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Research Article / Araştırma Makalesi

The Relationship Between Attitudes of Nursing Students Towards Web-Based Learning and their Readiness for Online Learning*

Hemşirelik Öğrencilerinin Web Tabanlı Öğrenmeye Yönelik Tutumları ile Çevrim İçi Öğrenmeye Hazır Bulunuşlukları Arasındaki İlişki*

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ABSTRACT

Introduction: In recent years, as education has become more digitalized, online learning strategies have frequently been employed in conjunction with face-to-face teaching approaches. This study aimed to determine the association between nursing students' attitudes regarding web-based learning and their readiness for online learning.
Methods: This cross-sectional study was carried out throughout the academic year 2020-2021. The sample consisted of 221 nursing students who experienced online learning for the first time. Personal information form, Web-based Learning Attitude Scale, and Readiness for Online Learning Scale were used to gather data using online Google forms.
Results: The mean score of readiness for online learning was 68.31±8.36 and the mean score of web-based learning attitude was 80.40±9.81. There was a significant positive correlation between the readiness for online learning mean scores and attitudes towards web-based learning mean scores of the students (r=0.164; p=0.015). The students, who were over the age of 21 and were living in province and had internet access, get a significantly higher mean score of readiness for online learning (p<0.05). The students, who were graduated from anatolian high school and having internet access, get significantly higher mean score of web-based learning attitude (p<0.05).
Conclusion: Students' computer-internet use self-efficacy and online communication self-efficacy were low, and their readiness for online learning was moderate. Students have indecisive attitudes toward web-based learning. Increasing their readiness for online learning has a beneficial impact on their attitudes regarding web-based education.

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ÖZET

Giriş: Eğitimde dijitalleşme ile birlikte son yıllarda yüzyüze eğitimle birlikte çevrim içi öğrenme yaklaşımları sıklıkla kullanılmaktadır. Bu çalışmada hemşirelik öğrencilerinin web tabanlı eğitime yönelik tutumları ile çevrimiçi öğrenmeye hazır bulunuşluk düzeyleri arasındaki ilişkiyi belirlemek amaçlandı.
Yöntem: Kesitsel türde olan bu araştırma 2020-2021 eğitim-öğretim yılı içinde gerçekleştirildi. Araştırmanın örneklemini ilk defa çevrim içi öğrenme deneyimleyen 221 hemşirelik öğrencisi oluşturdu. Veriler kişisel bilgi formu, Web Tabanlı Öğretime Yönelik Tutum Ölçeği ve Çevrimiçi Öğrenmeye Yönelik Hazır Bulunuşluk Ölçeği ile online Google forms aracılığıyla toplandı.
Bulgular: Öğrencilerin çevrimiçi öğrenmeye yönelik hazır bulunuşluk puan ortalaması 68.31±8.36, web tabanlı öğretime yönelik tutum puan ortalaması 80.40±9.81 idi. Öğrencilerin çevrimiçi öğrenmeye yönelik hazır bulunuşluk puan ortalamaları ile web tabanlı öğretime yönelik tutum puan ortalamaları arasında pozitif yönde anlamlı bir ilişki saptandı (r=0.164; p<0.05). 21 yaş üstünde olan, il merkezinde yaşayan ve kişisel bilgisayarında interneti bulunan öğrencilerin çevrimiçi öğrenmeye yönelik hazır bulunuşluk puan ortalaması anlamlı olarak yüksek belirlendi (p<0.05). Anadolu lisesi mezunu olan ve bilgisayarında internet imkanı bulunanlarda web tabanlı öğretime yönelik tutum puan ortalamaları anlamlı olarak daha yüksek belirlendi (p<0.05).
Sonuç: Hemşirelik öğrencilerinin bilgisayar-internet kullanımı öz-yeterliliklerinin ve çevrim içi iletişim öz-yeterliliklerinin düşük olmasına bağlı çevrim içi öğrenmeye hazır bulunuşlukları orta düzeydedir. Öğrencilerin web tabanlı öğrenmenin etkililiğine yönelik kararsız tutumda oldukları belirlenmiş olup, çevrim içi öğrenmeye hazır bulunuşluklarının arttırılmasıyla birlikte öğrencilerin web tabanlı eğitime yönelik tutumlarını da olumlu etkileyecektir.

