ORIGINAL RESEARCH ORİJİNAL ARAŞTIRMA

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Real Time Interactive Course Design Conducted in a Laboratory Environment with Web 2.0 Tools: Retrospective Qualitative Research

Web 2.0 Araçları ile Laboratuvar Ortamında Yürütülen Gerçek Zamanlı Etkileşimli Ders Tasarımı: Retrospektif Kalitatif Çalışma

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"This study was presented as an example of good practice at the Future of Nursing Education Symposium-3 held online on September 27-29, 2021."

ABSTRACT Objective: In this study, it was planned to evaluate the use of Web 2.0 tools in the online learning environment of the "parenteral medicine applications" and "nutrition" units of the nursing fundamentals course, which was carried out synchronized in the real laboratory environment during the pandemic period, and to evaluate the students' opinions. **Material and Methods:** This retrospective, qualitative study was carried out with 2020-2021 spring semester first-year nursing students (n=183). The topics chosen among the fundamentals of nursing course topics were delivered in the fundamentals of nursing application laboratory using the Teams program over the Moodle teaching Web 2.0 tools were used in the lessons. The course was planned using attention, relevance, confidence, satisfaction, and volition, an instructional design model. **Results:** The results revealed that more than half of the students actively participated in the lesson, were satisfied with the method used, were excited, and did not get bored. The simultaneous implementation of nursing practices in the laboratory environment stimulated students' interest in the lesson and positively affected their motivation and participation. **Conclusion:** Web 2.0 technologies can be used as alternative learning tools in the distance education process as they are among the methods that improve student-instructor interaction, enable the student to participate in the lesson, support the summary of the topics covered, and enhance the motivation of the student.

Keywords: Educational technology; motivation; student; nursing; distance education

ÖZET Amaç: Bu çalışmada, pandemi döneminde gerçek laboratuvar ortamında senkronize yürütülen hemşirelik esasları dersinin "parenteral ilaç uygulamaları" ve "beslenme" ünitelerinin çevrim içi öğrenme ortamında Web 2.0 araçlarının kullanımının ve öğrenci görüşlerinin değerlendirilmesi planlanmıştır. **Gereç ve Yöntemler:** Retrospektif kalitatif (nitel) yürütülen bu çalışma 2020-2021 bahar dönemi hemşirelik birinci sınıf öğrencileri (n=183) ile yürütülmüştür. Hemşirelik esasları programı dâhilîndeki seçilmiş konular ele alınmıştır. Dersler Moodle öğrenme yönetim sistemi üzerinden Teams programı kullanılarak hemşirelik esasları uygulama laboratuvarında yürütülmüştür. Dersin planlanması bir öğretim tasarımı modeli olan "attention, relevance, confidence, satisfaction, and volition" kullanılarak yapılmıştır. **Bulgular:** Öğrencilerin yarısından çoğunun derse aktif şekilde katıldığı, dersin işleniş yönteminden memnun oldukları, heyecanlandıkları ve dersten sıkılmadıkları saptanmıştır. Bununla birlikte hemşirelik uygulamalarının laboratuvar ortamından eş zamanlı olarak gerçekleştirilmesi öğrencilerde derse karşı ilgi uyandırmış, motivasyonlarını ve derse katılımlarını olumlu yönde etkilemiştir. **Sonuç:** Web 2.0 teknolojilerinin öğrenci öğretici etkileşimini artırdığı, öğrencinin aktif olmasına katkı sağladığı, işlenmiş konuların özetlenmesinde destek olduğu ve öğrencinin derse motivasyonunda kullanılabilecek yöntemler arasında olduğu ve uzaktan eğitim sürecinde alternatif öğrenme araçları olarak kullanılabileceği önerilmektedir.

