılmaz-Karabulutlu et al., 2011), above the average (Aslan & Uluçınar-Sağır, 2012; Dündar, 2009; Keskin, Yıldırım, 2008), adequate (Saracaloğlu et al., 2009) or, on the contrary, they perceive it at an insufficient level (Oğuztürk, Akça, & Şahin, 2011).

In the study, it was determined that there was no significant difference between the average score of male students' problem solving skills and the average score of female students. In the literature, there are studies that determine that the perception of problem solving in university students does not differ according to gender (Alver, 2005; Bilge & Arslan, 2000; Can, Öner & Çelebi, 2009; Diker- Coşkun, Garipoğlu, & Tosun, 2014; Dündar, 2009; Elkin & Karadağlı , 2015; Koç et al., 2015; Saracaloğlu et al., 2009; Tümkaya & İflazoğlu, 2000; Yılmaz et al., 2009). However, some studies also found a significant difference between gender and problem-solving skills (Barahmand, 2010;

Otacıoğlu, 2007). Çam and Tümkaya (2006), on the other hand, found that there was no significant difference in constructive problem solving and not taking responsibility sub-dimensions according to gender, but there was a difference in negative approach to problem, self-confidence and persistent-persistent approach. The reason why women's problem solving scores are lower than men's; This may be due to their elaborative way of thinking and the fact that girls are raised more protectively and their problem-solving skills are weaker than boys. The fact that girls are more insistent, hasty and persistent in solving interpersonal problems compared to boys is a negative thought that prevents the solution of the problem (Çam & Tümkaya, 2006; Öğülmüş, 2001).

University Enterance Exam score, it is seen that different results related to success have been reached in similar studies. For example, Akın et al. (2007) in the problem-solving skills of nursing students; determined that there is a statistically significant difference in terms of the secondary school achievement perception variables of the graduated high school and students. Bilge and Arslan (2000) found that students' assessment of their problem solving skills differed significantly according to their perceptions of academic success. Yalçın, Tetik, and Açıkgöz (2010) also determined that academic success perceptions of college students are an important factor on their problem-solving skills. Stadler et al. (2018), on the other hand, stated that the role of complex problem-solving skills in university success was predicted in their study on university students. Alver (2005), on the other hand, found that there was no significant relationship between the problem solving skill averages of the education faculty students and the academic achievement averages at the university. Diker-Coşkun et al. (2014) also determined in a study conducted with students from different faculties that students' problem solving levels did not differ significantly according to their perceptions of academic achievement.

In the study, it was also observed that there was a significant difference between the problem solving skills average of the students who chose their departments voluntarily and the average score of the students who chose their departments unintentionally. Otacıoğlu (2007), on the other hand, did not find a significant difference in the problem solving skill scores of the music education department students according to their willingness to enter the department.

Finally, in the study, a significant difference was found between the problem solving mean score of the students who were satisfied with choosing their departments and the mean score of the students who were not satisfied. Similarly, Bilge and Arslan (2000) determined that university students' satisfaction with the department they studied differed significantly according to their perceptions of problem solving skills. Based on these findings, it shows the importance of university students' education in a department that they voluntarily choose and that they are satisfied with, because it affects their problem-solving skills.

Students who have problem-solving skills at a creative level have a quality work culture. For this reason, employers will hire students who are successful in problem solving because they believe they will do good and quality work (Amran, Kutty, & Surat, 2019). This situation makes problem solving skills training necessary especially in university education.

It can be said that the restructuring of the course content in a way that will improve the problem solving and communication skills of university students is important in reaching the student profile to be trained. In addition, it is undeniable that university faculty members create appropriate learning environments and offer teaching experiences in order to develop students' problem-solving skills.

Studies with problem solving inventory show that there is a need for preventive and curative studies especially on depression, suicidality, anxiety and career-related problems (Heppner, Witty, & Dixon, 2004). For this reason, new studies can be conducted on different sample groups, examining the relationship between problem solving skills and related variables.