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1. Introduction

Changes in information and communication technology now allow education and training processes to take place in a digital setting. Although the proper and suitable use of technology in nursing education supports learning, millennial students, in particular, are receptive to innovative education and training techniques (1). Web-based learning and online learning approaches have been widely utilized in nursing education and other educational disciplines in recent years (1,2). Web-supported teaching can positively affect the knowledge and skills of nursing students when used to supplement traditional face-to-face teaching techniques (3,4). Furthermore, web-based learning nursing process learning offers favorable benefits, such as students being able to analyse a large number of cases and compare the findings of the analysis, and to re-watch the cases described (5). According to Erdogan et al. (2007), students' and instructors' attitudes about web-based education are important in its effectiveness. Determining students' opinions regarding this teaching will also allow for an evaluation of teaching settings (6). Although there are few research in the literature that use a scale to assess nursing students' attitudes about web-based teaching, there are studies in which students expressed positive opinions regarding courses supported by web-based instruction (3,7,8).

Online learning activities allow instructors and students to communicate without time and place constraints, provide immediate feedback on student performance, and allow students to easily access knowledge (9). To be effective in online learning activities, the adequacy of computer technologies and Internet access (10-12), relevant technical skills (12-14), self-directed learning (15,16), and readiness for online learning (17) are required. The initial requirement for adult learning is readiness for learning, and if this condition is satisfied, further processes of learning may be accomplished (18). It is important that students have adequate readiness for online learning design and implementation, therefore, the readiness of students and instructors should be determined for the success of the online education process (14). When the studies on determining readiness for online learning were examined, Korkmaz et al. (2015) found that students' readiness levels for online learning were quite high, and that the technical skills and motivation of the students, as well as their access to technology, were effective in readiness (19). In the study of Hung et al. (2010) students' online communication, computer-Internet self-efficacy, and learning motivation were all high, but their self-directed learning levels were low (13). Coşkun et al. (2018) found that medical students, who use the internet for educational purposes, have higher levels of readiness for online learning (20). In the study of Coopasami et al. (2017); readiness levels for online learning nursing students were found to be high despite a lack of technological facilities (11). The results of the studies show that there are different dimensions of readiness and that it is also influenced by the conditions and opportunities of the students (11,13,19,20).

In recent years, as education has become more digitalized online education/learning methods have been widely used in combination with traditional face-to-face education methods. (21). Due to the pandemic, universities have made a rapid transition to online and other web-based education methods in Turkey. After this transition, the use of different online education methods continued to be used in combination with the traditional face-to-face method as it was recommended. Therefore, these teaching/learning methods will continue to maintain their importance in the nursing education. No research has been conducted on the relationship between nursing students' attitudes towards web-based learning and their readiness. In order to provide an effective nursing education in the future, this study aimed to examine the relationship between the attitudes towards online learning and the readiness levels of a group of nursing students who experienced online learning for the first time.

2. Methods

2.1. Study design

This was a cross-sectional study which aimed to investigate the relationship between nursing students' attitudes regarding web-based education and their readiness levels for online learning.

2.2. Participants

The study population included nursing students, who attended a state university in central Anatolia region, and were exposed to the online education for the first time at the university in the academic year 2020-2021. There was no sample selection, and all students who met the inclusion criteria and agreed to participate in the study were included in the study. The study sample included 221 students (59%) who volunteered to participate. The research inclusion criteria were to have experienced online education for the first time during university education and to have agreed to participate in the study and dropped out were eliminated from the study. Before data collection the students were invited to participate in the study by sending the research link to their e-mail address and they were informed about the purpose of the study.

2.3. Data collection tools

Data were collected through an online platform (Google forms) with the "Personal Information Form", "Readiness for Online Learning

Scale (ROLS)" and "Web-Based Learning Attitude Scale (WBLAS)" in the academic year 2020-2021.

