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Original Research Article

Determination of Differences between Attitudes of Medical Faculty and Nursing Department Students towards the Use of Technology in E-Learning and Education

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Abstract: E-learning; education and learning activities carried out by means of Internet technologies without the need for teachers and students to be in the same environment and at the same time. Nowadays, E-learning is becoming increasingly popular in higher education day by day. The aim of this study was to determine attitudes of students of medical faculty and nursing department towards learning technologies in education. **Material and Methods:** The sample space of this descriptive study was the first, second, third years medical and nursing students. 114 students from nursing department and 163 students from medical faculties during 2018-2019 academic year were included in the study.; Personal Information Form, E-learning Attitude Scale and Technology Attitude Scale were used for collection of data". Descriptive statistics such as mean, standard deviation, percentage and frequency were used for data analysis. Mann Whitney-U and Kruskal Wallis Tests were used to compare independent groups. Results were evaluated at 95% confidence interval with $p < 0.05$ significance level. **Results and Discussion** 69.2% (n = 191) of the participants were female and 30.8% (n = 89) were male. While there was no significant difference in e-learning tendency and technology attitude scale between medical and nursing departments, e-learning avoidance was found to be significantly higher among nursing students ($p < 0.05$). It was found that there was a significant positive correlation between e-learning tendency and technology attitude scale points ($p = 0.001$ and $p = 0.001$). There was a negative correlation between general mean and avoidance of e-learning, but no significant relationship was found among nursing students ($p > 0.05$). when the students' e-learning tendency scores were evaluated, a significant difference was found between grades ($p = 0.001$). A significant difference was found between grades of medical students when the e-learning tendency scores and technology attitude scale scores were compared according to grades $p < 0.05$). There was no significant difference between the e-learning scores of nursing students when gardes were compared. **Conclusion:** In our study, attitudes towards e-learning and technology attitudes of both medical students and nursing students were found to be positive.

Keywords: **E-Learning, Technology in Education, Nursing Education, Medical Education**.

INTRODUCTION

Information is the most important source for development in the present century. In this period, so-called information age, technology has facilitated access to information and learning. Education has entered to a new era with the development of technology. Thanks to telecommunication and computer technologies, e – learning concept has been formed. E-learning increases the motivation of the student in the acquisition of knowledge, skills and attitudes and lifelong learning in higher education (Somyürek, 2014). Recently, new projects has been prepared by using technological innovations with a view to give a better education to, particularly, so-called 'digital generation' or 'Z generation'. Z generation has started to education period in which the internet usage has increased and access to information been easier (Torre, Ferris, Daley, & Durning, 2016; White, White, Ghamande, & Arroliga, 2017). The faculty members are averagely between the ages of 40-65 and have subsequently get adapted to technology. The research conducted in the United States showed that 46.6% of professors working

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in universities consisted of whom were born between 1946 and 1964. This generation is called Baby Boomers because of having difficulty in adapting to rapidly developing technological changes (Torre et al., 2016). By understanding the differences between the generations of teachers and students, organizing learning activities using technological means will reduce conflicts between generations and lead to a better learning climate. The rapid increase in knowledge in the field of health also leads to a modification in educational curricula. With e-learning, flexible, accessible, interactive (post-research presentation, discussion, clinical case, brainstorming), problem-centered and team-based learning methods can be applied to the healthcare students (Sezer, 2016).

Nowadays, the desire of the individuals who learned to learn to get education at any time and place, has been provided by the technology With today's technological developments, e-learning has emerged as a learning method in which education is more free, interactive, accessible and easier (Handelzalts, 2019; Yeşiltaş, 2017). E-learning basically provides a rich and interactive learning environment owing to the use of instructional methods appropriate to the subject content by means of technology through computer and internet. Thus, students can improve their knowledge and develop their skills with a wide range of technological applications, strategies and tools. In our country, internet technologies are widely used in higher education. For e-learning students; qualified and low-cost education provides individual and independent learning opportunities. Taking advantage of e-learning and using technology in nursing education and practice supports traditional education. E-learning for nurses working in healthcare service delivery; it eliminates time constraints in terms of intensive workload, performance, and shift working. The use of e-learning and technology provides equal learning opportunities for all individuals by eliminating time and space limitations in education if provided sufficient infrastructure (Fanfarelli & McDaniel, 2019; Nagy, 2018; ORHAN & MEN, 2018).

