ORİJİNAL MAKALE / ORIGINAL ARTICLE

Balıkesir Sağlık Bilimleri Dergisi / BAUN Sağ Bil Derg
Balıkesir Health Sciences Journal / BAUN Health Sci J
ISSN: 2146-9601- e ISSN: 2147-2238
Doi: https://doi.org/10.53424/balikesirsbd.1025165

The Effects of Two Different Teaching Techniques on Human Papilloma Virus Infection and Vaccine on Nursing Students' Social Anxiety and e-Learning Attitudes

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Geliş Tarihi / Received: *17.11.2021,* ***Kabul Tarihi / Accepted:*** *26.02.2022*

ABSTRACT

Aim: This research was conducted to determine the effect of education on Human Papilloma Virus Infection and vaccine on Students' Social Anxiety and e-Learning Attitudes with Pecha Kucha and Traditional PowerPoint presentation methods. **Materials and Methods:** This study adopted a randomized experimental pretest-posttest control group design. The data were collected using the Student Information Form, the Social Anxiety Scale Regarding the e-Learning Environment and the Attitude Scale towards Mobile Learning. **Results:** When the after-education knowledge point averages of the intervention and control group students were compared; It was determined that the mean score of the students in the intervention group was higher than the mean score of the students in the control group. **Conclusion:** It has been concluded that the intervention group has a positive effect on students' learning success and mobile learning attitudes and is effective in reducing social anxiety towards e-learning.

Keywords: Student, Education, Pecha Kucha Teaching Technique, Traditional Powerpoint Technique.

Human Papilloma Virüs Enfeksiyonu ve Aşısı Konusunda İki Farklı Öğretim Tekniğinin Hemşirelik Öğrencilerinin Sosyal Kaygı ve e-Öğrenme Tutumlarına Etkisi

ÖZ

Amaç: Bu araştırma, Human Papilloma Virüs Enfeksiyonu ve aşısı konusunda verilen eğitimin öğrencilerin Sosyal Kaygı ve e-Öğrenme tutumlarına etkisini Pecha Kucha ve Geleneksel PowerPoint sunum yöntemleri ile belirlemek amacıyla yapılmıştır. **Gereç ve Yöntemler:** Bu çalışmada rastgele deneysel öntest-sontest kontrol gruplu desen kullanılmıştır. Veriler Öğrenci Bilgi Formu, e-Öğrenme Ortamına İlişkin Sosyal Kaygı Ölçeği ve Mobil Öğrenmeye Yönelik Tutum Ölçeği kullanılarak toplanmıştır. **Bulgular:** Müdahale ve kontrol grubu öğrencilerinin eğitim sonrası bilgi puan ortalamaları karşılaştırıldığında; Müdahale grubundaki öğrencilerin puan ortalamalarının kontrol grubundaki öğrencilerin puan ortalamalarından daha yüksek olduğu belirlendi. **Sonuç:** Müdahale grubunun öğrencilerin öğrenme başarısı ve mobil öğrenme tutumları üzerinde olumlu etkisinin olduğu ve e-öğrenmeye yönelik sosyal kaygıyı azaltmada etkili olduğu sonucuna varılmıştır.

Anahtar Kelimeler: Öğrenci, Eğitim, Pecha Kucha Öğretim Tekniği, Geleneksel Powerpoint Öğretim Tekniği.

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Bu makaleye atıf yapmak için / Cite this article: Molu, B., & Yıldırım Keskin, A. (2022). Effects of Two Different Teaching Techniques on Human Papilloma Virus Infection and Vaccine on Nursing Students' Social Anxiety and e-Learning Attitudes. *Balıkesir Sağlık Bilimleri Dergisi, 11*(2), 295-303. https://doi.org/10.53424/balikesirsbd.1025165

INTRODUCTION

The COVID-19 pandemic has dramatically affected every aspect of life, including face-to-face education. During this period, most countries have shifted to distance learning and sought innovative ways to make education fun and engaging. How well students learn depends on how interesting methods instructors use to teach (Kim, 2018).