Personal information form: The form, developed by the researcher in line with the relevant literature (3,5,6,9,14) consists of questions to determine the students' gender, age, grade, high school graduated from, presence of mobile phones and computers etc, presence of internet access, and purpose of using the internet.

Readiness for Online Learning Scale (ROLS): The scale was developed by Hung, Chou, Chen, and Own (2010) and was adapted into Turkish by İlhan and Çetin (2013). The scale consists of a 5-point likert scale (1=strongly disagree-5 to 5 = strongly agree), 18 items, and five sub-dimensions. The sub-dimensions are "computer and internet use self-efficacy" (items 1,2,3), "self-directed learning" (items 4,5,6,7,8), "learner control" (items 9,10,11), "learning motivation" (items 12,13,14,15) and "online communication self-efficacy" (items 16,17,18). The total score obtained from the scale was between 18-90. An increase in the scores of each sub-dimension and the overall scale indicates a high level of readiness for online learning. The Cronbach Alpha of the scale is 0.95 (11). In this study it was found as 0.86.

Web-Based Learning Attitude Scale (WBLAS): It was developed by Erdoğan et al. (2007) to measure students' attitudes towards web-based learning. The scale consists of 26 items and two sub-dimensions on a 5-point Likert scale (5= strongly agree, 1= strongly disagree). The sub-dimensions are "effectiveness dimension of web-based instruction" consisting of 17 items and "resistance dimension of web-based instruction" consisting of 9 items. The lowest score that can be obtained from the scale is 26 and the highest score is 130; 26-46 is considered as "very negative," 47-67 as "negative," 68-88 as "undecisive," 89-109 as "positive" and 110-130 as "very positive." The Cronbach Alpha of the scale is 0.97 (6). In this study it was found as 0.78.

2.4. Statistical analyses

IBM SPSS Statistics 23 was used to distribute data, which included frequency, percentage, mean and standard deviation statistics, Kruskal-Wallis, Mann-Whitney U-Tests, One Way Anova and Spearman Correlation analysis. Post-hoc Benforroni test was used to determine the difference between the groups. The statistical significance level was accepted as .05.

2.5. Ethical considerations

Ethical approval was obtained from the Eskişehir Osmangazi University's non-interventional clinical research ethics committee (Decision no: E-25403353-050.99-101462/29.09.2020). This study was carried out with the principles of the Helsinki Declaration standards.

3. Results

More than half of the students (58.4%) were between the ages of 18-20 and female (56.6%), 66.5% resided in the provincial centre, and the majority (94.1%) were not working. Of the students, 80.5% had a personal computer for online learning and the majority (78.3%) had Internet access. Of the students, 38.9% used the Internet for 3-4 hours during the day, and the majority (81.4%) had no experience taking courses or education with the distance education method before the pandemic. Of the students, 80.2% stated that online learning/distance education was not suitable for nursing professions/education, and their mean scores of the evaluation for online education process provided by their university was 2.18±1.48 (out of five points) (Table 1).

The mean total score of readiness for online learning scale (ROLS) was significantly higher ($p<0.05$) in students over 21 years of age (69.69±8.71), those living in the city centre (69.65±8.05), those with more daily internet usage (75.35±11.23), and those who had internet on (67.84±7.81). The mean total score of the web-based learning attitude scale (WBLAS) were examined, the mean scores were higher in 2nd grade (83.08±7.32), Anatolian high school graduates (81.62±8.42), and those who had internet (80.07±10.23) ($p<0.05$) (Table 1).

The total mean ROLS score of nursing students in the study was 68.31±8.36 and the total mean WBLAS score was 80.40±9.81, evaluated as "indecisive attitude" (Table 2). Of the students, 74.7% had indecisive attitude and only 16.7% had positive attitude for web-based learning, respectively. When the scores of sub-dimensions were examined; self-directed learning scores (18.82±2.99) and learning motivation (16.47±2.32) scores and web-based learning effectiveness scores (52.41±7.7) of the students were higher than those of the other sub-dimensions (Table 2).

