38. Attitudes of University Students Towards Intelligence Games Ardahan University Sample[1]

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Abstract

It is thought that the attitudes of students studying at universities towards intelligence games will contribute to digitalization and innovation processes. The aim of the current research is to examine the attitudes of university students towards intelligence games in terms of some variables. The descriptive survey model, which is a quantitative research method, was used in the research. The study group of the research consists of students from the Child Development Program, Medical Documentation and Secretarial Department, Hair Care and Beauty Services Program, Elderly Care Program, Medical Laboratory Techniques Program and Medical Imaging Techniques Program at Ardahan University. 'Attitude Scale Towards Intelligence Games' was used as a data collection tool in the research. Data were analyzed with the SPSS 21.0 package program. Based on the results of the 'test of normality' conducted in the data analysis, it was determined that university students showed a normal distribution in the context of age, gender, department and department-based class variables in which their attitudes towards intelligence games were examined; however, they did not show a normal distribution in the context of class and previous education variables for intelligence games. According to the data obtained from the research findings, female students have higher attitudes towards intelligence games at a level that will make a significant difference compared to male students.

Keywords: Intelligence games, University students, Education, Attitude

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Üniversite Öğrencilerinin Zekâ Oyunlarına Yönelik Tutumları: Ardahan Üniversitesi Örneği[3]

Öz

Üniversitelerde öğrenim gören öğrencilerin zekâ oyunlarına yönelik tutumlarının dijitalleşme ve inovasyon süreçlerine katkı sağlayacağı düşünülmektedir. Mevcut araştırmanın amacı üniversite öğrencilerinin zekâ oyunlarına yönelik tutumlarını bazı değişkenler açısından incelemektir. Araştırmada nicel araştırma yöntemi olan betimsel tarama modeli kullanılmıştır. Araştırmanın çalışma grubunu Ardahan Üniversitesinde Çocuk Gelişimi Programı, Tıbbi Dokümantasyon ve Sekreterlik Bölümü, Saç Bakımı ve Güzellik Hizmetleri Programı, Yaşlı Bakımı Programı, Tıbbi Laboratuvar Teknikleri Programı ve Tıbbi Görüntüleme Teknikleri Programı öğrencileri oluşturmaktadır. Araştırmada veri toplama aracı olarak 'Zekâ Oyunlarına Yönelik Tutum Ölçeği' kullanılmıştır. Veriler SPSS 21.0 paket programıyla analiz edilmiştir. Verilerin analizinde yapılan 'normallik testi' sonuçlarına göre üniversite öğrencilerinin zekâ oyunlarına yönelik tutumlarının incelendiği yaş, cinsiyet, bölüm ve bölüm bazlı sınıf değişkenleri bağlamında normal dağılım gösterdiği tespit edilmiştir. Ancak üniversite öğrencileri zekâ oyunlarına yönelik sınıf ve önceki eğitim değişkenleri bağlamında normal bir dağılım göstermediği tespit edilmiştir. Araştırma bulgularından elde edilen verilere göre kız öğrencilerin zekâ oyunlarına yönelik tutumları erkek öğrencilere göre anlamlı fark yaratacak düzeyde daha yüksektir.

Anahtar Kelimeler: Zeka Oyunları, Üniversite Öğrencileri, Eğitim, Tutum

Introduction

It is thought that playing intelligence games has a shaping effect on individuals' daily lives and educational levels (Alkan & Mertol, 2017, p.62). Intelligence games improve the individual's ability to think flexibly, make predictions, memory, and analyze (Kul, 2018, p.987). Intelligence games is a tool for individuals in revealing their own potentials, in developing different and original strategies for the problems, in making a fast and true decision, and what is more in making them attain a systematic structure of thinking (Duman et al., 2023). Intelligence games, which require thinking skills like reasoning and logical thinking, have been found to positively impact cognitive development (Zhou, 2023). In this context, considering the contribution of intelligence games to the cognitive/mental, affective and social development of the individual, it is thought that integrating intelligence/mind games into education will have beneficial results. In this regard, the Ministry of National Education also included the "Intelligence Games" course in the education curriculum (MEB, 2013, p.1) as an elective

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course. When the curriculum of the intelligence games course is examined, it is seen that there is a hierarchical structure between the levels and these levels contain three basic stages (MEB, 2013, p.2):

> *1. Beginner Level: It includes learning the rules of the games, gaining basic knowledge and skills, playing beginner games and solving puzzles.*
>
> *2. Intermediate: It includes making logical inferences, starting from the right place in puzzles, applying basic strategies in strategy games, playing intermediate games and solving puzzles.*
>
> *3. Advanced: It includes high-level knowledge and skills such as creative thinking, analyzing, revealing original strategies, evaluating, and generalizing. Playing advanced games, solving puzzles and benefiting from the experiences of others are included in this step. (MEB, 2013, p.2)*

The theoretical framework for Towards intelligence games is presented in detail in Table 1.

