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ВИКЛАДАННЯ ОРТОПЕДИЧНОЇ СТОМАТОЛОГІЇ В УМОВАХ ВОЄННОГО СТАНУ ТА ЕПІДЕМІОЛОГІЧНИХ ЗАГРОЗ

Мета дослідження. *Узагальнення досвіду викладання ортопедичної стоматології в умовах воєнного стану та епідеміологічних загроз на кафедрі ортопедичної стоматології Дніпровського державного медичного університету.* **Основна частина.** *За допомогою освітніх платформ Google Meet та Moodle навчальний процес на кафедрі повністю діджиталізований. Організація комунікацій між викладачем та студентом відбувається із застосуванням месенджеру Viber. Головна функція лекції в системі дистанційної освіти змінилася з інформативної на настановну, спрямовану на систематизацію та узагальнення. Практичні заняття в режимі реального часу (онлайн) проводяться в синхронному режимі, що передбачає інтерактивну форму роботи з «клінічними кейсами», які імітують віртуальних хворих, або шляхом «трансляції з двох камер», коли на екран подається зовнішнє зображення прийому хворого та зображення з внутрішньоротової камери. Для наочності діагностичного та технологічного процесу використовується онлайн демонстрація інтерфейсів програм Planmeca Romexis Viewer, OccluSence by Bausch, My Crown Design та ін. Платформа Moodle є одним з найкращих варіантів методологічного забезпечення самостійної роботи здобувачів. Вона формує статистику та відстежує відвідування, а також дозволяє проведення контрольних тестувань студентів в онлайн-режимі. Для поточного тестування також застосовуються платформи Google Form та Kahoot. Проте, навчаючись тільки в дистанційному форматі неможливо забезпечити оволодіння клінічними маніпуляціями, практичними навичками та низкою спеціальних компетенцій. Тому, більш доцільною є змішана форма навчання із тренінгами в фантомних класах та участю студентів у клінічних прийомах. Університет має низку домовленостей зі стоматологічними клініками Тунісу, Марокко, Ізраїлю, Німеччини щодо проходження практичної підготовки студентів-іноземців, які навчаються дистанційно.* **Висновки.** *Подальша стратегія розвитку української стоматологічної освіти під час воєнного стану та епідеміологічних загроз полягає у подальшому розвитку змішаної форми підготовки здобувачів другого рівня освіти, що включає як дистанційне навчання, так і відпрацювання практичних навичок у фантомних класах та в клінічних умовах.*
Ключові слова: *ортопедична стоматологія, дистанційне навчання.*

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TEACHING PROSTHETIC DENTISTRY IN THE CONDITIONS OF MARTIAL LAW AND EPIDEMIOLOGICAL THREATS

Purpose of the study. *Summarizing experience of teaching prosthetic dentistry in the conditions of martial law and epidemiological threats at the Department of Prosthetic Dentistry of the Dnipro State Medical University.* **Main part.** *By means of platforms Google Meet and Moodle, the educational process at the department is completely digitized. The organization of communications between the teacher and the students takes place using the Viber messenger. In the distance education system, the main function of the lecture has changed from informative to instructive, systematizing and generalizing. Practical classes in real time (online) are conducted in synchronous mode, using an interactive form of work with "clinical cases" that simulate virtual patients, or by "broadcasting from two cameras", when they show the external image of the patient's examination and the image from the intraoral camera. The online demonstration of the interfaces of the Planmeca Romexis Viewer, OccluSence by Bausch, My Crown Design and other programs is used to visualize the diagnostic and technological process. The Moodle platform is one of the best options for methodological support of independent work of students. It forms statistics and monitors attendance; it allows conducting control tests of students in online mode. Google Form and Kahoot platforms are also used for current testing. However, studying only in a distance format cannot satisfy the end result of mastering clinical manipulations, practical skills and special competencies. Therefore, it's necessary to provide a mixed form of education, practicing trainings in phantom classes and students' participation in clinical procedures. The university has agreements with dental clinics in Tunisia, Morocco, Israel and Germany which are regarding the practical training of foreign students who study remotely.* **Conclusions.** *The further strategy for the development of Ukrainian dental education during martial law and epidemiological threats consists in the further development of a mixed form of training for students of the second level of education, which involves both distance learning and learning practical skills in phantom classes and in clinical conditions.*
Key words: *prosthetic dentistry, distance learning.*

Despite a number of challenges faced by our state because of the armed aggression of the Russian Federation, the problem of high-quality education of the medical students remains more relevant and vital than ever. The introduction of the mixed form of the educational process, which, unfortunately, due to the aggravation of the situation in our country, has recently become exclusively online, allowed to a certain extent to solve the problem of organizing the training of future dentists.

