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Assessment Scale of Academic Enablers: A Validity and Reliability Study*

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ABSTRACT

Purpose: This study aims to determine how university students evaluate the academic enablers they have acquired. To this end, the Assessment Scale of the Academic Enablers (ASAE) was developed and applied to 5,208 university students to test its validity and reliability.

Research Methods: The study employed a quantitative research design during the data collection and the analysis phases.

Findings: The ASAE consists of 20 items and three sub-factors: (i) learning competencies, (ii) communication and social competencies, and (iii) homework and responsibility competencies. Item-total correlations were found to vary from 0.44 to 0.70 and factor-loading values from 0.44 to 0.82. The three factors explain 51% of the total variance and the scale's reliability coefficient is 0.90. Results show that gender makes a significant difference in ASAE scores in favor of women. Also, the mean scores differed statistically depending on faculty. Particularly, students in the Faculty of Education obtained the highest scores in all factors; on the other hand students in the Faculty of Law earned mostly the lowest scores.

Implications for Research and Practice: The results show that the ASAE is a valid and reliable measurement tool that universities in Turkey can use to evaluate their success in using academic enablers for increasing students' academic success.

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Introduction

Factors impacting students' academic success and performance constitute indicators of the quality of countries' education systems and determiners of educational policies in need of change (Alnabhan, Al-Zegoul & Harwell, 2001). It is, then, only pertinent that educators and policy makers examine these factors. There are several studies (Laidra, Pullman & Allik, 2006; Rohde & Thompson, 2007; Stanovich, Cunningham & Freeman, 1984) that accept cognitive capacity as the main factor influencing students' academic achievement while others (Jenkins & Demaray, 2015) focus on attitudes and behaviors, such as motivation (Linnenbrink & Pintrich, 2002; Schunk & Zimmerman, 1994; Zimmerman, 1998), self-efficacy (Elias & Loomis, 2002; Vrugt, Langereis & Hoogstraten, 1997; Wood & Locke, 1987), study behaviors (Devine, 1987; Gettinger & Seibert, 2002; Hoover & Patton, 1995), class participation (Cobb, 1972; Greenwood, Horton, & Utley, 2002; Willingham, Pollack & Lewis, 2002), and positive social behaviors (Malecki & Elliott, 2002; Wentzel & Watkins, 2002).

The literature indicates that higher education should be compatible with environmental needs and economic development (Chryssolouris, Mavrikios & Mourtzis, 2013; Davies, 2017; Marchello, 1987; Sohal, 2013) and should develop learning enablers, such as personal productivity, flexibility, and lifelong learning (Avargil, Herscovitz & Dori, 2012; Deaconu, Osoian, Zaharie & Achim, 2014; Mulder, Gulikers, Wesselink & Biemans, 2009). Competency-based systems first emerged in the USA in the 1970s (Winterton, 2009, as cited in Deaconu et al., 2014) and Mulder et al. (2009) state that currently, the US educational system takes the following three areas as its base: (i) students' acquisition of behavioral learning, (ii) their acquisition of the basic skills needed for all jobs, and (iii) performance improvement. Competency understanding in vocational, technical, and higher education also gained importance in Europe during the 1980s. In the 1990s, significant steps were taken in Europe through processes implemented first in Lisbon and then Bologna. In 2008, the European Qualifications Framework for Lifelong Learning (EQF) was formed. Thirty-nine countries, including Turkey, determined their own national qualifications regulations based on the EQF depending on education level.[1]

The National Qualifications Framework for Higher Education in Turkey (NQF-HETR)[2] determined qualifications to be the knowledge, skills, and competency (i.e., responsibility and autonomy) that universities should provide students of any level, area, and program. The EQF defined knowledge as theoretical and factual, skills as either cognitive (including logical, intuitive, and creative thinking) or practical (including manual skills and methods, materials, tools, and the use of tools), and competency as the student's ability to apply knowledge and skills independently and responsibly.

[1] For detailed information on the EQF, see: http://www.cedefop.europa.eu/en/events-and-projects/projects/european-qualifications-framework-eqf
[2] For detailed information about Turkey's National Qualifications Framework, see: http://tyyc.yok.gov.tr/?pid=10

Academic competencies indicate a student's performance as well as the standards that are used in assessing academic performance (Cole, 1991). DiPerna and Elliott (1999) describe academic competencies as a multi-dimensional structure necessary for academic success and include students' skills, attitudes, and behaviors as being among said competencies. Academic competencies are divided into two main components, namely, academic knowledge and skills (i.e., academic skills) and academic enablers.[3] Academic knowledge and skills and academic enablers are complementary components that work as long as they exist together. In other words, academic competence is not simply achieved by acquiring academic success through academic knowledge and skills; instead, it is achieved by also acquiring the tools that will support learning and the formation and application of academic knowledge and skills. Those attitudes and behaviors considered to be academic enablers have been identified as study skills, academic motivation, social relations, and participation (DiPerna & Elliott, 2002). Similar distinctions are also found in the form of hard and soft skills, where mostly soft skills are related to business life (Laker & Powell, 2011; Andrews & Higson, 2008; Schulz, 2008; Kumar & Hsiao, 2007).