The studies in this area gain importance, as e-learning give rise to accessible and up-to-date education opportunity to adults and support students in traditional education, studies. This study is conducted because of the importance of using technology in education. The aim of this study was to determine the attitudes of students of medical and nursing students towards e-learning and use of technology in education. The findings obtained as a result of the research is supposed to contribute to other studies that will be conducted in the future.

METHODS

The Design of the Study

The study aimed to determine the attitudes of the medical and nursing students towards the e-learning and the usage of technology in education. The sample of this descriptive study consisted of the nursing and medical students at their first, second, and third years of graduate of a state university in Istanbul in the academic year of 2018-2019. In the study all of the sample was aimed to be include and no sample selection was made. However, the study was completed with 114 nursing and 163medical students due to reasons such as refusing to participate in the research and not coming to school on the date of the research.

Data Collection

A total of 277 students were enrolled in the study, including students of the Istanbul Medeniyet University School of Medicine and Nursing department in the 1st, 2nd and 3rd grade. A sociodemographic data form, E-learning Related Attitude Scale for and Technology Attitude Scale was applied to the participants by face-to-face interview method.

Personal Information Form; This form, which was created by researchers as a result of literature review, contains a total of 15 questions aimed to determine the socio-demographic characteristics of students, the time they spend on the internet, the applications they frequently use on the internet, their grades, their computer usage situations, and the use of technology in distance education and education.

Attitude Scale for E-learning; The scale developed by Baran and Haznedar (2012) is a five-point Likert type scale from “strongly disagree” (1) to “strongly agree” (5). The results of the factors analysis, which was conducted for 20 items, displayed that this attitude scale can be used both with single factor and two factors. The two-factor scale was made up of two dimensions: ‘predisposition to e-learning’ dimension contains 10 positive items and ‘avoidance of e-learning’ dimension includes 10 negative items. The lowest score that can be obtained from a single factor scale with a Cronbach α coefficient of 0.93 is 20 and the highest score is 100. As the score increases, the attitude level increases positively. In this study, the scale was used as a single factor and Cronbach α coefficient was found to be 0.90.

Technology Attitude Scale; Technology Attitude Scale developed by Yavuz (2005) consists of 19 items, 13 of which are positive and 6 of which are negative. The five-point Likert-type scale points vary from strongly agree”(5) to“ strongly disagree ”(1), the score that can be obtained from the type scale changes between 19-95. By selecting “Undecided” answer, the highest total score that can be obtained is 57, indicating neutral status. 58 points and above are considered as positive attitude and 56 points and below are considered

as negative attitude. The Cronbach α coefficient of the scale was 0.87 (Yavuz & Coşkun, 2008). In this study, Cronbach α coefficient of the scale was found to be 0.70.

Statistical Analysis

The SPSS 25.0 packet program was used for statistical analysis. Descriptive statistics like mean, standard deviation, frequency and percentage; beside nonparametric tests like Mann Whitney U and Kruskal–Wallis tests were performed. The significance level was considered to be p<0,05 .

Ethical Aspect of the Study

The data of the study was started to be collected after getting permission from Istanbul Medeniyet University Medical Faculty Ethical Committee. The students were included in the study after they were given information and their written permission were taken. Besides, the permission from Haznedar and Bara for the usage of E-learning Attitude scale, and from Yavuz fort the usage of Technology Attitude Scale was taken.