Table 1. Readiness for Online Learning and Web-Based Learning Attitude mean scores according to some socio-demographic characteristics of students (n=221)

Variables		n	%	ROLS (Mean±SD)	WBLAS (Mean±SD)
Age (20.25±0.11)	18-20	129	58.4	67.32±7.99	80.37±9.27
	≥21	92	41.6	69.69±8.71	80.43±10.57
				MW-U:179.090; p=0.013*	MW-U:6.005; p=0.879
Level/Grade	1	63	28.5	67.68±8.68	77.84±10,12
	2	69	31.2	67.18±8.05	83.08±7.32
	3	43	19.5	69.97±9.09	81.34±13.77
	4	46	20.8	69.30±7.60	79.00±6.97
				F=1.323; p=0.268	F=3.729; p=0.012a*
Gender	Female	125	56.6	67.98±7.45	80.84±7.52
	Male	96	43.4	68.73±9.45	79.83±12.19
				MW-U:6.431; p=0.359	MW-U:5.879; p=0.797
Graduate school	Anatolian high school	149	67.4	68.04±9.13	81.62±8.42
	Basic school	18	8.2	67.00±7.40	75.55±15.08
	Health vocational	27	12.2	69.40±7.86	80.22±13.41
	Others	27	12.2	69.59±3.88	77.07±6.83
				KW=3.716; p=0.294	KW=8.726; p=0.033*
Residence	Province	147	66.5	69.65±8.05	80.72±10.18
	District	43	19.5	66.48±8.29	81.27± 7.63
	Village	31	14.0	64.48±8.50	77.64±10.55
				F=6.460; p=0.002a**	F=1.481; p=0.230
Internet presence	Yes	178	80.5	67.84±7.81	80.07±10.23
	No	43	19.5	60.60±4.66	73.20±1.64
				MW-U:159.00; p=0.016*	MW-U:181.500;p=0.027*
Daily internet usage	1-2 h	17	7.7	65.91±8.00	78,29±7.07
	3-4 h	86	38.9	67.72±7.83	81.36±11.02
	5-6 h	78	35.3	71.27±6.32	79.15±8.43
	≥7 h	40	18.1	75.35±11.23	81.67±10.43
				F=8.820; p<0.001a	F=1.182; p=0.317
Online education/ course experience	Yes	41	18.6	68.12±9.20	79.85±1.00
	No	180	81.4	68.35±8.19	80.81±0.87
				MW-U:3.788; p=0.790	MW-U:3.456; p=0.527

ROLS: Readiness for online learning scale, WBLAS: Web-based learning attitude scale, SD: Standard Deviation, KW: Kruskal-Wallis test, MW-U: Mann-Whitney U test. F: Ona-way ANOVA aPost-hoc benforroni test was used. Significant at *p<0.05 and **p<0.01 levels.

Table 2. Readiness for Online Learning and Web-Based Learning Attitude total and sub-dimensions mean scores

	Min.-Max.	Mean±SD
Readiness for Online Learning (ROLS) Total	41.00-90.00	68.31±8.36
Computer and internet self-efficacy	3.00-15.00	10.83±2.30
Self-directed learning	9.00-25.00	18.82±2.99
Learning control	5.00-15.00	10.63±1.68
Learning motivation	8.00-20.00	16.47±2.32
Online communication self-efficacy	3.00-15.00	11.53±2.25
Web-Based Learning Attitude (WBLAS) Total	40.00-119.00	80.40±9.81
Web-based learning effectiveness	25.00-79.00	52.41±7.70
Web-based learning resistance	15.00-40.00	27.98±3.33

Min.: Minimum, Max.: Maksimum, SD: Standard Deviation.

The relationship between a group of nursing students' attitudes towards web-based education and their readiness levels for online learning was determined with spearman correlation. Table 3 shows a significant positive relationship between ROLS and WBLAS scores (r=0.164, p>0.05). There was a positive and highly significant relationship between the students' web-based learning effectiveness subdimension score (52.41±7.7) and ROLS total score (68.31±8.36), computer and internet use self-efficacy (10.83±2.30) and learner control (10.63±1.68) subdimensions (respectively r=0.232, p<0.01; r=0.178, p<0.01; r=0.177, p<0.01) (Table 3).