Table 1. Theoretical framework for mind games

Researchers / **Discourses**	Kirriemur & McFarlane (2004)	Aslan (2019)	Bottino & Ott (2007)	Devecioğlu and Karadağ (2014)	MEB (2013)	Alkaş Ulusoy, Saygı & Umay (2017)	Altun, Hazar & Hazar (2018)	Alkan & Mertol (2017)	Kul (2018)	Hassabis (2017)
Intelligence games enable strategic thinking.	+	+	+	+		+			+	+
Intelligence games support logical reasoning.		+			+	+			+	
Intelligence games improve thinking skills.			+			+	+		+	+
Intelligence games contribute positively to learning.		+		+	+	+		+	+	
Intelligence games play the role of increasing the self-confidence of the individual.					+					
Intelligence games enable the individual to socialize.					+	+		+	+	
Brain teasers help making quick and right decisions.					+					
Intelligence games contribute to problem-solving skills.	+	+			+	+	+	+	+	
Intelligence games contribute to concentration skills.							+			
Intelligence games contribute to spending quality time.					+			+		
Intelligence games reflect positively on family relationships.								+		

Intelligence games develop flexible thinking skills.						+			+	
Intelligence games inspire human creativity.										+

The elective course of intelligence games has been added to the curriculum by the Ministry of National Education since the 2013-2014 academic year in order to develop reasoning skills in children. In addition, as of the current 2023-2024 academic year, efforts are being made to gradually open a "Mind Games Class" in every school. All these require judgment, reasoning, concentration, etc. There is a need for educators and adults who can train individuals who use high-level skills. In this context, the perceptions and attitudes of university students, who are at the highest level of formal education, towards intelligence games are important.

One of the situations that affect intelligence games is undoubtedly the attitudes of the individual. Attitudes affect human orientations. Attitudes have the power to predict the behaviors of the individual (Gümüş, 2018, p.40). In this regard, it is thought that the current study is important in terms of revealing the towards intelligence games attitude levels of university students. Based on this idea, the aim of the research is to examine the attitudes of university students towards intelligence games in terms of some variables. In this context, the problem sentence of the research was determined as follows:

1. Do university students' attitudes towards intelligence games differ in terms of age, gender, class, department, and previous towards intelligence games education?

The limitations of the study,

1. It was limited to the students of Ardahan University.

2. In the study, the answers given by the participants on the scale were accepted as correct and impartial.

Method

This research was carried out in accordance with the quantitative research method. In the research, descriptive scanning model, which is one of the scanning models, was used. Descriptive scanning is research conducted on large groups, in which the opinions and attitudes of individuals in the group about a phenomenon and event are taken, and the phenomena and events are tried to be described (Karakaya, 2012, p.59).

Study Group

The research study group was selected from 5612 students studying in 1st 2nd 3rd 4th grades at Ardahan University. In this context, the population of the study consists of 5612 students. When the size of the sample in different population sizes was calculated, it was seen that while the sample size of this study should be applied to %95 students with 400 confidence, it should be applied to %99 students with 3716 confidence (Cohen, Manion & Morrison, 2000). In parallel with this information, the sample group of the study was determined as 346 university students as a result of the elimination of the scales that were

answered incompletely and inadequately. The classes included in the study were selected by simple random sampling. Study Group of the research is presented in Table 2.

Table 2. Demographic data of teachers participating in the research

Variable	Category	N	%
Gender	Female	262	75.7
	Male	84	24.3
	Total	**346**	**100.0**
Age	Ages between 18-20	225	65.0
	Ages between 21-23	112	32.4
	24 and above	9	2.6
	Total	**346**	**100.0**
Grade	1st Grade	185	53.5
	2st Grade	161	46.5
	Total	**346**	**100.0**
Department	Child Development	99	28.6
	Medical Documentation and Secretary	27	7.8
	Hair care and beauty	31	9.0
	Elderly Care	84	24.3
	Medical Laboratory Techniques	34	9.8
	Medical Imaging Technologies	71	20.5
	Total	**100**	**100.0**
What grade are you in in the department you are studying Child Development	Child Development 1	50	14.5
	Child Development 2	49	14.2
	Medical Documentation and Secretary 2	27	7.8
	Hair Care and Beauty	31	9.0
	Elderly Care 1	45	13.0
	Elderly Care 2	39	11.3
	Medical Laboratory Techniques 1	20	5.8
	Medical Laboratory Techniques 2	14	4.0
	Medical Imaging Technologies 1	39	11.3
	Medical Imaging Technologies 2	32	9.2
	Total	**346**	**100.0**
Previous training towards intelligence games	Yes	29	8.4
	No	317	91.6
	Total	**346**	**100.0**