Anahtar Kelimeler: Eğitim teknolojisi; motivasyon; öğrenci; hemşire; uzaktan eğitim

To support today's education processes, it has become a necessity to include interactive elements in the processes and benefits from the opportunities they offer. Web 2.0 tools, which have various advantages in creating an effective online learning environment and preparing materials that support the education

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process, are in a very advantageous position in this context.[1] Web 2.0 tools are second-generation web services designed to facilitate interpersonal communication, information sharing, interoperability, and secure collaboration between individuals.[1,2] The fact that Web 2.0 applications is a significant advantage for instructors and students. Web 2.0 tools, integrated into educational environments easily, can provide great convenience in promoting the quality of education, making lessons more efficient and more understandable, turning theoretical knowledge into practice, and making learning environments more functional.[3] Studies on nursing education using Web 2.0 tools highlight the positive contributions of these technologies. In another study, it is stated that the interactive learning environment created with Web 2.0 tools supports the theoretical model emphasizing the effect of nursing students on class participation and academic self-concepts.[4] It is also reported that the materials created with Web 2.0 tools are funny and enjoyable for students.[1]

The acquisition of basic nursing skills, especially the skills laboratory experiences of students who have just stepped into nursing education, are important opportunities that increase students' self-confidence and competence.[5] During the pandemic period, students have encountered unexpected changes in significant practices of nursing education such as patient care and laboratory experiences. All institutions providing nursing education due to the coronavirus disease-2019 (COVID-19) pandemic have made a compulsory shift to the distance education system. Authorities tried to find solutions to the problems encountered in this period by integrating traditional education methods with distance education models. During the pandemic, students are worried about distance education because they cannot perform basic nursing practices in a laboratory environment, they are far from practice areas, they are inexperienced in distance education courses and exams, and they suffer from technical issues. Most of the nursing students thought that it would be insufficient to offer all theoretical and practical courses through distance education, especially first-year students were worried about the efficiency of distance education.[6] In the workshop organized by the Nursing Education Association in our country to evaluate the barriers faced by nursing students, their opinions, and suggestions in distance education, it has been emphasized that due to low motivation in the home environment, nursing students demanded the use of methods that can enhance their motivation in the lessons, the learning objectives/forms of the lessons and the course contents to be interesting and the trainers accessible.[7] In addition, the students stated that due to the intensity of the course content, their attention decreased, the instructors did not give feedback, they only read monotonous slides, they were not willing to carry out the course, they did not allow the students to ask questions, and did not call them by their names. The following recommendations were emphasized in the workshop report: using models in laboratory and practical lessons, using different teaching methods and techniques, conducting mini exams before and after the lesson, encouraging student participation, using Web 2.0 tools in the lesson, making the lessons fun, rewarding the students actively participating in the lesson, and making a general summary of the subject after the lesson, etc. In addition to these recommendations, the following recommendations are also highly noteworthy: evaluation of students' views and ensuring their participation to achieve interactive lessons, enriching the course content (reinforcement questions, use of audio-visual tools, survey application), using different interactive teaching methods in the course, using Web 2.0 tools more effectively, providing feedback on the content related to exams and assignments, and instructors being willing, energetic, smiling and attentively dressed in lessons. Among the drawbacks highlighted in the 9th Fundamentals of Nursing Workshop with the theme of "Distance Education of Fundamentals of Nursing" held in 2021 is the lack of student interaction, the inability of students to participate in practice-based courses actively, and the inability to evaluate psychomotor skill teaching. In the workshop, the strengths of distance education were explained as students' knowledge of technology, the use of the Microsoft Teams (Microsoft, ABD) program synchronously, the downloadable course materials, and being able to watch the training videos again. On the other hand, the weaknesses of distance education were listed as follows: there is limited interaction with students, not

all students can attend the lesson, feedback from the student cannot be received in the laboratory practice, and synchronous demonstration and simulation method cannot be performed due to lack of interaction and infrastructure problems.[8] In addition, it is stated that among the weaknesses of distance education, factors such as the decrease in educator-student, student-student interaction and socialization, the inability to instantly resolve learning difficulties, and the limitations in learning practice-oriented subjects cause a decrease in students' motivation.[2,9]

The opinions and suggestions in the final reports of the 2 workshops mentioned above overlap with each other. For this reason, feedback from students should be evaluated, solutions should be offered to the problem, and arrangements should be made to increase the efficiency and quality of education. In this context, it is thought that Web 2.0 tools will contribute to adapting to this process faster, making arrangements that will turn the disadvantages of online education into an advantage, developing more effective educator-student communication techniques, taking into account the feedback from students, determining and meeting expectations from web-based education. Among the suggestions regarding the conduct of the fundamentals of nursing course are increasing interaction through student-centered teaching methods, motivating practices to increase the rate of course participation, and scoring active participation.[8] Based on these results, it is thought that the ongoing lessons should be conducted in different learning environments that will actively involve the student in the lesson through active learning methods during the COVID-19 pandemic.