Table 3. Relation between Readiness for Online Learning and Web-Based Learning total and sub-dimensions mean scores

	WBLAS Total	Web-based learning effectiveness	Web-based learning resistance
ROLS Total	0.164*	0.232**	-0.068
Computer and internet self efficacy	0.144*	0.178**	0.035
Self-directed learning	0.105	0.173*	-0.090
Learning control	0.136*	0.177**	0.099
Learning motivation	-0.048	0.015	0.158
Online communication self-efficacy	0.102	0.168*	0.088

Significant at *p<0.05 and **p<0.01 levels. ROLS: Readiness for online learning scale, WBLAS: Web-based learning attitude scale.

4. Discussion

The success of online education is related to students' readiness and attitudes in adapting to the online and web based educational process (22). In our study, we investigated the attitudes of a group of nursing students regarding web-based education, their degrees of readiness for online learning, and the relationship between them. Students' attitudes towards to web-based learning were found to be "indecisive" but near to positive. Students faced a rapid transition to web-based learning as a result of covid pandemic, which was a new educational method for them. In addition, limitations on computer and/or internet usage, as well as communication, created complications. Despite these obstacles, our result is predicted and acceptable. In the literature, Akgün (2015), Durmuş and Bağcı (2013) found similar results to ours in the literature (23,24). Unlike our findings, students' attitudes towards online learning were 'positive' in Akimanimpaye and Fakude (2015)'s study (25), 'negative' in Yakar and Yakar (2021), Yurdal et al. (2021)'s studies (26,27), and 'moderate' in the study of Uysal et al. (2022) (28). It is established that many factors can impact people's attitudes about web-based learning. It is especially important with poorer outcomes to identify the elements influencing the attitude and to offer a suitable educational environment. Positive outcomes can also be used to help students improve their attitudes.

Some socio-demographic characteristics may influence students' views toward web-based education processes differently (10) and education level/grade in university is an essential determinant (29). Second-year nursing students were shown to have higher positive views than other students in this study. Furthermore, it was discovered that Anatolian high school graduates had the most favorable views, and the number of Anatolian high school graduates was greater among second-year nursing students. This might have a huge impact on our outcomes. In contrast to our findings, Malkawi et al. (2020) found that senior students' attitudes towards e-learning were the most positive (29). Students' knowledge of computers and the Internet will grow as their education level/grade level grows. Therefore, this may affect the students' attitude positively. In this respect, our result differs from the literature.

Technological and Internet resources are critical in the online educational process (11,17). In this study, the attitudes towards web-based learning of students who had internet connections on their computers were higher than those of others. Experience of using the internet even for different purposes can positively contribute to this result. According to our knowledge, there are no findings in the literature on this topic.

Another parameter in our research is online learning readiness, which is an important factor for the effectiveness and success of online education (30). It is therefore advisable to determine online readiness of students (31). In this study, nursing students' readiness level for online learning was moderate. The fact that nursing students experienced online education for the first time may have affected their readiness. Although the results of Chung et al. (2020) support our results (32), there are other studies that determine readiness levels which are higher than moderate level (11,20,33). With our results supporting the literature, there are Studies that determine higher results than ours. These study results can be a guide to increase readiness.

Readiness for online educational process may be influenced by some socio-demographic factors (14,34) such as age and residence. In this study according to age, readiness for online learning was higher among nursing students over the age of 21. This finding may be attributed to the fact that as students get older, they have more expertise in computers and the Internet. Konak's (2021) findings support our results (34). According to the residence, students who lived in province had the highest readiness for online learning. Although technological developments are rapid today, there are students who currently do not have computers and internet in rural areas. Compared to districts and villages, living in provinces during a pandemic provided easy access to the internet and this probably influenced our results. Unlike from our results, Sakal (2017) discovered that students' residence had no effect on their readiness for online learning (14). There was a periodic increase in the need for internet for educational purposes during the period of our research, which may explain the difference in our study result.