Nursing instructors turn to different strategies to make lessons engaging because they teach detailed and complex curricula in crowded classrooms through distance learning (Murray, 2013; Robb, 2012). During the pandemic, nursing instructors had a hard time in the distance education process and faced many problems. PowerPoint presentations, which are used in lectures under normal conditions, have not started to attract the attention of students in distance education, so the instructors have started to resort to ways of expression that can attract the attention of students. Distance education and online education may cause social anxiety and indifference to the lessons in students, so the use of different narrative techniques by nursing educators can eliminate this problem. The structuring of the training components is the creative use, it aims to improve education and training and to increase learning (Buchko et al., 2012). Different innovative teaching methods are now in use to help improve nursing students' academic performance (Nielsen et al., 2013). Students generally prefer traditional techniques for PowerPoint presentations (Kim, 2018; Savoy et al., 2009). PowerPoint presentations have become an essential educational resource for nursing students as well as all students. PowerPoint provides pictures, tables, and videos that make education more effective (Savoy et al., 2009). However, during the online education period, PowerPoint presentations can cause social anxiety and distress for students, this may be because the students are not in the classroom environment and think that they can make a false statement. On the other hand, Pecha Kucha is an effective technique for both presenters and students (Byrne, 2016; Masters & Holland, 2012). Pecha Kucha, which means chit-chat in Japanese, is a seven-minute creative presentation software format that consists of 20 slides. (Byrne, 2016; Levin & Peterson, 2013; Masters & Holland, 2012; Murugaiah, 2016; Oliver & Kowalczyk, 2013). Pecha Kucha helps teachers use visual images to make presentations (Byrne, 2016; Levin & Peterson, 2013).

Pecha Kucha is an innovative teaching technique for nursing education. It is pretty different from PowerPoint because it aims to attract students' attention and motivate them to participate in their learning. It also helps them think critically, synthesize new information with prior knowledge, and develop communication skills. It is an effective material based on visual images with little written material (Byrne, 2016; Masters & Holland, 2012). There is a study conducted by giving Pecha Kucha training in nursing education, and in this study, it was reported that the students were satisfied with this learning. In order to measure the effectiveness of the use of Pecha Kucha in nursing education in different courses, we discussed the subject of "Human Papilloma Virus (HPV), and Vaccine Education" explained in the Infectious Diseases Nursing course. The "Education on HPV and its Vaccine" offered in infectious diseases nursing is a challenging topic for nursing students as they have difficulty comprehending its complex nature. We used Pecha Kucha (intervention) and PowerPoint (control) to teach the topic and investigated their impacts on nursing students' knowledge and anxiety levels and their attitudes towards learning.

The research question is as follows:

Is there a difference between the success levels of students who had a lecture with the Pecha Kucha technique and students who had a lecture with the traditional PowerPoint technique?

MATERIALS AND METHODS

Study type

This study adopted a randomized experimental pretest-posttest control group design. This research was conducted in a nursing school between 30 April 2021 and 30 May 2021 in the 2020-2021 academic year in Akşehir District/City.

Study group

The study population consisted of 85 second-year students enrolled in the "Infectious Diseases Nursing" course through distance learning. The inclusion criteria were as follows: (a) agreeing to participate, (b) taking the Infectious Diseases Nursing course for the first time, (c) not having received training in HPV infection and its vaccine before, (d) taking both pretest and posttest, and (e) filling out the questionnaires completely. We aimed to access the whole population before sampling. Seventeen nursing students were excluded because they either did not want to participate (n=10), failed to fill out the forms completely (n=4), or withdrew from the study (n=3). Therefore, the sample consisted of 68 students (Figure 1).