In new learning environments enriched with technology, students are expected to achieve permanent learning in a motivated way. Motivating students is one of the important elements that increase the effectiveness of the learning-teaching process.[10] Creating learning environments that will keep student motivation active, keeping their curiosity alive, planning a colorful and stimulating lesson, using rich content and different methods and techniques in a learning-teaching process increase the student's desire to learn and enable students to participate in the learning process. Motivation to learn is an important component of training, especially in the field of educational technology, where the physical presence of the instructor is less felt. Student motivation is a difficult area to measure because of the complex relationships of many contributing factors.[11] The attention, relevance, confidence, satisfaction (ARCS) motivation model is a model developed by Keller that addresses the problem of "lack of learning motivation" from 4 perspectives-ARCS.[12] The ARCS-V theory is based on motivational design. The purpose of motivational design is to make a learning experience effective and "more intrinsically interesting".[13] Attention, relevance, confidence, satisfaction, and volition (ARCS-V) motivation theory offers guidance to include various strategies that will motivate educators and students.[12] In this context, based on these results, it is thought that it is a necessity to conduct the ongoing lessons during the COVID-19 pandemic in different learning environments that will make students active by using active learning methods. In this context, it is aimed to evaluate the course design in which the Web 2.0 tools used in the planning and preparation of the content of the nursing fundamentals course, which are carried out synchronized in the real laboratory environment, can be a solution to the problems experienced by the Z generation nursing students, who are especially digital natives, and meet their expectations.

Taking these as a starting point, the study aims to evaluate the use of Web 2.0 tools in the online learning environment of the "parenteral medicine applications" and "nutrition" units of the nursing fundamentals course, which was carried out synchronized in the real laboratory environment during the pandemic period, and to evaluate the students' opinions.

MATERIAL AND METHODS

THE RESEARCH DESIGN

This retrospective study is action research, one of the qualitative research methods. In this study, which was conducted as a case study, detailed information on the factors affecting learners' participation in synchronous lessons was collected and examined in depth. The qualitative approach was preferred in this study since it was believed that significant data could not be g collected with traditional data collection

tools because the study attempts to disclose students' experiences, viewpoints, and the meanings they assign to online education during the pandemic.

The population of the research consisted of 183 students enrolled in the first class of the nursing department in the spring semester of the 2020-2021 academic year. In the sample, the data of the students who took the nursing fundamentals II online course between April-May 2021 were used. The study group of this research, which was conducted to evaluate the use of Web 2.0 tools in the online learning environment for the "parenteral drug applications" and the "nutrition" units of the nursing fundamentals course and evaluate the views of the students about the course, consisted of students who attended the course for four weeks in the first year of nursing department of a state university. Fourteen students randomly selected from this group of volunteers were asked to evaluate the course of the course.

The universe consisted of 183 students and at the end of the 4-week course period, the opinions of 14 volunteers were asked using the Mentimeter application (Interactive Presentation Software, İsveç) and thematic analysis was performed. Students' views were first coded separately by 2 researchers, and main themes and sub-themes were created. Then, by going through the determined themes, the 2 researchers re-analyzed all the views, and a consensus was reached on the main and sub-themes. Finally, an expert was consulted for all themes, and the main and sub-themes were finalized.

DATA COLLECTION METHODS

The feedback received from the students regarding the materials of Web 2.0 tools used in the classroom and their course evaluation opinions were examined. The opinions of the students were collected by using The Opinion Evaluation Form of the Nursing Fundamentals Course Conducted in the Laboratory Environment. This form, consisting of three open-ended questions, was created by the researchers, and was used to determine their opinions and suggestions about the course and its materials, course materials, and the learning process with three open-ended questions. This form was presented online after the lesson to evaluate the views of the students on the education given by the teacher of the lesson based on the ARCS-V model and the learning environment created. Student opinions were collected with the recorded lesson video, student correspondence section, and the Mentimeter application, which is one of the Web 2.0 tools in the lesson. Among the Web 2.0 tools used in the course, the Kahoot application (Kahoot!, Norveç), Mentimeter application, Google Forms (Google, ABD), Microsoft Teams application, and videos were examined.