First of all, it should be noted that the guarantee of sufficient educational results is the motivation of the students. Thus, in the conditions of the war, a new generation of professionals-individuals, hardened by the difficult conditions of today, is being formed. At the same time, the vector of the teacher's work shifts to mentoring, and classes become not only a platform for acquiring knowledge, but also a place to find like-minded people [1].

In general, it is clear that distance learning has become possible thanks to modern digital technologies. Fortunately, teachers were ready for the "digitalization" of the educational process, which became a continuation of the process of "digitization" of all aspects of social life. Currently, the main tasks of digitization in education are its further development, in particular, the introduction of new technologies for processing and storing information, increasing the degree of institutional support for stimulation, and providing advisory support to pedagogical workers [2].

Thus, during the forced break in face-to-face practical training, the academic community developed a rational and accessible system of dental education using such platforms as Google Meet, Google Classroom, Microsoft Teams, Moodle and others, with additional use of other WEB resources. So, the main types of classes became online lectures, practical classes, master classes, situation games, webinars, analysis of "Krok 2» tests, defense of disease histories, and offline training practical skills in phantom classes [3-6].

According to the results of the survey of distance learning students, 81.1% of them believed that this form of education was useful for them, but 92.4% indicated the need to increase clinical materials on educational platforms [7]. And such requests completely meet the requirements regulated by the National Framework of Qualifications and the World Federation of Medical Education, that the professional training of the dental master cannot be limited to the acquisition of knowledge in the specialty, first of all, it is practical experience [8].

Even if students can observe clinical manipulations while watching video films and master classes, the possibility of forming communicative competence remains unresolved. Only through direct contact with a patient, students learn empathy, acceptance, self-congruence, creation of a comfortable climate, and recognition of expectations from the treatment and diagnostic process [9].

So, a lot has been done to optimize the educational process of medical students, in particular dental students, but there are still a certain number of aspects that need to be resolved. In the present article, we would like to share our own practice of their implementation.

The purpose of the study is to generalize the experience of teaching prosthetic dentistry in the conditions of distance learning of students of the second level of higher education in the field of knowledge 22 "Health care", specialty 221 "Dentistry" in the conditions of martial law and epidemiological threats at the Department of Prosthetic Dentistry of the Dnipro State Medical University.

Research results and their discussion. At the beginning of the war at the department the distance education has already developed by the way of the gradual digital transformation of the educational space in the conditions of the COVID-19 pandemic. So far, we have achieved widespread digitization of the learning process, the organization of communication between the teacher and the student, as well as the creation of an individual educational trajectory. In this regard, we were not original, using the tested and recommended educational platforms Google Meet and Moodle. Accordingly, the Viber messenger has helped to create chats between teachers and students.

In our opinion, in the distance education system, the role of lectures is important; their main function has changed from informative to instructive, and they have become aimed at systematization and generalization. As a result of reducing the number of hours for lectures, their main purpose is to reveal the conceptual apparatus of the discipline, to create a holistic idea of the subject, to develop professional interest, and to determine the content of other forms of classes (practical and independent). According to our experience, regarding the methodology of lectures, the discrete principle of their design, in which each statement is maximally illustrated with clinical material, is the most acceptable form for students' perception [10].

However, practical classes in real time (online) are the most used form of education now. The curriculum provides that 75% of the time allocated to

the practical training is conducted in a synchronous mode, in the form of conversation with the teacher, which allows for interactive communication for the students. During practical classes, the capabilities of Google Meet (demonstration of presentations and text documents, video films, interactive whiteboard) are used.

A significant duration of practical classes at stomatological departments required clinical manipulation with patients, which is not possible under the conditions of distance learning. To eliminate the problem of filling the time space, we use two main technologies in the organization of practical classes.

First, it is a work with "clinical cases" that simulate virtual patients. We use all three types of cases: "case-event", "case-exercise", and "case-situation".

The use of the case-study method is due to the ability of this form of education to promote the development of students' communication skills, the ability to creatively use the acquired knowledge, cooperation in groups and consideration of the opinions of others. This method teaches to formulate a problem, to find ways to solve it, to collect and to analyze the data obtained, and to argue the point of view. During the discussion of the case, there is an exchange of information, a combination of theory and practice, and an understanding of the need for acquired knowledge [11].

During the online conference, the teacher presents the students with a specific clinical situation for further group discussion. His role is mainly guiding, he motivates everyone present to actively search for a solution and consider all possible options using the acquired knowledge. During the discussion, all aspects of patient management should be discussed: diagnosis, differential diagnosis, treatment, rehabilitation and prevention.