When examining the distribution of university students included in the sample according to gender, it was found that out of the participating students, 262 (75.7%) were female, while 84 (24.3%) were male. Among the university students who participated in the research, 225 individuals were in the 18-20 age range (65.0%), 112 individuals were in the 21-23 age range (32.4%), and 9 individuals were in the 24 and above age range (2.6%). Looking at the class levels of the students, it can be observed that 185 students were in the first year (53.5%) and 161 university students were in the second year (46.5%). In terms of the programs in which the students were enrolled, 99 (28.6%) were in the Child Development Program, 27 (7.8%) were in the Medical Documentation and Secretarial Department, 31 (9.0%) were in the Hair Care and Beauty Services Program, 84 (24.3%) were in the Elderly Care Program, 34 (9.8%) were in the Medical Laboratory Techniques Program, and 71 (20.5%) were in the Medical Imaging Techniques Program. When examining the data regarding the classes in which the students were enrolled in their respective programs, it can be seen that 50 (14.5%) were in Child Development I, 49 (14.2%) were in Child Development II, 27 (7.8%) were in Medical Documentation and Secretarial II, 31 (9.0%) were in Hair Care and Beauty Services II, 45 (13.0%) were in Elderly Care I, 39 (11.3%) were in Elderly Care II, 20 (5.8%) were in Medical Laboratory Techniques I, 14 (4.0%) were in Medical Laboratory Techniques II, 39 (11.3%) were in Medical Imaging Techniques I, and 32 (9.2%) were in Medical Imaging Techniques II. Out of the university students who participated in the research, 317 (91.6%) individuals had not received any previous education on brain games, while 29 (8.4%) individuals had received previous education on brain games.

1. Data Collection Tools

In accordance with the the research problem situation and theoretical framework, 'the attitude scale towards intelligence games (ZOTÖ)' developed by Kurupınar and Aydoğan (2020) was used. The KMO value of the scale used was determined as .93 and the Cronbach Alpha internal consistency coefficient was determined as .89 for the whole scale (Kurupınar & Aydoğan, 2020, p.4396). In addition, the researcher has prepared a "Personal Information Form" for obtaining information regarding the variables that are expected to contribute to the research process from the students. In this context, attitudes of the university students towards intelligence games has been prepared to reveal the relationship in the context of different variables. In the "Personal Information Form", questions indicating the age, gender, grade, department, status of previous trainings towards intelligence games of the students were included.

2. Data Analysis

The research data were analyzed with SPSS 21.0 package program. Frequency, relative coefficient of variation, percentage, arithmetic mean statistics for descriptive analyses was used. In the study, firstly, test of normality was used to test the distribution normality of the data. The most well-known normality tests are Kolmogrov Smirnov, Chi-Square, Lilliefors and Shapiro-Wilk normality tests. At this point, the preferred test was decided by looking at the sample size of the study. In order to obtain the quantitative data of the study, the Kolmogrov Smirnov test was taken into account since the sample group in which the scale was applied consisted of 346 students. The works of Ak and Büyüköztürk are taken as a reference for this situation. In the study by Ak (2008, p.10), it is recommended to apply the Kolmogorov Smirnov test when the number of observations is 30 or more, while in the study by Büyüköztürk (2017, p.42), it is suggested to apply the Kolmogorov-Smirnov test when the number of data points is 50 or more.

Findings

The analysis data of the SPSS 21 package program were used to determine the distribution levels of the research data and to decide which tests to use. In this context, based on the results of the 'test of normality', it was found that university students' attitudes towards intelligence games showed a normal distribution in terms of the variables of age, gender, department, and class they belonged to. However, it was determined that they did not show a normal distribution in terms of the variables of class and previous education in intelligence games. Skewness and kurtosis coefficients were considered to assess the normality of the distribution. Reference values between these contexts +1.5 and -1.5 were taken into consideration, and parametric tests were applied assuming that the skewness and kurtosis values in this range showed normal determine (Tabanchnick, 2013). Parametric tests were applied to the groups that showed context normal determine and non-parametric tests were applied to the groups that did not show normal determine. The findings obtained for the research is presented in tables under the title of the investigated variable.

1. Results of Attitudes of University Students Towards Intelligence Games According to Age Variable

Table 3. One Way ANOVA test results by attitudes of university students towards intelligence games age variable.