In this study, the high daily Internet usage time and the presence of Internet connection during the online education had a positive effect on the students' readiness for online learning. These qualities are recognized to facilitate the use of the Internet and technology for educational purposes. According to Coşkun et al. (2018), medical students' readiness for e-learning grew as their time spent on the

internet for research and learning increased (20). In contrast to our findings, in studies of Bircan (2021), Pullu and Gömleksiz (2020) online learning readiness of students with and without Internet connections, were similar (33,35).

Students without online learning experience are not expected to adapt to a different learning environment immediately (14). Therefore, it would be useful to determine readiness (13). In this study, the readiness level of students with and without experience of online learning was similar. The fact that the number of students without online learning experience is much greater, may have a role in our results. There are studies that reports similar results to our study (13,36), as well as studies that reports different results. The experience of online education or course shows that students accept and manage the educational process easier (37).

Readiness for online learning is composed of self-efficacy in computer and Internet use, self-directed learning, learning control, learning motivation, and online communication dimensions. High scores obtained from these dimensions positively affects readiness of the students (13). In this study, self-directed learning and learning motivation levels of students were higher than the others. Since online education requires the active participation of the student, our result will positively affect the online learning success. In contrast self-efficacy in computer and Internet use, learning control and online communication dimensions of the students need to be increased. For this, access to the Internet and computers should be facilitated. Similar to our results, Sarıtaş and Barutçu (2020) determined that undergraduate students' self-directed learning status and motivation were high, but their learning control was the lowest (37). In studies examining readiness for e-learning, Yakar and Yakar (2021) and Coşkun et al. (2018) found that students' motivation levels for e-learning were low (20,26). In studies examining students' online learning controls, there are studies reporting low learning control (23,32,37) and also high learning control (34). The study results are important in order to know in which dimensions students' readiness are stronger and which dimensions are weaker.

To ensure the effectiveness of online education, it is important to ensure active communication between instructors and students by using appropriate technology. This will also increase students' motivation to participate in the online education process (38). Students' computer–internet self-efficacy and online communication self-efficacy were also low in the online learning environment. The fact that students used technology for online education for the first time and were not active in the educational environment as desired/expected and that they were unfamiliar with the communication features and requirements of online learning may have caused these results. Compared to face-to-face classroom learning environments, interactions in online learning environments are not at the desired level (39) and diminish interaction between the instructor and the student (40).There are studies that show strong computer-Internet self-efficacy (10,34) and high online communication self-efficacy in online learning context (10,23,34), which conradict with our finding.

Students must to be ready and have a positive attitude in order to benefit from online learning processes efficiently (26). According to findings of the study, as the readiness levels of nursing students towards online learning improved, so did their attitudes towards web-based learning and their positive attitudes about web-based learning succesfully increased. Students with higher computer and Internet self-efficacy and self-directed learning control provide high levels of effectiveness of web-based learning. Bircan and Zabun (2021) discovered that students' computer-Internet self-efficacy influences their readiness for online learning, and their results concur our results (33). It is advised that students be prepared for self-learning for efficient web-based learning (7), and that students who good traits that encourage online preparedness will embrace this educational process and its efficacy more readily.

4.1. Limitations

The study's participants were confined to nursing students from a single faculty of health sciences; hence the study's conclusions cannot be generalized.

5. Conclusion

According to this study, nursing students were fairly prepared for online learning. Regardless of their self-directed learning and learning motivation scores, students' lower levels of computer and internet self-efficacy, online communication self-efficacy, and learning control levels must be considered in order to raise their readiness for online learning. It was also revealed that the students' views on the efficacy of web-based learning were undecided, and that supplying and enhancing their readiness for online learning affected their attitudes toward web-based learning favourably. Because today's educational situations necessitate both web-based and face-to-face learning, determining students' readiness for online learning and intervening as needed will have an influence on web-based learning success. Because online education requires a different communication environment than face-to-face education, it is suggested that students improve their online communication skills and motivation, as well as their ability to use technology for education and learning, by providing technological infrastructure.

Combining online learning with face-to-face teaching strategies will also help students adjust to these new learning methods.

Conflict of Interest: There is no conflict of interest in this study.

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