RESULTS

A total of 272 students participated in the study, 163 of which were from medical and 114 from nursing school. 69.2% (n = 191) of the students were female and 30.8% (n = 89) were male. When examined according to their grades, 21.2% (n = 57) of the students were in the first year, 45.7% of them (n = 123) in the second year and 33.1% of them (n = 89) in the third year. 47.5% of the students (n = 131) stated that they spend 2-3 hours a day on the internet. Among the students, the most commonly used smartphone applications were WhatsApp with 82.2% (n = 227), You Tube with 69.6% (n = 69.6), and Instagram with 68.8% (Table 1).

Table 1: Demographic data and internet usage

		n	%
Grade	1	57	21.2
	2	123	45.7
	3	89	33.1
Gender	Female	191	69.2
	Male	85	30.8
Faculty	Medical student	163	58.8
	Nursing student	114	41.2
Time spent on internet	0-1 hours	19	6.9
	2-3 hours	131	47.5
	4-5 hours	94	34.1
	6-7 hours	24	8.7
	>7 hours	8	2.9
The applications used on internet	Facebook	17	6.2
	Whatsapp	227	82.2
	Instagram	190	68.8
	Youtube	192	69.6
	Mail	45	16.3
	Twitter	69	25
	Link in	3	1.1
	Snapchat	13	4.7
	Messenger	1	0.4
	Shazam	1	0.4

The mean age of the participants was 20.40 ± 2.04. When scores of the subscales of the questionnaire examined, the median (min-max) of the Predisposition to E-Learning score was 33.28 ± 3.80 (23-47) and the median (min-max) of the Avoidance of E-learning score was 29.05 ± 3.95 (19-40). According to these results, it can be interpreted that students do not adopt e-learning applications. The median score of the Technology Attitude Scale was 67.44 ± 6.75 (36-85) (Table 2).

Table 2: The mean scores of scales

	Mean±SD	Median (Min-Max)
Predisposition to e-learning	33.28±3.80	33 (23-47)
Avoidance of e-learning	29.05±3.953	29 (19-40)
Technology Attitude Scale Points	67.44±6.757	67 (36-85)

There was no significant difference in predisposition to e-learning, avoidance to e-learning and technology attitude scores in terms of gender (p= 0.108, 0.762 and 0.068, respectively) (Table 3). When compared according to departments, there was no significant difference found in terms of predisposition to e-learning and technology attitude scale scores, however avoidance to e-learning was found to be significantly higher among nursing students (p values: 0.265, 0.125 and 0.005, respectively).

Table 3: The relationship between gender and the scales

	Female(n=191)		Male (n=85)			
	Mean±Std	Median (Min-Max)	Ort±Std	Median (Min-Max)	Z	p
Predisposition to e-learning	33.01±3.51	33 (24-44)	33.84±4.32	34 (23-47)	1.609	0.108[a]
Avoidance of e-learning	29.11±3.85	29 (19-38)	29.01±4.12	29 (20-40)	0.303	0.762[a]
Technology Attitude Scale Points	66.99±5.99	66 (46-84)	68.36±8.17	69 (36-85)	1.828	0.068 [a]
a: Mann Whitney-U						

A significant positive correlation was calculated between the students' average grade points (GPA) and e-learning tendency and technology attitude scale (p = 0.002 and p = 0.007, respectively). But there was a negative correlation between GPA and e-learning avoidance (p = 0.011). When medical and nursing students were examined separately, a significant positive correlation was found between GPA and medical susceptibility to e-learning and technology attitude scale (p = 0.001 and p = 0.001 respectively); a negative correlation between GANO and e-learning avoidance (p = 0.034) in medical students. There was no significant relationship between GPA and e-learning scores among nursing students (p values: 0.735, 0.444 and 0.427, respectively) (Table 5).

A significant difference was found between the students' predisposition to e-learning scores when compared according to grades (p = 0.001). There was a significant difference between the predisposition to e-learning scores of the students between 1st and 2nd grades and 1st and 3rd grades. While there was no relationship between avoidance to e-learning scores and grades of the students, a borderline significant relationship was found between technology attitude scale scores and grades of the students (p = 0.282 and p = 0.048, respectively) (Table 4).