PREPARATION AND APPLICATION PROCESS OF EDUCATIONAL MATERIAL

The model was integrated into the lesson using four steps (Figure 1).

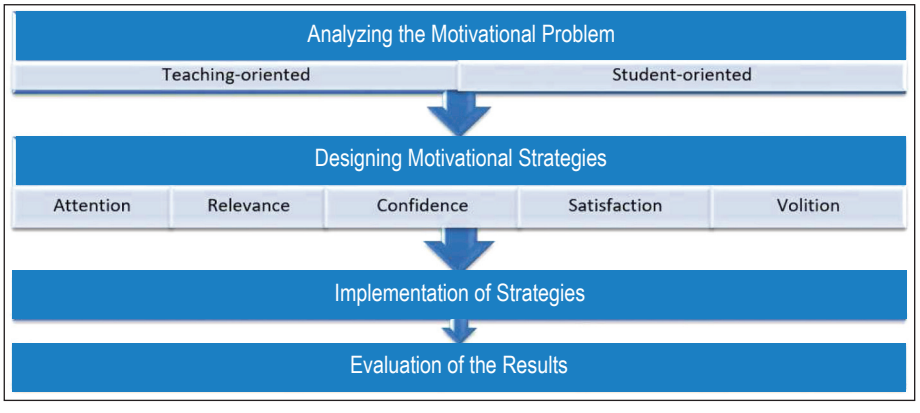

FIGURE 1: Course design based on the ARCS-V model.
ARCS-V: Attention, relevance, confidence, satisfaction, and volition.

1. Analyzing the Motivation Problem (Teaching-Oriented, Student-Oriented): The difficulties experienced by students in distance education during the COVID-19 period are as follows: students have difficulty actively participating in classes, cannot interact, have attendance problems, are bored, and are not excited about participating in the lesson, their motivation is decreased, and they do not want to get prepared for the lessons.

2. Designing Motivational Strategies: This step consists of five steps (Table 1).[14]

The Web 2.0 tools used are presented in Table 2.

3. Implementation of the Strategies: The fundamentals of nursing course was given during the COVID-19 using the Teams program. The course lasted 5 hours a week for 4 weeks and was delivered by the instructors. Within the scope of the course, nutrition and parenteral applications were prepared based on the ARCS-V design model and were performed live in the fundamentals of nursing skill laboratory. The nutrition course lasted for 1 week (5 hours), the parenteral drug administration course lasted for 2 weeks (5+5=10 hours), and the video-question-answer practice activity (5 hours) was carried out to revise the course in the last week. Lectures were delivered using PowerPoint (Microsoft, ABD) presentations, case studies, videos, and simultaneous laboratory applications together (Figure 2).

Before the lesson, application videos, process steps, and resources related to the lesson were shared with the students. To ensure students' interest in the lesson, making comments, active learning, and motivation, an award-winning Kahoot quiz competition was held at the end of each subject, and students were provided with various assignments during the lesson to actively participate in the lesson. For example, questions about drug cards and drug calculations were prepared for the students, and written feedback was requested from them. Students shared photos of the assignments in the comments section of the Teams program, and the instructor of the course gave feedback on the assignments simultaneously. After the self-assessment, the students asked and reinforced the subjects they did not understand or felt lacking. Those who wanted to practice were allowed to practice using screen sharing during the lesson, and feedback was given by the instructor of the course (Figure 3).

In the last week, the revision week, feedback about the course was received through Mentimeter, and Google Forms, and the course process was completed by re-applications, if deemed necessary, based on the evaluation results (Figure 4).

4. Evaluation of the Results: Finally, the students were asked to fill out a questionnaire about the nursing practices that they wanted to be shown again in the laboratory environment via Google Forms.

As a result of the survey, the most requested applications were demonstrated again. Then, the

Mentimeter application was carried out to evaluate the students' views on the teaching of the course and determine the nursing practices they wanted to do individually. In the application, each student was asked two questions (Figure 5).