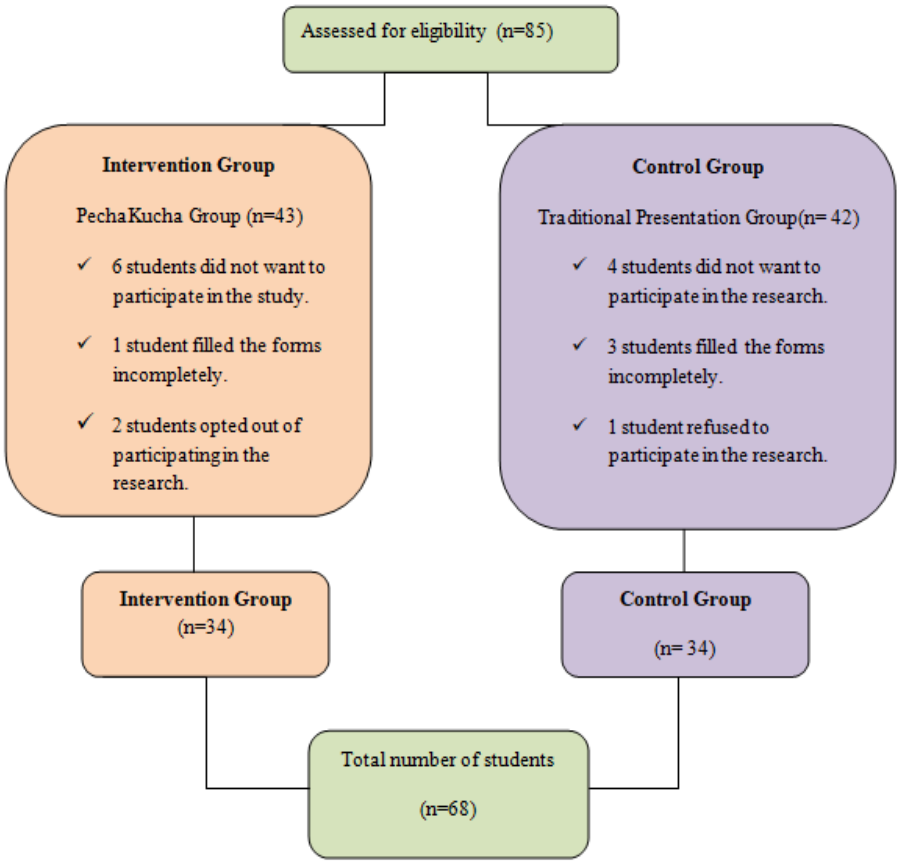

Figure 1. Sampling Diagram

Data collection tools

The data were collected using a sociodemographic characteristics questionnaire (SCQ), the Infection Knowledge Test (IKT), the Social Anxiety Scale for E-Learning Environments (SASE), and the Attitude Scale towards Mobile Learning (ASML). The data were collected online due to the nationwide school closures and restrictions on social contact during the pandemic.

Sociodemographic characteristics questionnaire: The SCQ was based on a literature review conducted by the researchers (Cangöl et al., 2019; Ceyhan, 2012; Erbaydar et al., 2016; Keskin et al., 2020). It consisted of ten items on sociodemographic characteristics (age, gender, income, place of residence, presentation techniques, etc.).

Infection Knowledge Test (IKT): The IKT was based on a literature review conducted by the researchers (Cangöl et al., 2019; Ceyhan, 2012; Erbaydar et al., 2016; Keskin et al., 2020). It consisted of 25 items on knowledge of HPV infection and its vaccine (pretest-posttest) scored as 2 (correct answer) or 0 (incorrect answer).

Social Anxiety Scale for E-Learning Environments (SASE): The SASE was developed by Keskin et al. (2020). Online learning environments have three types of learner interaction: learner-learner, learner-instructor, and learner content. The instrument measures Approaches to E-Learning Discussion Pages (SASE-AELDP) and Approaches to E-Learning Tutorial Interaction" (SASE-AELTI). The instrument consists of three subscales (negative evaluation, somatic symptoms, and avoidance of interaction) and 23 items scored on a seven-point Likert-type scale. Higher scores indicate higher levels of social anxiety. The SASE had a Cronbach's alpha of 0.98 in the present study.