Size	Age	N	X	Ss	sd	F	p.	Significant Difference
Attitude Scale Towards Intelligence Games	Ages between 18-20	225	79.3867	13.59217	2 1125	3.745	.025	1-2
	Ages between 21-23	1122	83.3480	12.48690				
	Age 24- or more	99	84.5556	11.57704				

When the table is examined, it is seen that attitude of university students towards intelligence games makes a significant difference in the context of the age variable (F=3,741; p<0,05). According to the results of the LDS test conducted to determine the significant differences in students' attitudes towards intelligence games across different age ranges, it was found that students in the age group of 21-23 (X=83.3482) had significantly higher mean total scores compared to students in the age group of 18-20 (X=79.3867).

2. Results of University Students' Attitudes Towards Intelligence Games Based on the Variable of Their Class in the Departments They Study

Table 4. Results of One-Way ANOVA test on university students' attitudes towards IQ games based on the variable of their class in the departments they study.

Size		Which Department and Grade	N	X	Ss	sd	F	p.	Significant Difference
Attitude Towards	**Scale**	Child Development I	50	81.8000	11.31551	9	4.219	.000	1-9

Intelligence Games	Child Development II	49	86.4898	13.18794		2-5 2-9 4-9
	Elderly Care I	45	81.1333	12.20352		
	Elderly Care II	39	84.8205	12.27288		
	MS II	27	74.8148	13.89997		
	Hair Care II	31	80.9032	12.41364		
	MLT I	20	82.4000	11.83839		
	MLT II	14	82.3571	7.22823		
	MIT I	39	72.4359	16.26231		
	MIT II	32	78.6563	11.50767		

When the table is examined. it is seen that the attitudes of university students towards intelligence games make a significant difference in the context of the grade variable in which they study (F= 4.219; p<0.05). According to the results of the LDS test conducted to determine which department and which grades students' attitudes towards intelligence games differ significantly, the total score averages of the first-year students studying in the Medical Imaging Techniques Program (X= 72.4359 are significantly lower than the total score averages of the first-year students of Child Development (X= 81.8000, the total score averages of the second-year students of Child Development (X= 86.4898 and the total score averages of the Elderly Care Program students (X = 84.8205).

In addition. according to the results of the LDS test. the total score averages of the second-grade students of Child Development (X= 86.4898 are significantly higher than the total score averages of the students of the Department of Medical Documentation and Secretariat (X= 74.8148).

3. The Results of University Students' Attitudes Towards Intelligence Games According to the Variable of the Department They Study

Table 5. One Way ANOVA test results of university students' attitudes towards intelligence games according to the department variable they study.

Size	**Department**	**N**	**X**	**Ss**	**sd**	**F**	**p.**	**Significant Difference**
Attitude Scale Towards Intelligence Games	Child Development	99	84.1212	12.44028	5	5.659	.000	1-2 1-6 4-6
	MS	27	74.8148	12.20352				
	Hair Care	31	80.9032	12.27288				
	Elderly Care	84	82.8452	13.28147				

MLT	34	82.3824	10.06348
MIT	71	75.2394	14.55773

When the table is examined. it is seen that the attitudes of university students towards intelligence games make a significant difference in the context of the department variable they study (F= 5.659; p<0.05). According to the results of the LDS test conducted to determine between which department students' attitudes towards intelligence games differ significantly, the total score averages of Child Development students (X= 84.1212) are significantly higher than the total score averages of the students of the Department of Medical Documentation and Secretariat (X= 74.8148) and the total score averages of the students of the Medical Imaging Techniques Program (X= 75.2394).

In addition. the total score averages of the students in the Elderly Care Program (X= 82.8452) are significantly higher than the total score averages of the students in the Medical Imaging Techniques Program (X= 75.2394).

4. The Results of University Students' Attitudes Towards Intelligence Games According to the Gender Variable

Table 6. T-test results of university students' attitudes towards intelligence games according to gender variable.

Size	Gender	N	X	Ss	sd	T	p.
Attitude Scale Towards Intelligence Games	Female	262	81.6374	12.82248	344	2.069	0.05
	Male	84	78.2024	14.48038			

It shows a significant difference according to the gender variable of the Attitude Scale towards Intelligence Games [t(344) =2.069; p< .05]. Accordingly, female students (X= 81.6374) have higher attitudes towards intelligence games at a level that will make a significant difference compared to male students (X= 78.2024).

5. The Results of University Students' Attitudes Towards Intelligence Games According to the Grade Variable.

Table 7. Mann Whitney U test results of university students' attitudes towards intelligence games according to the grade variable.