DATA ANALYSIS

The content analysis method was used in the analysis of the data. The researcher coded the collected data in accordance with the purpose of the study and created themes. Expert opinion was consulted while creating the themes.

ETHICAL ASPECT OF RESEARCH

The study was approved by the Karadeniz Technical University Health Sciences Scientific Research Ethics Committee (date: November, 22, 2022; no: E-13562490-199-312068-27) with a waiver of informed consent and was conducted in accordance with the principles of the Declaration of Helsinki.

RESULTS

The answers given by the students were divided into categories, expressed with frequencies, and reflected with examples from the answers given (Table 3).

DISCUSSION

Prolongation of the pandemic has brought about a number of detrimental effects of online education, and increased fatigue and low motivation in front of the screen in students.[18] In this period, the necessity

TABLE 1: Designing motivational strategies.

The first step of the model, **"attention"**, is achieved by arousing the student's interest in the lesson live in the fundamentals of nursing practice laboratory.	● At this stage, the instructor who started the lesson with a nurse uniform gave the lesson and maintaining it until the end of the lesson. ● The laboratory environment, equipped with patient care equipment, has the characteristics of a real patient unit. ● The instructors aimed to stimulate the interest of the students in the lesson by introducing the laboratory environment live at the beginning of the lesson. ● During the course in the laboratory environment, nursing practices related to the subjects were completed with low-level simulation models, and instructors took the role of the patient. ● While showing the nursing practices to the students, simultaneous shots were taken with portable cameras to obtain images from different angles and reflect every movement in the environment to the student. ● In addition, Kahoot and Mentimeter applications, a gamification application, were used to keep the competition alive in the classroom, ensure that the student is active and motivated for the lesson, evaluate the student, repeat the knowledge, and ensure retention.
In the second step of the model, the **"relevance"** step, the student is made aware of the suitability of the subject for his personal needs and purposes.	● At this stage, it is aimed to raise awareness of the relationship between the practice and professional responsibilities by asking questions to the student about the steps of the procedures, cases, visuals, and live demonstrations of the nursing practices. ● For this purpose, while explaining the process steps of nursing practices in the laboratory environment, questions were asked to the students, the reasons for the process steps were explained, and thus the subject was associated with professional responsibilities.
The third step of the model, the **"confidence"** step, is the stage in which students realize that they can achieve success using their control and efforts. Giving students a chance to show that they comprehend the subject will increase their self-confidence and motivation.	● After the lecture, students were given assignments, they were asked to share screenshots of the assignments online or by making the application with live screen sharing during the next lesson, and then interactive feedback was given by the instructor through the assignments. ● Giving feedback to students during the lesson is a significant factor in the development of confidence.
The fourth step of the model, the **"satisfaction"** step, aims to make students feel an inner satisfaction by rewarding their success with reinforcers.	● At this stage, it is pivotal to provide learners with feedback that will support their efforts and success in the lesson and use verbal and written praise and concrete rewards to satisfy them. ● In addition, following a course consistent with the learning objectives, using measurement tools suitable for the course content, and making a fair assessment will create a sense of equality in the learners. ● For this purpose, 3 lessons were evaluated with Kahoot, a gamification tool during lesson. ● Some gifts (fundamentals of nursing and anatomy textbooks, nursing journals, Karadeniz Technical University calendar, and notebook) were sent to the addresses of the students who ranked first at Kahoot. ● In this step of the model, it is suggested that instructors ask questions to evaluate their teaching from students' perspectives. ● Before lesson planning, instructors should always evaluate whether their lesson will be interesting, useful, compatible with student goals, and motivates students through questions.
In the **"volition"** step, the instructors applied a questionnaire with Google Forms at the end of the courses to determine the self-evaluation of the students regarding the nursing practices and the practices they wanted to be repeated.	● As a result of the evaluation, the 3 nursing practices with the highest rate were simultaneously demonstrated. ● While repeating these topics, the students participating in the course were asked questions about the steps of the procedures, and the applications were completed according to the answers received. ● At this stage, it is aimed to create awareness in students to gain nursing skills.