REFERENCES

Akın, S., Güngör, İ., Mendi, B., Şahin, N., Bizat, E., & Durna, Z. (2007). Üniversite öğrenimlerini sürdüren hemşirelik bölümü öğrencilerinin problem çözme becerileri ve iç-dış kontrol odağı algısı. *Hemşirelikte Eğitim ve Araştırma Dergisi, 4*(2), 30-36.

Alcı, B. Erden, M., & Baykal, A. (2008). Üniversite öğrencilerinin matematik başarıları ile algıladıkları problem çözme becerileri, özyeterlik algıları, biliş üstü öz düzenleme stratejileri ve ÖSS sayısal puanları arasındaki açıklayıcı ve yordayıcı ilişkiler örüntüsü. *Boğaziçi Üniversitesi Eğitim Dergisi, 25*(2), 53-68.

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.

Amran, M. S., Kutty, F. M., & Surat, S. (2019). Creative problem-solving (CPS) skills among university students. *Creative Education*, 10(12), 3049–3058. https://doi:10.4236/ce.2019.1012229

Aslan, O. & Uluçınar-Sağır, Ş. (2012). Fen ve teknoloji öğretmen adaylarının problem çözme becerileri. *Journal of Turkish Science Education, 9*(2), 82-94.

Barahmand, U. (2010). Worry and problem solving skills in university students. *Journal of Psychology*, 1(2), 105-111.

Başar, G. Akın, S., & Durna, Z. (2015). Hemşirelerde ve hemşirelik öğrencilerinde problem çözme ve eğitim becerilerinin değerlendirilmesi. *Gümüşhane Üniversitesi Sağlık Bilimleri Dergisi, 4*(1), 125-147.

Bilge, F., & Arslan, A. (2000). Akılcı olmayan düşünce düzeyleri farklı üniversite öğrencilerinin Problem çözme becerilerini değerlendirmeleri. *Türk Psikolojik Danışma ve Rehberlik Dergisi, 2*(13), 7-18.

Can, A. (2018). *SPSS ile bilimsel araştırma sürecinde nicel veri analizi* (6.baskı). Ankara: Pegem A.

Can, H. Öner, Ö., & Çelebi, E. (2009). Üniversite öğrencilerinde eğitimin sorun çözme becerisine etkisinin incelenmesi. *Fırat Sağlık Hizmetleri Dergisi, 4*(10), 35-58.

Chang, E. C. (1998). Hope, problem-solving ability, and coping in a college student population: Some implications for theory and practice. *Journal of Clinical Psychology*, *54*(7), 953-962.

Çam, S., & Tümkaya, S. (2006). Üniversite öğrencilerinde kişilerarası problem çözme. *Çukurova Üniversitesi Sosyal Bilimler Enstitüsü Dergisi, 15*(2), 119-131.

Çapri, B., & Gökçakan, Z. (2008). Akılcı duygusal davranış terapisi (ADDT)'ne dayalı grupla psikolojik danışmanın üniversite öğrencilerinin problem çözme algısına etkisi. *Çukurova Üniversitesi Sosyal Bilimler Enstitüsü Dergisi, 17*(1), 135-154.

Deniz, M. E., Arslan, C., & Hamarta, E. (2002). Lise öğrencilerinin problem çözme becerisinin çeşitli değişkenler açısından incelenmesi. *Eğitim ve Yönetim*, 31, 374-389.

Diker-Coşkun, Y., Garipoğlu, Ç.,& Tosun, Ü. (2014). Analysis of the relationship between the resiliency level and problem solving skills of university Students. *Procedia - Social and Behavioral Sciences,* 114, 673- 680.

Durmaz, Ş., Kaçar, Z., Can, S., Koca, R., Yeşilova, D., & Tortumluoğlu, G. (2007). Çanakkale sağlık yüksekokulu öğrencilerinin problem çözme becerileri ve etkileyen bazı faktörler. *Atatürk Üniversitesi Hemşirelik Yüksekokulu Dergisi*, 10(4), 63-71.