During the development of the scale used in this study, several prior studies related to academic competency and enablers (e.g., Avargil et al. 2012; Deaconu et al., 2014; DiPerna & Elliot, 1999; Gettinger & Seibert, 2002; Linnenbrink & Pintrich, 2002; Mulder et al., 2009; Wentzel & Watkins, 2002) were examined, including the 8 key competencies of the European Commission for lifelong learning[4] (i.e., communication in one's native language, communication in a foreign language, basic competencies in mathematic and science/technologies, digital competencies, learning to learn, social and civic-related competencies, taking initiative and entrepreneurship, and cultural awareness and expression) and competencies at the undergraduate level in the NQF-HETR[5] (i.e., being able to work independently and take responsibility, learning competency, communication and social competency, and field-specific competencies).

Higher education must never cease to improve on and strengthen countries' human resources infrastructure by imparting on students' not only academic skills but also skills that will serve them in a holistic manner. To this end, Turkey's higher education system engages in many activities and supports studies aimed at improving universities and service quality. A secondary objective is to gauge how students perceive the many changes that have been made and the many services that have appeared as a result.

[3] In Turkish, there is no word that corresponds to the English word enablers. It is expressed in Turkish in a way that means something similar to *making it possible* or *facilitating an opportunity*.
[4] For detailed information, see: https://ec.europa.eu/education/sites/education/files/document-library-docs/factsheet-key-competences-lifelong-learning_en.pdf
[5] For more information on Level 6 (undergraduate education) competencies of the NQF-HETR, see: http://tyyc.yok.gov.tr/?pid=33

This study seeks to develop a scale measuring students' perceptions regarding how deeply they have acquired or improved in the academic enablers that higher education institutions endeavor to impart on them. Concordantly, this study is important in three aspects. Firstly, it will serve as a tool that universities may use to evaluate students' perceptions on the academic enablers intended to be imparted on them during their undergraduate education. Secondly, measuring students' perceptions will afford practitioners and policymakers valuable data to use in their respective fields. Thirdly, performing the study with 5,208 students in Istanbul University renders its reliability and validity strong.

Method

Research Design

This research was planned following a survey model seeking determining the certain characteristics of a group.

Research Sample

The universe of the research consists of undergraduate students who attended Istanbul University during the 2015-2016 academic-year. The minimum sample number required for accurate assessment was calculated as 3,914 with a 99% confidence level and a 2% margin of error. The sample size consisted of 5,208 students, with an average age of 22, the oldest being born in 1960 and the youngest being born in 2000. Of the students, 2,742 were female (52.65%) and 2,405 were male (46.18%).

Research Instruments and Procedures

Development of ASAE

Creation of item pool: A comprehensive literature review was completed on the qualifications, competencies, and enablers required for and pertaining to higher education. We furthermore investigated a measurement tool developed for freshmen students (CIRP; Astin, 1966) in America by the Higher Education Research Institute (HERI) (Eagen et al., 2015; HERI, 2016a, b, c, & d; Pryor, Hurtado, Saenz, Santos, & Korn, 2007) and measures used in profile studies performed at Cornell, Iowa State, Oregon State, Michigan, and Indiana universities and Carleton, Bowdoin, and Amherst colleges (Cornell University, 2015; Kuh, 2009; Massachusetts Institute of Technology, 2014). We also examined studies conducted in various European countries (Bargel, Ramm, & Multrus, 2001; Busse, 2015; University College of London, n.d.; The Higher Education Economy, 2013), Canada, and Australia (Baik, Naylor, & Arkoudis, 2015; Canadian University Survey Consortium & Prairie Research Associates, 2013). Finally, we analyzed studies examining higher education conducted at universities in China, Russia, and Kyrgyzstan (Centre of Development and Resources for Students, 2012; Ivanov Devlet Universitesi, n.d.; Moskova Devlet Universitesi, n.d.; Pomor Devlet Universitesi, n.d.).

Despite the vast number of internationally authored studies on this subject, similar studies are quite scarce in Turkey (Atasever, 2007; Cicek, Baykul & Keles, 2014; Gizir et al., 2010; Hatipoglu, Acar, Vural Akar & Binay, 2012; Kustepeli & Gulcan, 2002; Sencar, 2013; Sevuktekin, Nargelecekenler & Cetin, 2012; Yaylali et al., 2006), conducted mostly in different faculties (Akyurt, 2009; Cevik & Yigit, 2009; Ozel, 2006; Sahin, 2005; Senol & Tufekci, 2007; Tekin, 2014) and departments (Ekiz, 2006; Yigit, Esenay & Derebent, 2007, Ilgaz & Akdol, 2009; Issi, 2008; Kaya & Buyukkasap, 2005; Kizilcaoglu, 2003; Senses, 1999).[6] The theoretical and practical reviews have been provided to identify a large number of themes and items to pool from. The draft form has been created from the item pool.