Attitude Scale towards Mobile Learning (ASML): The ASML was developed by Demir and Akpınar (2016). The scale focuses on mobile learning, mobile learning attitude, and scale development. The instrument consists of four subscales: (1) satisfaction level towards mobile learning (SLML), (2) the effect of mobile learning on learning (EMLL), (3) the motivation towards mobile learning (MML), and (4) the usefulness of mobile learning (UML). The instrument has 45 items scored on a five-point Likert-type scale [Totally agree (5), Agree (4), Partially agree (3), Disagree (2), Totally disagree (1)]. The total score ranges from 45 to 225. The instrument has

a Cronbach's alpha of .950 (Demir & Akpınar, 2016), which was 0.97 in the present study.

Data collection

We used the closed envelope method to randomly assign nursing students into intervention (Pecha Kucha; n=34) and control (PowerPoint; n=34) groups. The same instructor delivered the lectures on the topic "Education on HPV and its Vaccine." She used Pecha Kucha for the intervention group and PowerPoint for the control group. All participants filled out the data collection forms before class (pretest). For the intervention group, the instructor used Pecha Kucha presentations with only images (each presentation lasting six minutes 40 seconds) and delivered the lectures for two weeks. The lesson activity was completed with the students related to the subject explained in the rest of the lesson in a 45-minutes. The instructor made a 45-minute presentation with PowerPoint slides (with no images) to the control group. There was no recess between the lectures because the same instructor delivered the classes consecutively online. The Pecka Kucha-based presentation consisted of 20 slides, each of which was presented for 20 seconds. The presentation lasted six minutes and 40 seconds. The PowerPoint presentation consisted of 45 slides, each of which was presented for a minute. The classes lasted two weeks. After the classes, all participants filled out the data collection tools (posttest). A faculty member who did not attend the classes coded the evaluation forms. The faculty member was blinded to the groups.

Data analysis

The data were analyzed using the Statistical Package for Social Sciences (SPSS, v. 24.0) at a significance level of $p<0.05$. Number (n), percent (%), mean, standard deviation, median, and percentile were used for sociodemographic and knowledge data. The Shapiro-Wilk test was used for normality testing. Variance homogeneity was determined using Levene's test. The exact method of Chi-square analysis was used to compare categorical variables. Pretest and posttest ASML scores were compared using a t-test. Paired samples t-test was used to evaluate two consecutive measurements. Pearson's correlation coefficient was used to evaluate the linear relationship between continuous variables.

Ethical considerations

The study was approved by the Non-Invasive Ethics Committee of the School of Medicine (07.04.2021-E.57027) and School of Health (22.03.2021-E.48659) of University Selcuk . Verbal and written consent was obtained from nursing students who agreed to participate. Permission was obtained from the developers of the scales. The study was carried out according to the Declaration of World Medical Association (WMA), Declaration of Helsinki, and/or the World Psychiatric Association Hawaii/II Declaration of Good Clinical Practice rules.

RESULTS

The majority of the participants were between the ages of 18 and 21 (92.6%). Most participants were women (77.9%). The majority of the participants had an Anatolian High School degree (89.7%). Less than half the participants lived in the city (41.2%). Most participants had a nuclear family (72.5%). Less than half the participants had a neutral income (income = expense) (Table 1).

Table 1. Distribution of students in Pecha Kucha education (intervention) and traditional PowerPoint education (control) groups by sociodemographic characteristics.

Sociodemographic Characteristics	Groups						
	Intervention Group (n=34)		Control Group (n=34)		Total (n=68)		p
	n	%	*n*	%	*n*	%	
Gender							
Girl	28	82.4	25	73.5	53	77.9	0.380
Male	6	17.6	9	26.6	15	22.1	
Age groups							
18-21 years	31	45.5	32	47.1	63	92.6	0.642
22-25 years	3	4.5	2	2.9	5	7.4	
Graduated school							
Health high school	4	11.8	1	2.9	5	7.4	0.378
Anatolian high school	29	85.3	32	94.2	61	89.7	
Super high school	1	2.9	1	2.9	2	2.9	

Table 1. (Continue)Distribution of students in Pecha Kucha education (intervention) and traditional PowerPoint education (control) groups by sociodemographic characteristics.