Size	Grade	N	Mean Rank	Rank Sum	U	p.
Attitude Scale Towards Intelligence Games	I. Grade	185	166.41	30785.00	13580.000	.157
	II. Grade	161	181.65	29246.00		

Students' attitudes towards intelligence games do not differ significantly between 1st grade (X= 30785.00) and 2nd grade (X= 29246.00) scores (p=0.157).

6. The Results of University Students' Attitudes Towards Intelligence Games According to the Variable of Previous Education

Table 8. Mann Whitney U test results of university students' attitudes towards intelligence games according to the variable of previous education.

Size	Receiving Training for ZO	N	Mean Rank	Rank Sum	U	p.
Attitude Scale Towards Intelligence Games	Yes	29	276.72	8025.00	1603.000	.000
	No	317	164.06	52006.00		

Students' attitudes towards intelligence games are higher at a level that will make a significant difference between the total score averages of the students who have previously received education for intelligence games (X= 8025.00) and the total score averages of the students who have not received education before (X = 52006.00).

Conclusion and Discussion

The attitudes of university students towards intelligence games differed significantly in the context of the age variable, and the attitudes of the students in the 21-23 age group towards intelligence games were higher than the students in the 18-20 age group. When the ranking was examined, it was determined that the total score averages of the students in the 24 and older age group (X= 84.5556) were the highest, the total score averages of the students in the 21-23 age group (X= 83.3482) were in the second place, and the total score averages of the students in the 18-20 age group (X= 79.3867) were the lowest. In this context, considering the relationship between the concept of age and the level of maturation, it can be said that as the age of the students increases, their attitudes towards intelligence games also develop. This situation is supported by the attitudes of the groups obtained in the study towards intelligence games. In their study, Adalar and Yüksel (2017) found that their attitudes towards intelligence games differed significantly in the context of the age variable. In the study conducted by Yardimciel and Kılıç (2021) on teachers' attitudes towards intelligence games, a difference was found in the context of the age variable.

When the attitudes of university students towards intelligence games were examined in the context of the class variable in the department they studied, a significant difference was found between the departments. It was determined that second-year students in the Child Development Program had higher attitudes towards intelligence games, while first-year students in the Medical Imaging and Techniques Program had the lowest retention towards intelligence games.

It was determined that the attitudes of university students towards intelligence games also made a significant difference in the context of the department variable they studied, and the attitudes of the students studying in the Child Development program towards intelligence games were higher than the attitudes of the students studying in the MS and MIT programs towards intelligence games. In addition,

it was determined that students who received education in the Elderly Care Program had higher attitudes towards intelligence games than students who received education in the MIT program.

When looking at the data obtained in terms of the gender variable, it was found that female students have a higher attitude towards IQ games compared to male students. However, studies conducted by Yılmaz (2019), Çetin and Özbuğutu (2020), and Yardimciel and Kılıç (2021) did not find significant differences in terms of the "gender" variable. However, in the study on the intelligence games of university students, a significant difference was found by differing from the current studies.

It was determined that students' attitudes towards intelligence games did not differ significantly in the context of the class they studied. In this context, it can be said that the attitudes of 1st and 2nd grade students towards intelligence games are similar.

It was determined that the attitudes of previously trained students towards intelligence games were higher at a level that would make a significant difference in the attitudes of previously untrained students towards intelligence games. In this context, it can be said that the trainings received for intelligence games positively improve the attitudes towards intelligence games. The findings obtained in the studies of Demirel (2015), Kurbal (2015), Savaş (2019), Yardimciel and Kılıç (2021) support the current study. In addition, Altun, Hazar and Hazar (2016) found in their study that there was an increase in the attention levels of children who received intelligence games training. In the study conducted by Yılmaz and İkikardeş (2020), they stated that the training received for intelligence games developed a positive attitude towards intelligence games. Bottino and Ott (2006) stated in their study that studies with children in general have a positive effect on school success. Alkaş Ulusoy, Saygı and Umay (2017), in their study on the views of primary school mathematics teachers on intelligence games, found that teachers' awareness levels increased as a result of the course given to teachers on intelligence games. In addition, according to Gershenfeld (2014), games enable individuals to take on different roles and produce alternative solutions to different problems. In this context, it can be said that the trainings received for intelligence games reflect positively on the emotional, cognitive and behavioral aspects of the students.

In line with the results of the research; In universities, students can be trained on intelligence games.

1. Students in universities can be provided with training on IQ games.

2. Elective or compulsory courses for intelligence games can be added to the course curricula of universities.

Qualitative and experimental studies can be conducted with different sample groups on the subject. In addition, the reasons for the variables that differ may be the subject of research.

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