Receiving and implementing expert opinion: In the second stage, five experts in the fields of scale evaluation and the educational sciences were consulted to determine not only the scale's linguistic and expressive appropriateness but also the suitability level of each item measuring the selected academic enablers.

Rewriting the items of the scale: In the third stage, the scale items were rewritten according to the field experts' recommendations.

Application of the pilot study: In the fourth stage, we performed a pilot study with 314 students after receiving approval from the ethics committee.

Item analysis, exploratory factor analysis: In the fifth stage, the raw state of the scale was applied to 5,208 students (see Table 1 for sampling design) in Istanbul University. Consequently, we conducted an exploratory factor analysis in order to learn its validity and reliability.

Table 1

Sampling Design[7]

No	Faculty	Universe	Calculated Sample	Target Sample	Respon-dents	Frequency Distribution (%)
1.	Physical Edu. & Sports	601	42.43	42	43	0.8
2.	Cerrahpasa Medicine	2,867	200.93	201	229	4.4
3.	State Conservatory	283	18.78	19	21	0.4
4.	Dentistry	1,028	72.44	72	72	1.4

[6] This is not an exhaustive list of studies on the topic in question.
[7] Numbers are based on the 2015-2016 academic year.

Table 1 Continue

No	Faculty	Universe	Calculated Sample	Target Sample	Respon-dents	Frequency Distribution (%)
5.	Pharmacy	1,144	80.06	80	88	1.7
6.	Literature	13,008	887.94	888	998	19.2
7.	Science	4,056	249.57	250	295	5.7
8.	F. Nightingale Nursing	1,038	73.28	74	79	1.5
9.	Hasan Ali Yucel Education	3,257	227.05	227	239	4.6
10.	Law	6,916	487.63	488	515	9.9
11.	Economics	10,992	757.40	757	611	11.7
12.	Theology	4,173	257.62	258	313	6.0
13.	Communication	3,775	263.76	264	173	3.3
14.	Istanbul Medicine	3,111	219.50	220	225	4.3
15.	Management	2,726	182.08	182	203	3.9
16.	Engineering	7,504	500.06	500	558	10.7
17.	Forestry	1,863	131.53	132	139	2.7
18.	Health Sciences	1,372	96.51	97	106	2.0
19.	Political Sciences	2,114	132.09	132	157	3.0
20.	Fisheries	370	18.92	19	27	.5
21.	Transport & Logistics	401	28.24	28	29	.6
22.	Veterinary Medicine	1,005	70.95	71	88	1.7
	Total	70,987	4,998.76	5,001	5,208	100

Validity and Reliability:

Exploratory Factor Analysis (EFA): The data obtained from respondents were subject to both a Kaiser-Meyer-Olkin (KMO) Test of Sampling Adequacy and Barlett's Test of Sphericity to assess suitability. The KMO index ranges from 0 to 1. So that respondent data may be considered suitable for factor analysis, not only should the KMO index be .50 or greater, Barlett's Test of Sphericity should be significant ($p < .05$) (Hair, Anderson, Tatham & Black, 1995). The KMO value was .93 and Barlett's test results ($\chi^2 = 7{,}521.998$; $SD = 190$; $p < .001$) were significant, meaning that the correlation matrix is suitable for an exploratory factor analysis to be conducted on it. While a factor load of .45 or greater is considered, .30 is often accepted (Otrar & Argin, 2015). In this study, .30 was accepted as the lower cut-off point for factor loading. A three-factor ASAE explaining 51% of the total variance emerged as a result of the factor analysis. The scale was found to consist of 20 items and item-total correlations ranged from .44 to .77. The factor loads related to sub-factors are given in Table 2.

Table 2

Factor Loads Related to the Sub-factors (n=5,208)

Factor 1: Learning Competencies	Rotated Factor Load	Item-Total Correlation
I have established a relationship between the events I encounter in daily life and what I have learned.	.56	.44
I have had the opportunity to learn how to work independently.	.48	.52
I have developed a positive attitude toward life-long learning.	.67	.59
I check what I have written in order to develop my writing skills.	.61	.66
I question the reliability and quality of the information I receive.	.74	.51
I try to find alternative solutions to problems.	.77	.63
I have reviewed scientific research and articles.	.60	.62
I have had the opportunity to take responsibility.	.64	.54
Eigenvalue = 7.17 Variance explained = 35.85%		