Sociodemographic Characteristics	Groups						
	Intervention Group (n=34)		Control Group (n=34)		Total (n=68)		p
	n	%	*n*	%	*n*	%	
Province							
Province	14	41.1	14	41.1	28	41.2	0.803
District	12	35.3	14	41.1	26	38.2	
Village/Town	8	23.6	6	17.8	14	20.6	
Family type							
Nuclear family	28	82.3	22	64.7	50	73.5	0.156
Extended family	6	17.7	10	29.4	16	23.5	
Fragmented family	0	0.0	2	5.9	2	2.9	
Family income family							
Income less than expenses	6	17.7	12	35.3	18	26.5	**0.000**
Income equal to expenses	24	70.6	8	23.6	32	47.0	
Income more than expenses	4	11.7	14	41.1	18	26.5	
Total	34	100.0	34	100.0	68	100.0	

The intervention group had a mean posttest IKT score of 36.61±4.18 (min: 27; max: 40). The control group had a mean posttest IKT score of 29.41±1.57 (min: 25; max: 30). The intervention group had a significantly higher mean posttest IKT score than the control group (p=0.000) (Table 2).

Table 2. Comparison of the scores of students in Pecha Kucha education (intervention) and traditional PowerPoint education (control) groups on IKT score.

	Intervention Group (n=34)		Control Group (n=34)		t	p
	Mean (SD)	Min-Max	Mean (SD)	Min-Max		
After Education IKT Score Averages	36.61(4.18)	27-40	29.41(1.57)	25-31	11.619	**0.000***

*T test on independent samples, p<0.05

Table 3 shows the participants' pretest posttest SASE and ASML scores. SASE has two sub-dimensions. These are; Approaches to E-Learning Discussion Pages (SASE-AELDP) and Approaches to E-Learning Tutorial Interaction (SASE-AELTI). The intervention group had a mean pretest and posttest SASE-AELDP Factor 1 score of 32.97±15.71 and 26.85±15.31, respectively. The control group had a mean pretest and posttest SASE-AELDP Factor 1 score of 31.32±13.29 and 26.41±15.81, respectively. The difference between the groups was statistically significant (p=0.017). The intervention group had a mean pretest and posttest SASE-AELTI Factor 1 score of 34.26±16.15 and 29.23±14.75, respectively. The control group had a mean pretest and posttest SASE-AELTI Factor 1 score of 31.82±12.12 and 27.61±14.92, respectively. The difference between the groups was statistically significant (p=0.036). The intervention group had a total pretest and posttest SASE-AELTI score of 77.79±36.48 and 64.67±30.54, respectively. The control group had a total pretest and posttest SASE-AELTI score of 65.79±26.20 and 59.20±32.41, respectively. The difference between the groups was statistically significant (p=0.044). The intervention group had a total pretest and posttest SASE score of 161.61±74.31 and

132.85±65.95, respectively. The control group had a total pretest and posttest SASE score of 136.58±52.82 and 124.47±67.79, respectively (p=0.047) (Table 3).

Table 4 shows the correlation between pretest-posttest SASE and ASML scores.

Table 3. Comparison of Social Anxiety towards E-learning (SASE) and Mobile Learning Attitude Scale (ASML) scores of pre- and after education intervention and control groups of students.