Durmuş, M., & Okanlı, A. (2018). Üniversite öğrencilerinin problem çözme becerileri ile psikolojik dayanıklılık düzeylerinin değerlendirilmesine yönelik bir araştırma. *Yaşam Becerileri Psikoloji Dergisi*, 2(4), 177-189.

Dündar, S. (2009). Üniversite öğrencilerinin kişilik özellikleri ile problem çözme becerileriarasındaki ilişkinin incelenmesi. *Dokuz Eylül Üniversitesi İktisadi ve İdari Bilimler Fakültesi Dergisi, 24*(2), 139-150.

Elkin, N. & Karadağlı, F. (2015). Üniversite öğrencilerinin problem çözme becerilerinin değerlendirilmesi. *Adıyaman Üniversitesi Sağlık Bilimleri Dergisi, 1*(1), 11-18.

Gorard, S. (2017). *İstatistiksel ve korelasyonel teknikler* (Çev.: Sarıcaoğlu, Ö.). A. Erözkan & E. Büyüköksüz (Ed.). *Eğitimde yöntemleri ve metodolojileri* (s.195-204) içinde Ankara: Anı Yayıncılık.

Günüşen, N. P., & Üstün, B. (2011). Hemşirelik öğrencilerinin problem çözme beceri düzeyleri ile kontrol odağı arasındaki ilişki. *Dokuz Eylül Üniversitesi Hemşirelik Yüksekokulu Dergisi, 4*(2), 72-77.

Heppner, P.P., Reeder B. L., & L. M. Larson. (1983) Congnitive variables associated withpersonal problem solving appraisal: implications for counseling. *Journal of Counseling Psychology*, 30, 537-545.

Heppner P. P., Witty T. E., & Dixon W. A. (2004). Problem-solving appraisal and human adjustment: A review of 20 years of research using the problem solving inventory. *The Counseling Psycologist*, 32, 344-428.

Higher Education Institution (2018) Yükseköğretim girdi göstergeleri.https://yokatlas.yok.gov.tr/lisans.php?y=107310401 (29.10.2019).

Hu, R., Su, X. H., & Shieh, C. (2017). A Study on the application of creative problem solvingteaching to statistics teaching. *Eurasia Journal of Mathematics, Science and Technology Education*, 13, 3139-3149.

Keskin, G., & Yıldırım, G. Ö. (2008). The evaluation of university students in terms of problem solving, autonomy, multiple intelligences based on constructive approach norms.*İnönü University Journal of the Faculty of Education, 9*(16), 67-88.

Koç, B., & Büyükgöze-Kavas, A. (2015). Üniversite öğrencilerinin saldırganlık, kişilerarası problem çözme becerileri, kişilerarası ilişki tarzları ve iletişim beceri arasındaki ilişkilerin incelenmesi. *Uluslararası Türkçe Edebiyat Kültür Eğitim Dergisi, 4*(2),783 799.

Koç, B., Terzi, Y., & Gül, A. (2015). Üniversite öğrencilerinin iletişim becerileri ile kişilerarası problem çözme becerileri arasındaki ilişki. *Uluslararası Türkçe Edebiyat Kültür Eğitim Dergisi, 4*(1), 369-390.

Leisian, S., & Tatiana, P. (2015). Training program on creative program at Russian Universities. *Procedia-Social and Behavioral Science*, 191, 2710 2715.https://doi.org/10.1016/j.sbspro.2015.04.388

Morgan, C. T. (2019). Psikolojiye giriş (Çev: Karakaş, S. & Eski, R.). 21. baskı. Konya: Eğitim.

Oermann M, Truesdall S., & Ziolkowski L. (2000). Strategy to assess, develope and evaluate critical thinking. *The Journal of Continuing Education in Nursing, 31*(4),156-160.

Oğuztürk, Ö., Akça, F., & Şahin, G. (2011). Üniversite öğrencilerinde umutsuzluk düzeyi ile problem çözme becerileri arasındaki ilişkinin bazı değişkenler üzerinden incelenmesi. *Klinik Psikiyatri*, 14, 85-93.