Table 2 Continue

Factor 2: Communication & Social Competencies	Rotated Factor Load	Item-Total Correlation
I communicate with one or more faculty members through email.	.53	.59
I work with my friends on class projects.	.55	.65
I have received advice from a faculty member after class.	.61	.50
I participate in in-class discussions.	.67	.62
I have worked with students on a project outside of class.	.63	.60
I have had the opportunity to develop my computer skills.	.44	.60
I have given an oral presentation on an issue facing society.	.65	.58
I have asked a faculty member questions in class.	.50	.64
Eigenvalue = 1.75 Variance explained = 8.76%		
Factor 3: Homework & Responsibility Competencies		
I have done homework after gathering information and ideas from different sources.	.67	.62
I have done homework in an electronic environment.	.66	.70
I come to class with my homework complete.	.74	.64
I turn in my homework on time.	.82	.58
Eigenvalue = 1.31 Variance explained = 6.53%		
KMO = 0.93 Bartlett's Test of Sphericity (χ^2 = 7,521.998; *SD* = 190)		

Using factors' content as a basis, the first sub-factor was named *Learning Competencies* (LC) and consists of 8 items. Items' factor loading ranged from .48 to .77. The factor's eigenvalue was 7.17, which corresponded to 35.85% of the total variance. The second sub-factor was named *Communication and Social Competencies* (C&SC) and consisted of 8 items. Items' factor loadings ranged from .44 and .67. The eigenvalue of the factor was 1.75, which corresponds to 8.76% of the total variance. The third sub-factor was named *Homework and Responsibility Competencies* (H&RC) and consisted of 4 items. Items' factor loads ranged between .58 and .70. The eigenvalue

of the factor was 1.31, which corresponded to 6.53% of the total variance. These three factors together explained 51% of the total variance.

Cronbach Alpha values related to the sub-factors are given in Table 3. In Table 3, it is seen that the Cronbach Alpha values for the sub-factor LC was .842, the sub-factor C&SC was .802, and the sub-factor H&RC was .813. Additionally, Cronbach's alpha value for ASAE was .904.

Table 3
Cronbach's Alpha Values for the Scale's Sub-factors (n=5208)

Factor	Cronbach's Alpha Value
1. LC	.842
2. C&SC	.802
3. H&RC	.813
Total	.904

After the reliability tests were conducted, an independent sample *t*-test was performed with the scores of those students who had scored in both the upper and lower 25 percentile. The *t*-test sought to determine both items' discriminating power and whether participants' answers to the items differed by group (Ergin, 1995). The results showed the differences for all groups to be statistically significant ($p < .001$) and that this difference favored the upper 25-percentile group (see Table 4).

Table 4
ASAE Scores by the Upper and Lower 25 Percentiles

Score	Groups	*n*	χ	S	S hx	*t*- test		
						t	*SD*	*p*
1. LC	Lower	1,152	17.72	3.82	.11	-143.13	2,436	.000
	Upper	1,286	35.91	2.35	.07			
2.C&SC	Lower	1,247	11.89	2.27	.06	-156.20	2,687	.000
	Upper	1,442	30.03	3.51	.09			
3. H&RC	Lower	1,197	6.30	1.93	.06	-177.12	2,774	.000
	Upper	1,579	17.62	1.43	.04			
Total Scale	Lower	1,310	40.12	7.59	.21	-146.42	2,580	.000
	Upper	1,272	81.21	6.63	.19			

Lastly, the Pearson product-moment correlation analysis showed a positive and significant relationship ($p < 0.001$) between factors. In other words, all factors contain the same structure (see Table 5).

Table 5

Pearson Product-Moment Correlations

Factors	C&SC	H&RC	Total
LC	.603*	.534*	.858*
C&SC		.616*	.888*
H&RC			.790*

* $p < .001$

Data Analysis

The data obtained were analyzed using IBM SPSS 21. We performed a descriptive analysis to devise evaluation criteria for academic enablers, an independent *t*-test to determine whether the mean scores differed by gender, and an ANOVA to ascertain whether the scores differed by faculty. Moreover, we conducted a post hoc Bonferroni[8] test to determine the origin of the differences observed.

Results

The mean and standard deviation scores related to the ASAE are given in Table 6. ASAE scores were, by sub-dimension, $\bar{X}$=27.52, s=6.93) in LC, $\bar{X}$=21.13, s=7.21) in C&SC, and $\bar{X}$=12.75, s=4.45) in H&RC. ASAE scores in general were $\bar{X}$=61.17, s=15.92).

[8] Post hoc results are not mentioned due to the limit on words allowed. However, the researchers are able to share them upon request.

Table 6

ASAE Results (n=5,208)

Sub-dimensions	$\bar{X}$	**SD**
1. LC	27.5	6.93
2.C&SC	21.1	7.21
3. H&RC	12.7	4.45
ASAE (Total Scale)	61.1	15.92

Table 7 illustrates that there is a significant difference in ASAE scores (t = 7.49; p < .001) by gender in favor of women ($\bar{X}_{women}$ = 62.74; $\bar{X}_{men}$ = 59.43). There are also significant differences in LC (t = 6.58; p < .001) in favor of women ($\bar{X}_{women}$ = 28.13; $\bar{X}_{men}$ = 26.86) and in H&RC (t = 13.44; p < .001) also in favor women ($\bar{X}_{women}$ = 13.53; $\bar{X}_{men}$ = 11.87). That being said, however, no significant difference between men or women was found in C&SC (t = 1.62; p > .05).