SASE Scale Sub-Dimensions	X±SS		X±SS		p*
	Before Education		After Education		
	Intervention group (*n*=34)	Control group (*n*=34)	Intervention group (*n*=34)	Control group (*n*=34)	
Approaches to E-Learning Discussion Pages (SASE-AELDP)					
Factor 1	32.97±15.71	31.32±13.29	26.85±15.31	26.41±15.81	**0.017**
Factor 2	14.58±7.0	10.79±5.34	11.32±6.69	10.58±6.71	0.121
Factor 3	36.26±19.22	36.26±19.22	30.00±16.34	28.26±16.09	0.211
E-Learning Discussion Total Score	83.82±39.03	70.79±27.52	68.17±36.16	65.26±35.71	0.056
Approaches to E-Learning Tutorial Interaction (SASE-AELTI)					
Factor 1	34.26±16.15	31.82±12.12	29.23±14.75	27.61±14.92	**0.036**
Factor 2	14.91±8.01	14.91±8.01	12.02±6.67	11.50±6.32	0.106
Factor 3	28.61±15.57	22.47±10.85	23.41±12.43	20.91±12.68	0.097
E-Learning Tutorial Interaction Total Score	77.79±36.48	65.79±26.20	64.67±30.54	59.20±32.41	**0.044**
SASE Total Score	161.61±74.31	136.58±52.82	132.85±65.95	124.47±67.79	**0.047**
ASML Scale Sub-Dimensions					
Satisfaction	57.67±16.57	59.23±10.49	56.02±16.98	56.97±15.48	0.408
Impact on learning	18.73±7.01	20.47±6.34	37.14±8.10	41.00±7.27	0.529
Motivation	19.02±7.52	19.91±7.04	18.73±7.01	20.47±6.34	0.899
Usefulness	18.05±5.40	19.73±4.64	18.08±5.85	19.38±4.56	0.839
ASML Total Score	134.61±29.19	138.52±16.49	130.00±32.89	137.82±27.40	0.508

***** Paired sample t-test for paired samples (Comparison of before education and after education mean scores of two normally distributed dependent groups, p<0.05)

Table 4. Correlation between scale sub-dimensions of e-learning social anxiety and mobile learning attitude mean scores of students before education and after education.

	1	2	3	4	5	6	7	8	9	10
1. E-Learning Discussion SASE Before Education-Total Score	-									
2. E-Learning Discussion SASE After Education Total Score	0.17	-								
3. 3. E-Learning Tutorial Interaction SASE Before Education- Total Score	0.93**	0.14	-							
4. E-Learning Tutorial Interaction SASE After EducationTotal Score	0.23	0.96**	0.22	-						
5. SASE Before Education Total Score	0.98**	0.16	0.98**	0.23	-					
6. SASE Post Training Total Score	0.20	0.99**	0.18	0.99**	0.19	-				
7. Mobile Learning Attitude Before Education Total Score	-0.10	0.01	-0.10	-0.01	-0.10	0.00	-			
8. Mobile Learning Attitude After Education Total Score	-0.13	0.02	-0.15	0.01	-0.14	0.02	0.27**	-		
9. Intervention Group After Education Knowledge Total Score	-0.23	-0.06	-0.24	-0.06	-0.24	-0.06	0.34*	0.61**	-	
10. Control Group After Education Knowledge Total Score	-0.04	0.08	-0.05	-0.00	-0.05	0.04	0.03	0.15	0.52**	-

DISCUSSION

This study compared the effect of Pecha Kucha and PowerPoint on nursing students' e-learning performance and mobile learning attitudes. The results showed that the intervention group had significantly higher IKT scores than the control group (p=0.000), suggesting that Pecha Kucha was better at teaching students about HPV and its vaccine than PowerPoint. Warmuth and Caple (2021) also found that Pecha Kucha was more effective than traditional student presentations. They reported that Pecha Kucha promoted various learning outcomes and instructor goals better than traditional PowerPoint presentations. Students who received Pecha Kucha-based education understood the material better and recalled more than their counterparts who received PowerPoint-based education (Warmuth & Caple, 2021). Murugaiah (2016) determined that Pecha Kucha supported collaborative learning and fostered second language oral presentation skills. Bakcek et al. (2020) compared the effects of Pecha Kucha and traditional PowerPoint presentations on nursing students' learning performance. However, they also did not find any difference in knowledge scores between the groups. Our intervention group participants had higher IKT scores than the control group, probably because Pecha Kucha is a visual-based presentation technique with little written material that attracts students' attention and keeps them focused for a long time (Anderson & Williams, 2012; Carroll et al., 2016). These results suggest that Pecha Kucha presentations help students learn more because they engage them in lectures. The intervention group had lower SASE "negative evaluation" scores than the control group, suggesting that Pecha Kucha helped students feel less anxiety and fear during the lectures than the traditional PowerPoint presentations. Students with high negative evaluation scores are more likely to avoid communication and socialization (Harmancı et al., 2019). People with social anxiety are generally preoccupied with negative self-judgments and feel like they are constantly watched and judged by others. People with social anxiety have different physiological, cognitive, and behavioral responses than healthy people (Baltacı & Hamarta, 2013). Anxiety can prevent them from interacting and performing in groups. There is a relationship between the method of communication of choice (face-to-face or online) and social anxiety (Behrens & Kret, 2019; Yen et al., 2012). All our participants had lower anxiety levels after the interventions. This may have three reasons. First, the education was online. Second, education reduces anxiety and fear. Third, both Pecha Kucha and PowerPoint presentations kept students focused on classes.