When the departments were examined separately, a significant difference was found between the predisposition to e-learning scores and technology attitude scale scores of medical students (p = 0.001 and p = 0.002, respectively). Predisposition to e-learning scores of the 1st and 2nd grade students and 2nd and 3rd grade students were different and the second-grade students had lower predisposition to E-learning scores compared to other grades. It was also calculated that second grade students were significantly lower in technology attitude scale scores than other grades. A borderline significance was detected between avoidance to e-learning scores and grades (p = 0.048). There was no significant difference between the e-learning scale scores of nursing students according to their grades (Table 4).

Table 4. The relationship of the student's GPA and scale scores

		Grade 1 (n=57)		Grade 2 (n=123)		Grade 3 (n=89)			
Group		**Mean±SD**	**Median (Min-Max)**	**Mean±SD**	**Median (Min-Max)**	**Mean±SD**	**Median(MinMax)**	**KruskalWallis**	**p**
Medical students	Predisposition to E-learning	36.50±5.27	38(26-47)	32.48±3.37	33(24-41)	34.37±3.92	35(26-40)	19.231	**0.001**[a]
	Avoidance to E-learning	28.25±5.51	29(22-40)	29.09±3.69	29(20-38)	27.40±3.71	28(19-38)	6.064	**0.048**[a]
	Technology Attitude Scale Score	72.9±7.15	72.5(60-85)	66.71±6.52	66(40-84)	68.98±5.88	70(60-78)	13.276	**0.002**[a]
Nursing students	Predisposition to E-learning	33.14±3.02	33(27-44)	31.84±3.49	32(24-38)	33.59±3.29	34(26-39)	5.125	0.077[a]
	Avoidance to E-learning	29.41±3.07	30(22-36)	30.42±4.13	30(20-38)	29.76±3.67	30(21-37)	1.989	0.370[a]
	Technology Attitude Scale Score	65.81±7.26	66(46-84)	66.13±4.60	65(59-76)	67.17±7.37	67(36-81)	2.595	0.314
a: Kruskal Wallis Test									

1 2-3, 2-1
2 –
3 2-1

A significant difference was found when predisposition to E-learning scores were compared according to the time spent on the internet (p = 0.008). It was found that as the time spent on the internet increased the predisposition to E-learning scores increased. However, no significant difference was found between avoidance to e-learning scores and technology attitude scale scores and time spent on the Internet (p = 0.346 and p = 0.053, respectively) (Table 5).

Table 5. The relationship between times spent on internet and scale scores

	(0-1 hour)	(2-3 hour)	(4-5 hour)	(6-7 hour)	(>7 hour)		
	Median (MinMax)	**Median (Min-Max)**	**Median (Min-Max)**	**Median (Min-Max)**	**Median (Min-Max)**	**Kruskal Wallis**	**p**
Predisposition to E-learning scale score	36 (24-43)	33 (23-47)	33 (26-40)	34 (28-40)	37.5 (33-41)	13.804	**0.008**[a]
Avoidance to E-Learning Scale score	29 (19-38)	29 (20-40)	29 (20-40)	29.5 (22-33)	24.5 (22-34)	4.474	0.346[a]
Technology Attitude Scale Score	68 (59-81)	67.5 (36-85)	66 (56-84)	66 (46-84)	73 (70-81)	6.059	0.053[a]
a: Kruskal Wallis Test							

A significant difference was found when the e-learning tendency scores of medical students were compared according to the time they spent on the internet (p = 0.004). It was found that the predisposition to e-learning scores of students who spent time on internet between 0-1 hours and >7 hours were significantly higher. While there was no relationship between the avoidance to e-learning scores and the time spent on the internet, a significant borderline relationship was found with technology attitude scale scores (p = 0.205 and p = 0.047, respectively) (Table 6).