Table 7
ASAE Scores by Gender (n=5,208)

						***t*-Test**		
Measure	**Groups**	***n***	$\bar{X}$	***SS***	$Sh_{\bar{x}}$	***t***	***SD***	***P***
ASAE	Females	2,742	62.74	15.80	.30	7.49	5,145	.000
	Males	2,405	59.43	15.83	.32			
LC	Females	2,698	28.13	6.89	.13	6.58	5,060	.000
	Males	2,364	26.86	6.89	.14			
C&SC	Females	2,686	21.29	7.20	.14	1.62	5,024	.105
	Males	2,340	20.96	7.22	.15			
H&RC	Females	2,699	13.53	4.33	.08	13.44	5,048	.000
	Males	2,351	11.87	4.42	.09			

Table 8 depicts the ANOVA results showing that mean scores differed statistically by faculty in the ASAE (F = 42.82; p < .001). Specifically, students in the Faculty of Education obtained the highest scores whereas students attending the Faculty of Law earned the lowest scores.

Table 8
ANOVA Results of the ASAE by Faculty (n=5,208)

f, $\bar{X}$ & *SS* Values				ANOVA Results					
Group (Faculty)	***n***	$\bar{X}$	***SS***	**Var. *K.***	***KT***	***SD***	***KO***	***F***	***p***
Cerrahpasa Medicine	229	53.29	16.95	**Between groups**	194,960.61	21	9,283.84	42.82	.000
State Conservatory	21	65.38	17.78	**Within group**	1,124,355.39	5,186	216.81		
Dentistry	72	56.56	13.76	**Total**	1,319,316	5,207			
Pharmacy	88	54.15	15.08						
Literature	998	65.62	15.40						
Science	295	59.80	16.61						
Nursing	79	67.66	15.10						
Education	**239**	**71.79**	**13.19**						
Law	**515**	**48.89**	**14.06**						
Economy	611	55.60	15.27						
Theology	313	67.43	13.01						
Communication	173	62.66	15.05						
Istanbul Medicine	225	59.05	15.01						
Management	203	65.29	13.32						
Engineering	558	63.28	13.71						
Forestry	139	66.92	13.31						
Health Sciences	106	62.44	13.78						
Political Sciences	157	63.26	14.92						
Sports Sciences	43	67.44	12.09						
Fisheries	27	65.37	13.90						
Shipping & Logistics	29	59.76	13.40						
Veterinary	88	60.44	15.47						
Total	5,208	61.17	15.92						

Sub-dimensions' mean scores were also evaluated by faculty and were found to differ statistically by faculty in LC (F = 16.68; p < .001) (see Table 9) in C&SC (F = 43.58; p < .001) (see Table 10), and in H&RC (F = 66.61; p < .001) (see Table 11). Students of the Faculty of Education scored the highest in all three sub-dimensions. On the other hand, pharmacy students scored the lowest in LC and law students the lowest in C&SC and H&RC.

Table 9
One-Way ANOVA Results for LC by Faculty

f, $\bar{X}$ & SS Values				ANOVA Results					
Group (Faculty)	***n***	$\bar{X}$	***SS***	**Var. K.**	***KT***	***SD***	***KO***	***F***	***P***
Cerrahpasa Medicine	226	24.72	6.98	**Between groups**	15,813.32	21	753.02	16.68	.000
State Conservatory	21	27.14	8.28	**Within Groups**	230,206.51	5,100	45.14		
Dentistry	72	25.51	6.88	**Total**	246,019.83	5,121			
Pharmacy	**86**	**24.67**	**7.37**						
Literature	982	29.38	6.86						
Science	288	26.72	7.19						
Nursing	78	29.12	6.74						
Education	**238**	**30.65**	**5.73**						
Law	510	25.85	7.23						
Economy	598	25.89	6.88						
Theology	306	30.37	5.99						
Communication	169	27.74	6.66						
Istanbul Medicine	225	26.60	6.80						
Business	201	27.50	6.34						
Engineering	542	26.56	6.51						
Forestry	134	28.25	5.59						
Health Sciences	105	26.87	6.61						
Political Sciences	156	28.89	6.45						
Sports Sciences	42	28.79	5.94						
Fisheries	26	28.77	5.79						
Transport & Logistics	29	24.86	7.44						
Veterinary	88	27.31	6.74						
Total	5,122	27.52	6.93						

