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THE EXPERIENCE OF CONDUCTING STATE EXAMS ONLINE**Dolynskiy V.V. / Долинський В.В.**

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Abstract. Nowadays information and telecommunication technologies have become an integral part of the educational process. It was the usage of modern technologies that helped higher education institutions to continue their distance learning in the maximum volume during the forced quarantine, caused by the COVID-19 pandemic. Therefore, the purpose of the study was to describe the methodology of the exam and analyze its effectiveness by interviewing both students and examiners. In developing the methodology of the exam, special attention was paid to testing clinical thinking and practice-oriented competencies of students through the use of specially designed virtual simulated patients, whose role was performed by examiners, as well as situational tasks for emergency diagnosis and emergency care. The results of the study indicate the possibility of conducting a practical (clinical) exam in the online format while maintaining a sufficient level of assessment of the quality of knowledge and skills of graduates.

Key words: distance learning, practical (clinical) exam, examination, virtual simulated patient.

Introduction.

Changes in the society and the world in the whole always provoke the appearance of new challenges in front of pedagogy and teachers, encourage them to apply the latest teaching methods and improve the existing ones. The pandemic caused by COVID-19 made the government introduce the regime of severe and later adaptive quarantine which led to the transition of higher education institutions, including medical ones, to distance learning [5, 7]. The management and teaching staff of medical institutions of higher education had questions as for the possibility of teaching students in conditions of distant learning, the opportunity of students' mastering practical skills, the chance to control the quality of education and the level of knowledge of applicants. However, the majority of high education establishments quickly developed or adapted to distance learning systems for teaching all the subjects [1, 3]. The separate challenge for medical universities and academies was to conduct a practical (clinical) exam as an integral part of the unified state qualifying exam for graduates. [2]

The practical orientation of the face-to-face exam is achieved by demonstrating practical competencies by students in interaction with real patients, including the



collection of complaints and medical history, objective examination and interpretation of laboratory and instrumental examinations [4]. Lockdown restrictions actually made the participation of both real and simulated patients impossible. The second important problem was to identify the students who took the practical exam and to avoid cheating. The third challenge was to organize the entire process of the practical exam online in the proper way[6].

The purpose of the article is to describe the method of conducting a practical (clinical) exam at Donetsk National Medical University (DNMU) under conditions of distant studying and evaluate its effectiveness.

Materials and methods. For organizing online methodological literature and articles on the problems of distance learning and examinations were analyzed. To make conclusions about the effectiveness of the method after the exam, the survey of examiners and students who took part in the exam was held with the help of e-mails which contained a questionnaire created in the appendix to Google Forms. 166 graduates and 28 examiners were interviewed anonymously.

At DNMU the initiative group was created with the aim to organize online state exams with the maximum possible storage of practical components under quarantine restrictions.

The identification of students who took the practical exam took place in two stages. First of all, all the participants of the practical exam, including students, examiners, and the members of the state examination commission, used only the university G Suite for Education (now Google Workspace for Education) corporate accounts. Each exam participant had an individual corporate account, the password to which only the student knew. The communication of students with examiners and members of the State Examination Commission (SEC) took place in the application for video conferences Google Meet. Secondly, before the exam, students gave informed consent to video recording of the state exam, as well as showed the camera a document that identified the person (passport, student card, driver's license).

The introductory speech of the SEC chairman and the instructing of the students were conducted with the help of the general video conference at the beginning of the state exam. The general video conference was organized by the staff of the distance learning department, who acted as moderators and members of the technical support group of the practical exam. At the beginning of the exam, each examiner received a pre-approved schedule for students to join a video conference with their corporate email addresses. In order to eliminate corruption risks, the employees of the distance learning department together with the education quality control department created connection schedules. In addition, the special chat was created in the Telegram messenger for solving technical problems and force majeure (power outages or lack of communication between students and examiners, etc.).

For the realization of the practical aspect, the state exam was held in 2 stages.