Secondly, instead of "clinical cases", in order to immerse students in a "clinical atmosphere", we practice "broadcasting from two cameras", when the external image of the patient's reception and the image from the intraoral camera are shown on the screen. Thus, we manage to create a "presence effect". In addition, with the consent of the patient, online communication with students is often practiced.

To visualize the diagnostic and technological process, we widely use the online demonstration of the interfaces of such programs as Planmeca Romexis Viewer (computer tomography), OccluSence by Bausch (computer occlusion diagnostics), My Crown Design (CAD/CAM technology), ANSIS 12.1 (three-dimensional modeling based on the finite element method) and some others.

The developed methodology of practical training allows to obtain a sufficient level of knowledge, skills and competences, as well as to master the algorithms of providing specialized assistance in the clinic of prosthetic dentistry. In any case, these forms are effective with students' active participation, a sufficient level of theoretical knowledge, and their motivation to get competencies.

We are deeply convinced that the educational process should be organized in such a way that a student wants to master knowledge independently. Ideally, he should assess his own level of training, find "problems" and eliminate them independently. In this regard, the Moodle platform allows creating an information space for working with students. On this resource, we provide access to curriculums, plans for lectures and practical classes, test databases, methodical recommendations, educational videos, clinical cases, etc. The practice of writing and placing on this platform the textbooks adapted to the educational process at the department, using the clinical experience of the department's employees, is quite justified. Over the past two years, we have worked off manuals on topical problems of dentistry, such as applied materials science, casted dental prosthetics, maxillofacial prosthetics, implant prosthetics, and increased tooth wear. We also use the rest elements of the Moodle system such as lecture, assignment, forum, chat, gallery, glossary, video conference and hyperlinks. A significant advantage of the formation of a department's educational space is the lesser influence of individual prejudices of certain teachers and the possibility of collegial correction of educational materials.

Based on the above, the Moodle platform is the most optimal option for methodological support of independent work of students. In addition, the system forms statistics and monitors visits.

Thus, the control of students' knowledge, skills and competencies is one of the important components of the educational process, including in the conditions of distance learning. Evaluation in any kind of activity always has a significant impact on efficiency, on a person's attitude towards the performance of duties, on the formation of a sense of responsibility. In addition, control provides systematic feedback that allows adapting the educational process [12].

We practice traditional types of control: preliminary, current, thematic, periodic, summative and final. During online conferences, we use simple and complex control conversations. At the same time, during a simple conversation, we find out the level of preparation for the lesson, while during a complex

one, we determine the ability of students to perform cognitive operations (analysis, synthesis, comparison, generalization, establishing cause-and-effect relationships, etc.) with the educational material. Despite its necessity, this method of control is certainly subjective.

On the contrary, tests are the most objective form of assessment. In addition, tests of the format "A" (with situational clinical tasks) are of great value in establishing the level of students' competences. The Moodle resource, which has already been discussed, allows us to conduct control tests of students in online mode. The teacher gives permission to students for online testing (25 or 50 tests for 25 or 50 minutes, respectively). It's considered that the positive result is at least 75% of correct answers.

For current testing, we also practice tasks on Google Form and Kahoot platforms. Alternating different testing resources avoids routine. Kahoot's "Quiz Challenge" is particularly attractive in this regard. In it, one can use the visualization of the question, determine the best in the group and form the podium of the winners, conduct the following discussion of the correct answers.

Test control increases the objectivity of control, but it does not contribute to the development of students' clinical thinking. Studying only in a distance format, it is impossible to satisfy the final result of mastering clinical manipulations, practical skills and a number of special competencies. Motivated students are interested in simulation training on phantoms and working with patients. Therefore, we try to use the mixed form of education.

We provide the opportunity for everyone who wants to take training in phantom classes on a flexible schedule, at a time convenient for them. Currently, three classrooms equipped with the most modern dental phantoms operate at the department. In addition, we have two educational microscopes, CAD/CAM equipment for students' learning. We offer students, if it is possible, to take part in the clinical manipulations. In this regard, the work of senior year students in private dental clinics is a very positive practice. Also, the University has a number of agreements with dental clinics in Tunisia, Morocco, Israel, and Germany regarding the practical training of foreign students studying remotely.

Conclusions. The strategy for the development of medical (dental) education in Ukraine during the martial law is the further development of the mixed form of education, which is a combination of remote training with practice of practical skills in phantom classes and in clinic conditions. Modern information and communication technologies ensure a decent level of the educational process, make education accessible and effective, and allow the formation of an informational educational environment and the creation of a global network of educational resources. However, despite the existing achievements, many problems remain; we are sure that they will be resolved in the near future.

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