Table 10

One-Way ANOVA Results for C&SC by Faculty

f, $\bar{X}$, & SS Values				ANOVA Results					
Group (Faculty)	***n***	$\bar{X}$	***SS***	**Var. K.**	***KT***	***SD***	***KO***	***F***	***P***
Cerrahpasa Medicine	229	17.74	7.12	**Between groups**	40,486.86	21	1,927.95	43.58	.000
State Conservatory	20	24.10	7.89	**Within groups**	224,018.75	5064	44.24		
Dentistry	72	17.90	6.40	**Total**	264,505.61	5085			
Pharmacy	87	18.09	6.56						
Literature	973	22.28	7.09						
Science	284	21.56	7.29						
Nursing	78	24.24	6.48						
Education	**231**	**25.99**	**6.52**						
Law	**509**	**15.38**	**6.02**						
Economics	593	18.77	6.89						
Theology	305	23.19	6.09						
Communication	168	21.91	7.40						
Istanbul Medicine	223	19.70	6.51						
Business	201	23.53	6.24						
Engineering	539	23.45	6.02						
Forestry	135	24.53	6.33						
Health Sciences	102	22.22	5.68						
Political Sciences	153	21.14	6.86						
Sports Sciences	43	25.21	5.24						
Fisheries	26	23.15	6.89						
Transportation & Logistics	28	21.46	6.87						
Veterinary	87	20.59	7.37						
Total	5,086	21.13	7.21						

Table 11

One-Way ANOVA Results for H&RC by Faculty

***f*, $\bar{X}$ & *SS* Values**				**ANOVA Results**					
Group (Faculty)	***n***	$\bar{X}$	***SS***	**Var. K.**	***KT***	***SD***	***KO***	***F***	***p***
Cerrahpasa Medicine	226	10.82	5.16	**Between Groups**	21,796.59	21	1,037.93	66.61	.000
State Conservatory	21	14.24	4.43	**Within groups**	79,269.22	5,087	15.58		
Dentistry	71	13.20	3.67	**Total**	101,065.81	5,108			
Pharmacy	85	11.75	3.41						
Literature	972	14.31	4.03						
Science	289	11.98	4.32						
Nursing	77	14.82	3.67						
Education	**236**	**15.21**	**3.28**						
Law	**510**	**7.73**	**4.02**						
Economics	598	11.28	4.45						
Theology	306	14.28	3.29						
Communication	171	13.21	4.04						
Istanbul Medicine	223	12.78	3.87						
Business	202	14.26	3.32						
Engineering	544	13.61	3.50						
Forestry	135	14.70	3.49						
Health Sciences	106	13.55	3.35						
Political Sciences	152	13.53	4.08						
Sports Sciences	43	13.49	3.10						
Fisheries	27	13.67	3.46						
Transport & Logistics	28	13.86	4.16						
Veterinary	87	12.59	4.23						
Total	5,109	12.75	4.45						

Discussion, Conclusion and Recommendations

This study has aimed to develop a valid and reliable scale that can be used to measure competencies and, more specifically, the academic enablers identified by the NQF-HETR that students are expected to acquire during their undergraduate education. To determine the structure validity of the 20-item ASAE an exploratory factor analysis was conducted using varimax rotation. As a result, we ascertained there to be three factors that account for 51% of the total variance. Factor load values for each item in the scale vary between 0.44 and 0.82. These dimensions were defined as *leaning competencies*, *communication and social competencies*, and *homework and responsibility competencies*. Cronbach's alpha reliability value related to the ASAE was 0.90 and the three factors have a Cronbach's alpha value greater than 0.80, indicating both the scale as a whole and its dimensions to be internally consistent. The differences for all groups were found to be statistically significant ($p < .001$) as a result of the factor-based discriminant analysis we conducted. Item-total correlation coefficients ranged between 0.44 and 0.70, and item-remainder correlation coefficients between 0.43 and 0.65. In other words, they are all above the general acceptance of 0.20. An examination of the correlation among the three factors led to the meaningful and positive relations to be stated statistically. The existence of high and positive relations not only indicates that the scale consists of independent factors but also proves that they have the same structure.

As a result, the 20-item ASAE was prepared in the form of a five-point Likert scale from 1 = "never" to 5 = "always." In other words, no items were reverse coded. A total score is obtained from the scale, and this score shows at what level students are considered to have acquired the academic enablers in question from their university.

According to findings, the Assessment Scale of Academic Enablers is valid, reliable, and suitable for understanding to what degree students have acquired or developed the academic enablers that the NQF-HETR requires universities to impart on them during their undergraduate education. The scale will provide universities with detailed information on how to identify the strengths and weaknesses of their institutions in imparting academic enablers and how to establish or reestablish the link between academia and employment.