This is the first study to investigate the effect of Pecha Kucha and PowerPoint presentation techniques on students' social anxiety. However, research shows that Pecha Kucha is an engaging technique that helps students develop positive attitudes towards classes and exhibit high learning performance (Beyer, 2011; Masters & Holland, 2012). Our results indicate that instructors should integrate different teaching techniques (e.g., Pecha Kucha) into their lectures to reduce students' anxiety. There was a strong positive correlation between participants' post-test SASE-AELDP and SASE-AELTI scores. This is the first study to focus on nursing students' SASE-AELDP and SASE-AELTI scores before and after going through two different teaching techniques. Our results

show that students who interact more with teachers in e-learning environments engage more in e-learning discussions and feel more comfortable during lectures, resulting in less social anxiety. In short, teaching techniques help students feel less nervous and communicate with their instructors more easily.

There was a weak positive correlation between participants' pretest and posttest ASML scores. However, there was no significant difference in the ASML subscale [satisfaction level towards mobile learning (SLML), the effect of mobile learning on learning (EMLL), the motivation towards mobile learning (MML), and the usefulness of mobile learning (UML)] scores between the intervention and control groups. Mobile learning changes the way students access and use the information and provides them with the opportunity to achieve learning whenever and wherever they want (Demir & Akpınar, 2016). The weak positive correlation between participants' pretest and posttest ASML scores may be because mobile devices contain distractions and cause demotivation. Our results are consistent with the literature (Çelik, 2012; Ozan, 2013). Almost all schools have shifted to distance learning, and mobile learning has been popular since the COVID-19 pandemic. Technological self-efficacy, access opportunities, and educational requirements play a role in the satisfaction level towards mobile learning, the motivation towards mobile learning, the effect of mobile learning on learning, and the usefulness of mobile learning. Korucu et al. (2019) found that university students who owned mobile devices had more positive attitudes towards mobile technologies than their counterparts who did not. The weak correlation between our participants' pretest and posttest ASML scores may be due to limited mobile access opportunities and technological self-efficacy.

CONCLUSION

The intervention group had higher posttest IKT scores than the control group. This result shows that Pecha Kucha is an effective online technique that helps instructors teach complex nursing topics and students learn more. Further research should look into the effectiveness of Pecha Kucha in different nursing topics. Our participants had lower SASE and ASML scores after Pecha Kucha and PowerPoint presentations. The following are recommendations based on the results:

- Nursing instructors should integrate mobile learning tools into their lectures and encourage students to use them effectively.
- Nursing instructors should increase student satisfaction by emphasizing visuality and time limitation by using the Pecha Kucha presentation technique.
- Researchers should address mobile learning and social anxiety together.
- Academics should use the Pecha Kucha method in other nursing courses as a fun and attractive method.
- Academics should use different teaching materials and techniques in specialized branch nursing courses, such as Infectious Diseases Nursing.

Limitations of Study

Although our results will pave the way for further research, this study has a limitation. The results do not represent all nursing students in Turkey. They are specific to the second-year nursing students who took the Infectious Diseases Nursing course in the nursing school in Akşehir District/City. Nevertheless, we think that our results shed light on an understudied area that could potentially have implications for nursing education.

Conflict of Interest

No conflict of interest was declared by the authors.

Author Contributions

Plan, design: B.M, A.Y.K; **Material, methods and data collection:** B.M, A.Y.K; **Data analysis and comments:** A.Y.K, B.M; **Writing and corrections:** B.M, A.Y.K.

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