TABLE 2: Web 2.0 tools and educational materials.

Kahoot	**Motivational strategies were used in the attention and satisfaction stages** ● It can increase the motivation of students towards the lesson. ● It is a gamification application that directs students to give correct answers in a short time and ranks them based on their scores. ● Multiple-choice questions like tests or surveys can be created. ● It allows students who answer the questions correctly in a short time to get higher scores and to keep the competition alive in the classroom by changing the order at the end of each question asked.[15] **Motivational strategies were used in the attention and volition stages** ● Mentimeter is an application that can be used to create surveys, word clouds, presentations, and quizzes. Users interact via code shared with them on their smart devices (Mentimeter, t.y.).
Mentimeter	● Since students do not share their credentials while participating in the activity, they can easily answer the questions posed by the teacher and participate actively in the lesson, thus providing a great advantage for shy and introverted students. ● It provides formative assessment and contributes to the development of positive attitudes towards the lesson.[16] ● It is possible to prepare word clouds. With the word cloud tool, frequently repeated words are shown in the middle of the cloud and larger than other words. The word cloud on the home screen updates as students add ideas. Since students can follow live, they become more willing to participate in the lesson.
Google Forms	**Motivational strategies were used in the volition step and in the evaluation of the results** ● Google Forms is a survey application tool. With this application, different types of survey questions with various themes can be prepared. ● Google Forms provides online and offline access, allowing students to work from anywhere. ● After the account is created, questions that require multiple-choice, short answers, and paragraphs are prepared. Images and videos can be added to the questions prepared with the application. Afterward, a link is sent to the participants, and they are asked to answer the obligatory questions. This application offers the possibility to see the answers in real-time. Responses submitted via Google Forms are automatically collected in a web-based spreadsheet and can be viewed online, enabling easy data analysis. ● If the questions prepared with Google Forms are used before the lesson or during the evaluation phase of the lesson, the learning levels of the students can be measured.[17]
Videos	**Motivation strategies were used in the implementation stage** ● Videos of basic care skills, including parenteral applications (intradermal injection, subcutaneous injection, intramuscular injections, intravenous catheterization, Vacutainer blood collection, intravenous fluid infusion) and nutrition topics (nasogastric tube insertion and removal, nasogastric tube feeding, blood glucose measurement with glucometer) and prepared by scanning the literature, were shot by the researcher in the Nursing Skills Laboratory of Karadeniz Technical University Faculty of Health Sciences Nursing Department with all the steps of the procedure in the form of practical explanations.

FIGURE 2: A screenshot of the lesson.

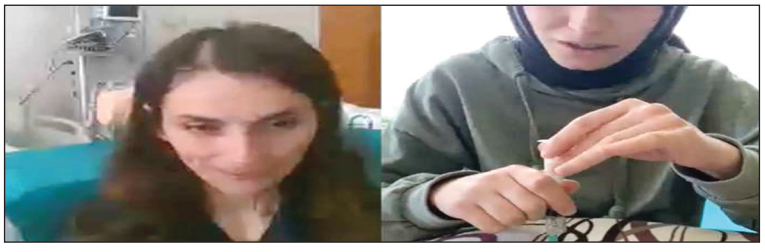

FIGURE 3: Simultaneous sample application of the instructor and the student during the lesson.

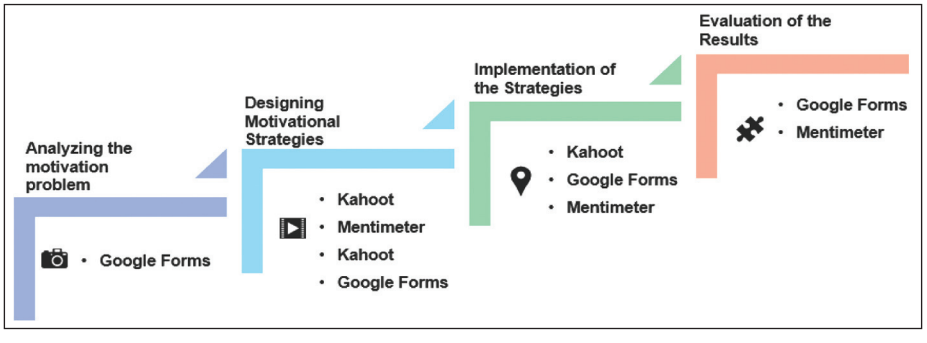

FIGURE 4: Web 2.0 tools used.