The first part was the demonstration of the student's knowledge and skills while working with a virtual simulated patient. The role of a virtual simulated patient was performed by examiners according to the pre-developed scenario of a clinical case. Scenarios of clinical cases of virtual simulated patients were developed by specialized departments and approved by the head of the SEC. Each student was



offered an individual clinical case. Examiners complained on behalf of the simulated patient, answering questions from students about complaints and medical history. Applicants determined the required amount of objective examination. If necessary, the examiner informed the students about the results of the objective examination of the virtual simulated patient. After that, the students identified the leading syndromes and established a preliminary clinical diagnosis and determined the list of laboratory and instrumental examinations necessary to confirm the diagnosis. The examiner demonstrated the results of examinations through a built-in presentation program only if they were pre-specified, the students interpreted the results, made a final diagnosis, developed tactics of treatment and management of the patient, made a prognosis, assessed the patient's disability.

The second part of the exam included solving situational problems in diagnosing emergencies and providing emergency care. Situational tasks were developed by profile departments and approved by the head of the SEC. Each student was offered an individual set of situational tasks. The conditions of the situational tasks were demonstrated by the examiner on the screen also by means of the presentation program built into the interface. Applicants had to answer the questions posed in the task in accordance with the condition regarding additional rapid methods of emergency diagnosis, clear algorithms for providing emergency care with the sequence of drug groups and the indication of specific active substances.

If the student did not have a chance to take the exam for a valued excuse (due to objective circumstances: lack of electricity or Internet connection), he or she was able to take part in a practice-oriented state exam on another day. This was reported to the applicant by the moderators using mobile communication after consultation with the head of the SEC. The results of the exam were summarized and discussed by the examiners together with members of the SEC and the dean of the faculty. In case of a conflict, videos of the applicants' survey and their written answers were viewed. The results were announced at the end of the practice-oriented state exam by general video conference.

All the information on the procedure for conducting a practice-oriented state exam in a remote format and the necessary instructions were published in advance on the university website. Before the state exams, the game was held with examiners and members of the SEC to test the algorithm of the exam.

To analyze the effectiveness of the developed methodology for conducting a practice-oriented state exam, the survey was conducted among the students who took part in the the exam and examiners. The majority of graduates (72% of all the respondents, 120 respondents) rated the practical exam as good or very good. 36% of examiners (10 people) rated the method and examination as good, 11% (3 people) evaluated it as very good, 43% (12 people) - as satisfactory.

Conclusions. The above methodology and the results of its evaluation by different contingents of participants demonstrate that conducting a practice-oriented state exam online is possible, while visualization and audioization of individual elements can maintain quality control of knowledge and skills, despite the impossibility of physical testing.



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Анотація. У сучасному суспільстві інформаційно-телекомунікаційні технології стали невід'ємною частиною освітнього процесу в багатьох навчальних закладах вищої школи. Саме їх наявність допомогла закладам вищої освіти продовжувати навчання дистанційно під час вимушеного карантину, причиною якого стала пандемією COVID-19. Проте, можливість повноцінної організації та реалізації навчального процесу у дистанційному форматі є і досі дискусійною, особливо серед науково-педагогічної спільноти викладачів медичних ВНЗ. Однією з найважливіших проблем при викладанні та оцінюванні якості знань здобувачів освіти у медичних ЗВО є практична спрямованість більшості спеціальностей та компетенцій. Викладацький склад Донецького національного медичного університету має досвід не тільки з імплементації дистанційного навчання в освітній процес, але й з організації та проведення практичного (клінічного) іспиту. Це й обумовило **мету нашого дослідження** – описати методiku проведення іспиту та проаналізувати її ефективність шляхом опитування як здобувачів освіти, так і екзаменаторів. **Матеріали та методи.** При розробці методики проведення іспиту особлива увага приділялась перевірці клінічного мислення та практично-орієнтованих компетентностей здобувачів освіти за рахунок використання спеціально розроблених віртуальних імітованих пацієнтів, роль яких виконували екзаменатори, а також ситуаційних задач з діагностики невідкладних станів та невідкладної допомоги. Після проведення іспиту було анонімно опитано 166 випускників та 28 екзаменаторів. Більшість здобувачів освіти (72% респондентів) оцінили проведення іспиту у дистанційному форматі позитивно, а екзаменатори оцінили методiku та проведення іспиту як добре (36%) або задовільно (43%). Загалом, **результати** проведеного дослідження свідчать про можливість проведення практичного (клінічного) іспиту у дистанційному форматі зі збереженням достатнього рівня оцінки якості знань та умінь випускників.

Ключові слова: дистанційне навчання, практичний (клінічний) іспит, обстеження, віртуальний імітований пацієнт.