Table 6. The comparison of E-learning scores and Technology Attitude Scale Scores according to the time spent on internet

		(0-1 hour)	(2-3 hour)	(4-5 hour)	(5-7 hour)	(>7 hour)		
Group		**Median (MinMax)**	**Median (MinMax)**	**Median (MinMax)**	**Median (MinMax)**	**Median (MinMax)**	**Kruskal Wallis**	**p**
Medical students	Predisposition to E-learning	38 (33-43)	33 (23-47)	33 (26-40)	34(28-40)	38(33-41)	13.804	**0.004**[a]
	Avoidance to E-learning	27 (19-30)	28 (21-40)	29 (20-40)	28(22-33)	22(22-34)	4.474	0.205[a]
	Technology Attitude Scale Score	73 (60-81)	68 (40-85)	66 (60-79)	70(60-84)	73(70-81)	6.059	**0.047**[a]
Nursing students	Predisposition to E-learning	30 (24-39)	34 (25-44)	33 (26-38)	33(30-38)		13.804	0.223[a]
	Avoidance to E-learning	32.5 (21-38)	30 (20-37)	29 (24-36)	29.5(24-30)		4.474	0.240[a]
	Technology Attitude Scale Score	64 (5976)	67 (36-81)	65.5 (56-84)	65(46-76)		6.059	0.186[a]
a: Kruskal Wallis Test								

DISCUSSION

In the present study, we did not determine any statistical difference in predisposition to e-learning attitudes of undergraduate students of Faculty of Medicine and Nursing according to gender variable. When literature was screened, Alev et al.'s examined the attitudes of computer teacher candidates towards distance education and stated that there was no statistical difference in predisposition to e-learning attitudes according to gender variable (Alev & ALTUN, 2014). Similarly, in the study conducted by Çiftçi et al. revealed that no statistical difference was found in the attitudes towards e-learning according to gender variable (Çiftci, Güneş, & Üstündağ, 2010). Haznedar et al. claimed that the attitudes towards e-learning scale scores of the students studying in the faculty of education were statistically higher in the e-learning tufts of male students (Haznedar & Baran). In the study conducted by Isik et al., it was shown that the attitude scores towards e-learning scale of graduating students were statistically higher than female students' pinch scores for e-learning. This is explained by the fact that women can express themselves better in e-learning (Isik, Karakis, & Güler, 2010). In our study, we did not find any statistical difference in the attitudes towards e-learning of nursing undergraduate students according to the age variable. In the literature, it was observed that as students' grades and ages increased, predisposition to e-learning scale scores towards e-learning increased (Çiftci et al., 2010; Haznedar & Baran). However, in our study, we observed that the predisposition to e-learning scores of the medical students increased between 1-3 grades. We related this result to the educational tools used in the lessons increase the students' susceptibility to e-learning. In our study, we observed an increase in the predisposition to e-learning scale score as the GPA of the medical students increased. In the study conducted by Baris et al., it was seen that the students with high academic achievement had higher predisposition to e-learning scale scores (Sezer, 2016). In the study conducted by Tekinarslan et al., it was observed that predisposition to e-learning scores of students with weak GPA were significantly lower than those with better GPA (Tekinarslan, 2008). Among nursing students, no relationship was found between academic achievement and predisposition to e-learning scores.

As a result, we observed that as the time spent on internet among medical students increased on the internet, both e-learning tendency scores increased and technology attitude scales increased.

CONCLUSION

In our study, the attitudes towards e-learning and technology attitudes of both medical students and nursing students were found to be positive. There was no significant difference between the students' grades, other socio-demographic characteristics, using status of computer and technology attitude scale scores. In line with these findings, it is suggested that the education given in the faculties of medicine and nursing can be supported by e-learning method. Advanced and large-scale research can be conducted on the attitudes and behaviors of academicians and clinicians towards e-learning and the use of technology in education.

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