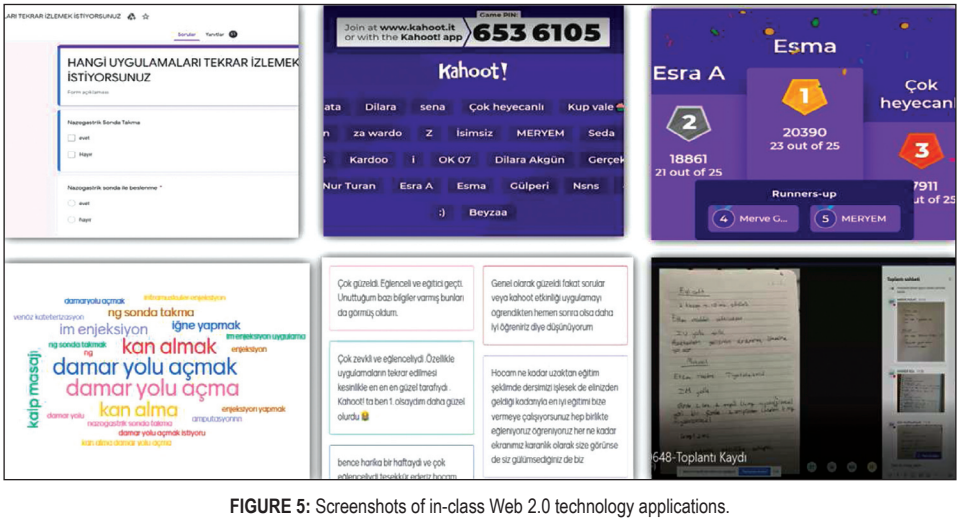

FIGURE 5: Screenshots of in-class Web 2.0 technology applications.

TABLE 3: Results obtained from student interviews regarding the course given with Web 2.0 tools used in online learning environment.

Theme	Code	f	Lesson Feedback/Example Expressions
Learning process	Positive feedback	8	"It was great, thank you"
			"It was very enjoyable and entertaining. Especially the revision of the applications was definitely the best part.
			"Kahoot would have been better if I had been #1"
			"I think it was a great week and a lot of fun, thank you, teacher"
			"Teacher, even though we took lessons with distance education, you tried to give the best education as much as you could, we had fun together, we learned. Even though our screen seemed dark to you, you always smiled, and so did we"
			"It was fun and exciting. Especially the Kahoot application was very enjoyable. I did not win an award, but I updated my information :)) thank you very much."
			"It was a lot of fun, the quizzes made the lesson colorful, we were not bored in the lesson this week, thank you very much"
			"The lessons were fun, it was good to revise the lessons, I hope they will be repeated"
			"It was perfect, thank you"
	Educational	2	"It was very nice; it was fun and educational"
			"It was the most productive lesson that can be given in distance education", it was also good that it was high-energy and educational, thank you for the energy you showed in the lesson"
	Exciting	1	"Thank you :) The lessons were fun, and I listened feeling excited without getting bored :)
	Negative feedback	Minor mishaps	1	"Our lesson this week started very well, but there were some drawbacks for me, apart from that it was very good, thank you."
	Suggestion	2	"I wish we could have done the lesson live"
			"Generally, it was good, but we would learn better if the questions or the Kahoot activity were applied after we learned the application"