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Akademik Yetkinlik Araçları Değerlendirme Ölçeği: Geçerlik ve Güvenirlik Çalışması

Atıf:

Akbiyik, M., & Senturk, M. (2019). Assessment scale of academic enablers: A validity and reliability study. *Eurasian Journal of Educational Research, 80,* 225-250, DOI: 10.14689/ejer.2019.80.11

Özet

Problem Durumu: Ülkelerin eğitim sistemlerinin kalitelerinin bir göstergesi ve eğitim politikalarında değişim ihtiyacının belirleyicileri olmaları sebebiyle öğrencilerin akademik başarılarını ve akademik performanslarını etkileyen faktörler incelenmelidir. Akademik yetkinlik (*academic competencies*) hem bir öğrencinin performansını hem de bu performansı değerlendirmek üzere kullanılan standartları işaret ederken; akademik yetkinlik akademik başarı için gerekli olan ve öğrencinin beceri, tutum ve davranışlarını içeren çok boyutlu bir yapıdır. Akademik yetkinlik, "akademik bilgi ve beceri" (yani temel akademik ve(ya) uygulamalı bilişsel bilgi ve beceriler) ile "akademik yetkinlik araçları" (yani bu bilgi ve beceriyi edinmesine katkı sağlayacak tutum ve davranışlar) şeklinde iki temel bileşenden oluşmaktadır. Yetkinlik temelli sistem ilk defa 1970'lerde ABD'de iş performansını ölçmeye yönelik uygulamaların mevcut ekonomik çerçevede başarısız olması sebebiyle ortaya çıkarken; 1990'larda, önce Lisbon ardından Bologna süreçleri ile Avrupa'da yükseköğretimde yeterlilik konusunda önemli adımlar atılmıştır. 2008'de ise Avrupa Yaşam Boyu Öğrenme Yeterlilikler Çerçevesi (*European Qualifications Framework for Lifelong Learning_EQF*) oluşturulmuştur. Türkiye'de dahil olmak üzere 39 ülke, kendi ulusal yeterlilik çerçevelerini EQF'i temel alarak, farklı eğitim kademelerine göre belirlemiştir. Türkiye Yükseköğretim Yeterlilikler Çerçevesi (TYYÇ) ile öğrencilerin herhangi bir programdan mezun olana kadar kazanmaları gereken bilgi (*knowledge*), beceri (*skills*) ve yetkinlikler (*responsibility & autonomy*) oluşturulur. EQF'te sorumluluk ve özerklik olarak adlandırılan bu başlık Türkiye'de yetkinlik şeklinde kullanılmaktadır. Ölçek geliştirme sürecinde, TYYÇ'de yer alan bilgi ve beceri alt başlıkları yerine sadece "yetkinlikler" alt başlığı ve altında yer alan ifadeler/maddeler dahil edilmiştir. Bunun sebebi hem bilgi ve becerilerin alan ve program temelli olması ve genellenebilirliğinin düşük olması hem de yetkinlikler altındaki tutum ve davranışların üniversite ve istihdam ilişkisini güçlendirmesi, bu yetkinliklerin özellikle 21. yüzyıl becerileri ile temelden ilişkili olmasıdır. Ölçeği isimlendirirken akademik yetkinlikler yerine "akademik yetkinlik araçları" ifadesini kullanmayı tercih edilmesindeki sebep ise ölçekte yer alan maddelerin uluslararası literatürdeki yetkinlik (competencies) kavramının akademik bilgi ve beceri ile birlikte tamamlayıcısı olan akademik yetkinlik araçları (enablers) kavramına karşılık gelmesidir.

Araştırmanın Amacı: Bu araştırmanın amacı, üniversite öğrencilerinin yükseköğretimde kazandırılması ya da geliştirilmesi hedeflenen akademik yetkinlik araçlarını ne düzeyde kazandıkları ya da geliştirdiklerine yönelik algılarını ölçen bir ölçek geliştirmektir.

Araştırmanın Yöntemi: Araştırmanın evrenini 2015-2016 yılında İstanbul Üniversitesi'nde dört yıllık fakültelerde (tıp fakülteleri de dahil edilmiştir) öğrenim gören Türkiye Cumhuriyeti vatandaşı lisans öğrencileri oluşturmaktadır. %99 güven seviyesi, %2 hata payı dikkate alınarak yapılan hesaplamada asgari örneklem sayısı 3914 olarak hesaplanmıştır. Uygulama sonucunda, en yaşlı öğrencinin 1960 ve en genç öğrencinin 2000 doğumlu olduğu ve ortalama yaşın 22 bulunduğu 5208 öğrenciden oluşmaktadır. Öğrencilerin 2742'sinin (%52,65) kadın, 2405'inin (%46,18) erkek olduğu görülmektedir. Türkiye Yükseköğretim Kurumunun EQF temelinde geliştirdiği ulusal yeterlilikler çerçevesinde belirlediği ve öğrencilerin lisans eğitimleri sürecinde geliştirmesini beklediği yetkinlikleri ölçmede kullanılabilecek geçerli ve güvenilir bir veri toplama aracının geliştirilmesi amacıyla hazırlanmış olan Akademik Yetkinlik Araçları Değerlendirme Ölçeği (AYADÖ) 20 maddeden oluşmaktadır. "1=Hiç" ve "5= Her Fırsatta" şeklinde puanlanmaktadır. Ters puanlanan bir madde yer almamaktadır. Ölçekten toplam bir skor elde edilmekte, bu skor öğrencinin üniversitesinden akademik yetkinlik araçlarını ne düzeyde kazandığını/edindiğini düşündüğünü göstermektedir.