Olgun, N., Öntürk, Z. K., Karabacak, Ü., Aslan, F. E., & Serbest, Ş. (2010) Hemşirelik öğrencilerinin problem çözme becerileri: Bir yıllık izlem sonuçları. *Acıbadem Üniversitesi Sağlık Bilimleri Dergisi, 1*(4), 188-193.

Otacıoğlu, S. G. (2007). Eğitim fakültelerinin farklı branşlarında eğitim alan öğrencilerin problem çözme beceri düzeylerinin karşılaştırılması. *Eurasian Journal of Educational Research*, 29, 73-83.

Öğülmüş, S. (2001). *Kişilerarası sorun çözme becerileri ve eğitimi.* Ankara: Nobel.

Özyacıoğlu, N. Aydınoğlu, N., & Aytekin, G. (2009). Sağlık yüksekokulu öğrencilerinin empatik ve problem çözme becerilerinin incelenmesi. *Atatürk Üniversitesi Hemşirelik Yüksekokulu Dergisi, 12*(3), 46-53.

Saracaloğlu, A., Yenice, N., & Karasakaloğlu, N. (2009). Öğretmen adaylarının iletişim ve problem çözme becerileri ile okuma ilgi ve alışkanlıkları arasındaki ilişki. *Yüzüncü Yıl Üniversitesi Eğitim Fakültesi Dergisi,*6(2),187-206.

Sardoğan, M. E. Karahan, T. F., & Kaygusuz, C. (2006). Üniversite öğrencilerinin kullandıkları kararsızlık stratejilerinin problem çözme becerisi, cinsiyet, sınıf düzeyi ve fakülte türüne göre incelenmesi. *Mersin Üniversitesi Eğitim Fakültesi Dergisi, 2*(1), 78-97.

Stadler, M., Becker, N.,Schult, J., Niepel, C., Spinath, F. M., Sparfeldt, J. R. & Greiff, S. (2018).The logic of success: the relation between complex problem-solving skills and university achievement.*Higher Education.* 76, 1-15. https://doi:10.1007/s10734-017_0189-y

Şirin, A., & Güzel, A. (2006). Üniversite öğrencilerinin öğrenme stilleri ile problem çözme becerileri arasındaki ilişkinin incelenmesi. *Kuram ve Uygulamada Eğitim Bilimleri, 6*(1), 231-264.

Tezel, A., Arslan, S., Topal, M., Aydoğan, Ö., Koç, Ç., & Şenlik, M. (2009). Hemşirelik öğrencilerinin problem çözme becerileri ve depresyon düzeylerinin incelenmesi. *Atatürk Üniversitesi Hemşirelik Yüksekokulu Dergisi, 12*(4), 1-10.

Tümkaya, S., & İflazoğlu, A. (2000). Ç. Ü. sınıf öğretmenliği öğrencilerinin otomatik düşünce ve problem çözme düzeylerinin bazı sosyo-demografik değişkenlere göre incelenmesi. *Çukurova Üniversitesi Sosyal Bilimler Dergisi, 6*(6), 143-158.

Wismath, S. Orr, D., & Zhong, M. (2014). Student perception of problem solving skills. transformative dialogues. *Teaching & Learning Journal,* 7(3), 1-17.

Yalçın, B., Tetik, S., & Açıkgöz, A. (2010). Yüksekokul öğrencilerinin problem çözme becerisi algıları ile kontrol odağı düzeylerinin belirlenmesine yönelik bir araştırma. *Organizasyon ve Yönetim Bilimleri Dergisi,* 2(2), 19-27.

Yılmaz, E., Karaca, F., & Yılmaz, E. (2009). Sağlık yüksekokulu öğrencilerinin problem çözme becerilerinin bazı değişkenler açısından incelenmesi. *Atatürk Üniversitesi Hemşirelik Yüksekokulu Dergisi, 12*(1), 38-48.

Yılmaz-Karabulutlu, E., Yılmaz, S., & Yurttaş, A. (2011). Öğrencilerin duygusal zekâ düzeyleri ile problem çözme becerileri arasındaki ilişki. *Psikiyatri Hemşireliği Dergisi, 2*(2), 75-79.