of developing new strategies in nursing education caused a change in education methods.[19] Our study was carried out by retrospectively examining the data of the courses held in a period when the effect of the pandemic was the most intense and there were many uncertainties and full isolation measures were implemented in our country. In this study, the functioning of synchronized nutrition and parenteral drug applications in a real laboratory environment was presented, the ARCS-V motivation model and Web 2.0 tools were used and students' views on Web 2.0 technologies were determined. In these applications, measurement, and evaluation tools such as Kahoot, Google Forms, and Mentimeter were used. It was stated that Web 2.0 tools, which were prepared based on the ARCS-V model and used in the teaching of the course, made the course more fun for the students and provided learning while having fun. Integrating technology into teaching methods leads to many positive cognitive outcomes in students.[20] Teaching entails improving student enthusiasm and involvement, improving the learning environment and instruments, and ensuring that the learning process is sustainable.[21] Zainuddin et al. suggested that students are more emotionally attached to learning through a game-like system and experience feelings of fun, pleasure, interest, enthusiasm, and curiosity, which is consistent with our results.[22] In addition, the students stated that supporting the course with visual and auditory tools attracted their attention and supported the learning process. Consistent with our study, literature has citations that Web 2.0 tools are important technologies that can increase learning abilities both in formal education classrooms and in distance education, they can help students learn better in classroom practices, students can learn to learn in accordance with the digital age

and provide students with ways to personalize their learning experiences.[23-26] The rapid and unprepared transition to distance education due to the COVID-19 pandemic has led to limited interaction problems with students. The pandemic period involved the use of information technology to build contact between instructors and students in online distant learning.[27] However, considering that distance education disrupts students' motivation and causes difficulties in the learning process this study showed that the ARCS-V model, which aims to attract students' attention throughout the course with interactive, dynamic, relevant, and entertaining and new activities, can be an effective solution.[28]

It has been determined that a teaching scenario based on the ARCS-V model positively affects the e-learning motivation of nursing students.[29] Various studies have shown that the use of animation and gamification in online distance education increases the motivation and knowledge of Generation Z nursing students born into technology.[18,30] Student-centered teaching approaches can increase motivation and participation in learning.[31] The student statements in our study show that the use of active learning techniques with Web 2.0 tools such as Kahoot and Mentimeter boosted students' participation and motivation in the lesson. Likewise, thanks to the ARCS model employed in the public health nursing course, students stated that they were willing to participate in learning activities, value motivation and teaching strategies that enable interaction with teachers in the classroom and were satisfied with the interactive classroom atmosphere.[32] Although adopting these techniques is not the same as the ARCS motivation model, it is claimed in the literature that they can spark interest in learning quickly.[31] It was reported that a single method of teaching a course is not effective in maintaining students' enthusiasm for participating in the course, and the ARCS model, in which different teaching methods are used alternately, effectively encourages and maintains students' motivation to learn.[32]

However, the current literature review revealed that there are not many studies in this area with the ARCS-V model and Web 2.0 tools in nursing skills teaching, and further studies are needed to determine the effects of online learning enriched with Web 2.0 tools on different thinking skills. It is thought that carrying out studies for this purpose will make significant contributions to the field. This study and the results of related studies in the literature show that students' views on Web 2.0 tools used in lessons are generally positive.

Students also experienced disadvantages such as internet connection problems and inadequate internet speed and quota during distance education. In addition, in Web 2.0, the difference between the time the application starts on the instructor's screen and reaches the student's screen, and the student's participation in the lesson from different devices also caused some problems. Therefore, it has been observed that some students have a negative attitude towards these tools due to technical problems, lack of technology, and indifference regarding the use of Web 2.0 tools in lessons, etc. These negative attitudes of the students can be differentiated and thus contribute to the field in this respect with the studies to be carried out in the future, especially by paying attention to these issues.

CONCLUSION

Distance education provides the opportunity to access many educational resources independent of time and place, and it is thought that Web 2.0 tools are quite rich in content and that integrating these tools into fundamentals of nursing courses in distance nursing skills teaching can provide great opportunities for instructors in preparing teaching materials, creating content, and developing them. It can be suggested that these tools can be used as an advantage in increasing the effectiveness of nursing education to meet the expectations of the students, who are the focus of education. It is expected that live lessons will be more effective on platforms that combine students and instructors simultaneously in online environments. In addition, this practice will not only support the realization of learning goals but also ensure that a problem-free educational environment can be created in classroom communication processes, that is, a new, standard classroom environment can be established.

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Conflict of Interest

No conflicts of interest between the authors and / or family members of the scientific and medical committee members or members of the potential conflicts of interest, counseling, expertise, working conditions, share holding and similar situations in any firm.

Authorship Contributions

All authors contributed equally while this study preparing.

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