Araştırmanın Bulguları: Yapılan açımlayıcı faktör analizi sonucunda ölçekte yer alan maddeler; Öğrenme Yetkinliği, İletişim ve Sosyal Yetkinlik ve Ödev ve Sorumluluk Yetkinliği başlıkları altında üç faktöre yüklenmiştir. Bu üç faktör toplam varyansın %51'ni açıklamaktadır. Varimax rotasyon sonucunda maddelerin faktör yükleri 0.44 - 0.82 arasında değişmektedir. Ölçeğin bütünü için Cronbach Alpha değeri 0.90'dır. Alt başlıkların Cronbach Alpha değerinin 0.80 üzerinde olması hem ölçeğin bütün olarak hem de alt boyutların kendi içinde tutarlı olduğunu göstermektedir. Faktör bazında ayırt edicilik analizinde tüm gruplar için farklılıkların istatistiksel olduğu ($p<.001$) görülmüştür. Madde toplam korelasyon katsayıları 0.44-0.70 arasında; madde kalan korelasyon katsayıları 0.43-0.65 arasındadır. Faktörler arası ilişkileri belirlemek üzere yapılan korelasyon analizi sonucunda tüm faktörler kendi arasında ve tüm faktörlerle toplam puan arasında pozitif yönde $p<.001$ düzeyinde anlamlı bir ilişki olduğu bulunmuştur. Bu sonuç da ölçekteki tüm faktörlerin aynı yapı içinde olduklarını kanıtlamaktadır. Ölçek ve alt ölçek puanlarının cinsiyet ve fakülte bazında karşılaştırmalı analizleri de yapılmıştır. AYADÖ puanları cinsiyet değişkenine göre anlamlı bir fark göstermiştir (t=7,49; $p<$,001). Söz konusu farklılık kadınların lehinedir ($\bar{X}_{kadın}$=62,74; $\bar{X}_{erkek}$=59,43). Öğrenme yetkinliği alt ölçeği (t=6,58; $p<$,001) ile ödev ve sorumluluk yetkinliği alt ölçeği (t=13,44; $p<$,001) puanlarının da cinsiyete göre anlamlı şekilde farklılaştığı görülmüştür. Söz konusu farklılık öğrenme yetkinliği alt ölçeği ($\bar{X}_{kadın}$=28,13; $\bar{X}_{erkek}$=26,86) için de, ödev ve sorumluluk yetkinliği alt ölçeği ($\bar{X}_{kadın}$=13,53; ($\bar{X}_{erkek}$=11,87) için de kadınların lehinedir. Ancak iletişim ve sosyal yetkinlik alt ölçeği puanlarının cinsiyete göre istatiksel olarak anlamlı bir farklılık göstermemiştir (t=1,62; $p>$,05). Fakültelere göre Akademik Yetkinlik Araçları

Değerlendirme Ölçeği puanları dikkate alındığında fakülte farkı gözetmeksizin örneklemdeki öğrencilerin akademik yeterlilikler ölçeğine ilişkin aritmetik ortalamaları ($\bar{X}$) 61,17 (*ss*=15,92) olarak elde edilmiştir. AYADÖ puanları fakülte değişkenine göre anlamlı fark göstermiştir (F=42,82; *p*<,001); en yüksek ortalama Hasan Ali Yücel Eğitim Fakültesi, en düşük ortalamaya Hukuk Fakültesi öğrencilerinindir. Fakültelere göre de alt ölçekler yine ayrı ayrı değerlendirilmiştir. Öğrenme yetkinliği (F=16,68; *p*<,001), iletişim ve sosyal yetkinlikler (F=43,58; *p*<,001) ve ödev ve sorumluluklar yetkinliği (F=66,61; *p*<,001) alt ölçekleri puanları için fakültelerin aritmetik ortalamaları arasındaki fark istatistiksel olarak anlamlıdır.

Araştırmanın Sonuç ve Önerileri: Ölçeğe ilişkin verilen istatistiksel skorlar ile cinsiyet ve özellikle fakültelere yönelik karşılaştırmalı analizler, ölçeğin TYYÇ'ne bağlı olarak lisans düzeyinde eğitim veren yükseköğretim kurumları tarafından, bu kurumların öğrencilere kazandırmakla (ya da öğrencilerde hali hazırda var olan bu beceri, tutum ve davranışlarını geliştirmekle) sorumlu oldukları temel akademik yetkinlik araçlarını öğrenciye ne düzeyde kazandırdıklarını anlamak, yine bu kurumların akademik başarıyı destekleyen araçları kazandırma sürecindeki zayıf ve güçlü yanlarını belirlemek ve akademi-istihdam ilişkisindeki halkaları işlevsel olarak oluşturmak/yeniden yapılandırmak amacıyla kullanılabilecek geçerli ve güvenilir bir araç olduğunu göstermektedir.

Anahtar Kelimeler: Akademik yetkinlik, akademik yeterlilik, yükseköğretimde yeterlilikler, üniversite, kalite.