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Simulationstraining: Interdisziplinäre Integration und Besonderheiten des Ausbildungsgangs Medizindidaktik

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Anmerkung. Der Artikel beschreibt die Methoden zur Implementierung von Simulationstrainings, die Wirksamkeit der Integration von Simulationserziehung, die Schaffung eines Simulationstrainingszentrums und die Erfahrung bei der Erstellung eines Kurses..

Schlüsselwörter: Simulation Bildung, Integration, Online-Kurse, Simulationszentrum, Probleme, Aufgaben, Schulung.

Simulation training: interdisciplinary integration and features of the training course in medical education

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Abstract: The article outlines the methods of implementing simulation training, the effectiveness of the integration of simulation education, the creation of a simulation training center and the experience of creating a course..

Keywords: simulation education, integration, online courses, simulation center, problems, tasks, training course.

Relevance of the topic. Improvement of higher medical education dictates the need to introduce new pedagogical and information technologies, innovative - simulation teaching methods Simulation education is a modern approach to teaching and assessing practical skills, abilities and knowledge, based on realistic modeling, imitation of a clinical situation where biological, mechanical, electronic and virtual models,. The introduction of innovative educational technologies determines the demand for highly qualified specialists capable of increasing the competitiveness of healthcare in the Republic of Uzbekistan.

The purpose of the study is the definition of the features of the organization of the theoretical content and methods of educational influences of the online course "Simulation Education", which opens up rich opportunities for access to knowledge, mastering educational material in the mode of individual approaches, stimulating further reflection on the results of specific practical activities in the field of medicine.

Research tasks:

- establishing the features of the course to approximate the imitation of professional activity to the real conditions of work with a high degree of reliability;
- determination of the effectiveness of the process to improve the development of practical skills, abilities and competencies at various levels of professional training of specialists, as well as to further improve the system of simulation training.

Material and methods. The research materials are based on the experience of creating and teaching the course (in the MOODLE system) "Simulation Education" at the Tashkent Medical Academy, on the results of research work related to finding ways to modernize higher medical education, as well as on a sociological survey of students.

Research object became students of bachelor's and master's degrees of the Tashkent Medical Academy. 192 students took part in the study: 80 students studying in the specialty "General Medicine", and 67 students of the medical and pedagogical faculty, 45 graduate students studying in various specialties.

Introduction. In modern conditions, with an increasing demand for medical services using the latest approaches and methods, the state faces an acute task of training personnel who can use modern achievements of world medicine and treatment methods in medical practice.

Over the years of independence in the Republic of Uzbekistan, a huge amount of work has been done to reform the entire education system, including the health personnel infrastructure. At the same time, an extremely important role in improving the quality of medical care and the formation of a highly qualified specialist is assigned to the issues of advanced training and

retraining of doctors, the introduction of new pedagogical technologies and innovations, modern technical teaching aids using information technologies.

In order to solve such problems, in many countries there have been global changes in priorities in medical education: from structure to process, and in the last decade - to educational result. This was characterized by the active introduction of new learning technologies, such as simulation, problem-based, electronic, mixed, command, etc.,.

Study of the topic in scientific sources. The quality of the provision of medical care to patients directly depends on the level of training of medical specialists who are proficient in modern methods of diagnosis and treatment of diseases, and are able to apply the latest achievements of medical science in practice. Therefore, it is natural that one of the main directions in the field of higher medical education is the need to significantly strengthen the practical aspect of training future doctors while maintaining the proper level of theoretical knowledge.

In the last decade, there have been major changes in teaching technologies, simulators and simulators have appeared that allow you to work out both independent and coordinated group actions.

It became clear that traditional medical education, which implied the training of specialists with medical education in the form of lectures, practical exercises with practicing manipulations on the simplest phantoms and simulators, seminars, participation of students in medical activities under the supervision of general and immediate supervisors during industrial practices, requires a thorough revision.

Along with this, I would like to note that the effectiveness of practical training is inextricably linked with the methodology of conducting practical classes, their educational and methodological support. The material and technical support of the educational process is a prerequisite for high-quality training of specialists in accordance with the requirements of curricula and programs. When it comes to the training of general practitioners, it is necessary to realize the fact that along with great success in the process of international integration, there are problems in the material and technical equipment of medical universities. Today it is impossible to train doctors without simulation centers. Undoubtedly, in every medical university of our republic there are phantoms, dummies, simulators for practicing practical skills. But together we must admit that these devices are morally outdated and do not meet international standards.

At the present stage of development of higher medical education, it is relevant to use modern phantoms and simulators in the educational process. This is due to the fact that it is not always possible to show certain pathological conditions at the clinical bases of departments. In some cases, students do not have the opportunity, including from the point of view of deontology, to work out certain methods of medical manipulations: cardiopulmonary resuscitation, intravenous, intramuscular injections, etc. To solve this problem, it is optimal to organize centers of simulation medicine on the basis of higher educational institutions. In simulation training, the main thing is to acquire the necessary theoretical knowledge and practical skills without harming human health, while maintaining the completeness and realism of the simulation.

A lot of experience has already been accumulated, proving the effectiveness of simulation training. Numerous evidences have been obtained indicating the successful transfer of the skills acquired by the doctor to the patient, which could not but lead to the extensive development of the network of simulation centers.

Only within the framework of simulation training, it is possible by repeated repetitions to bring to automatism not only the ability to perform an action, but also to work out the way of performing complex actions, provided by a set of knowledge and skills.

To develop such personal qualities of a university graduate in the educational process, it is necessary to introduce new innovative teaching technologies based on modern scientific achievements and aimed at the formation and development of a university graduate possessing a wide range of competencies.

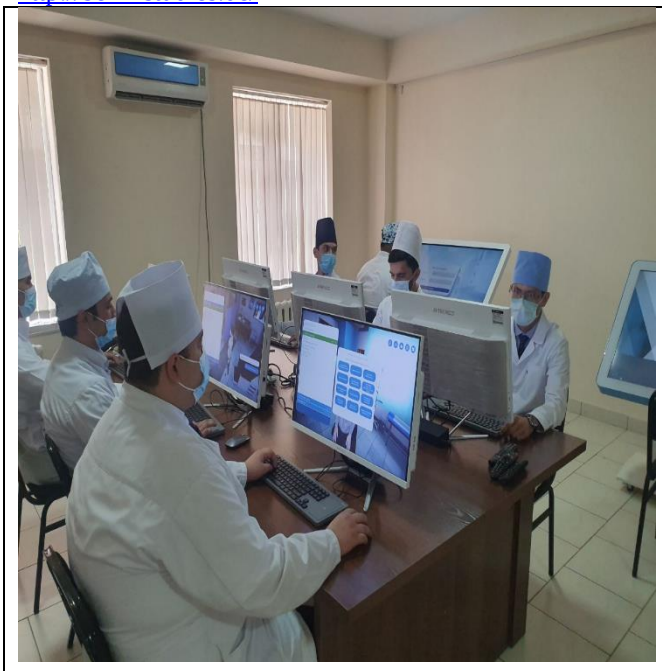
The new challenges facing higher education raise the issue of the need to rethink the methodological and technological approaches to teaching university disciplines. Currently, there is an active introduction into the sphere of higher education of information, communication and distance educational technologies, which provide for the modification of the methods of organizing educational material, teacher-student communication, and the entire structure of the educational process.

Main part. In March 2019, a simulation training center was created at the Tashkent Medical Academy and a robot patient ADAM.ALS, patient care dummies, a simulator for intravenous injections, a laparoscope, a hysteroscope, Baby SIM, etc. were purchased. The center has such rooms as "Patient Care", "Cardiopulmonary Resuscitation", "Surgical Manipulations", "Obstetrics and Pediatrics", "Briefing Room" (Figures 1, 2).

1-figure. Injection simulator

2 - figure. Cardiopulmonary resuscitation simulator

Several teachers were sent for internships at the leading Russian center for simulation training (Kazan). For two years, seminars and trainings for the teaching staff were held. Students of 1-6 courses were trained at the center according to the schedule. 1st year students were mainly trained in patient care skills. On the 2-3 course, they were trained in such medical manipulations as the technique of performing intramuscular and intravenous injections. 4-6 year students are trained in cardiopulmonary resuscitation skills. In addition, there is an opportunity to develop the clinical thinking of students using the "virtual patient" simulator. The degree of mastering of practical skills is constantly monitored (Figures 3, 4).



3 - figure. Knowledge monitoring.

4 - figure. Robot simulator.

Unfortunately, during the pandemic, students did not have the opportunity to study in the simulation center, but electronic handouts were created for them to master practical skills and a heading was organized on the MOODLE platform - a course in simulation education, where students could get answers to their questions and learn online.

Participants of the project "Improving the educational process using innovative imitation technologies" and teachers of the departments of clinical disciplines of the Academy have developed a course "Simulation education".

The research methods are theoretical (study of primary sources and modern scientific literature on teaching; systematization, analysis, synthesis, generalization of the obtained materials); empirical (questioning, analysis of performance results), organizational (comparison), methods of mathematical and statistical analysis of data.

This course was created using modular technology and problem-based learning. The modular technology, which has received wide application in the educational process, makes it possible to more widely realize the possibilities of independent work of students with modules. The student is given the opportunity to master the theoretical basis of practical skills on his own, to control the level of assimilation of knowledge, to make self-assessment and analyze situations.

When creating the course, problem learning was implemented using simulators. The effectiveness of this type of training lies in the systematically created problem situations and in the organization of students' activity in solving problems, which ensures the combination of the student's independent search activity with the assimilation of professional knowledge, skills and abilities. Problematic technology makes it possible not to present knowledge in a finished form, but to set educational tasks, questions, practical tasks for students that should interest him, awaken a desire to find a solution. It is the cognitive interest in the subject and professional motivation that ensure the effectiveness of learning.

Results and discussion. The main idea of the online course, as evidenced by the results of the survey, has achieved its result.

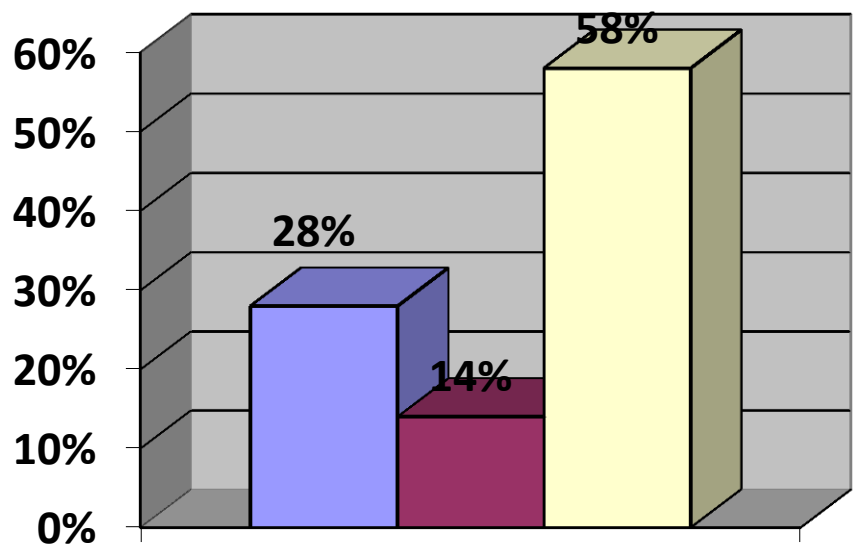


Diagram -1. Lesson options

Thus, 28% of the students who participated in the survey answered that in a decision-making situation they would prefer to choose the study of simulation learning in the MOODLE system. The opinions of the rest of the respondents were divided: 14% of students expressed a desire to listen to the theoretical part in the classroom, and to study practical skills using video lessons and perform tasks remotely, the other 59% of students, on the contrary, would like to study materials remotely, and would prefer practical skills in a simulation center.

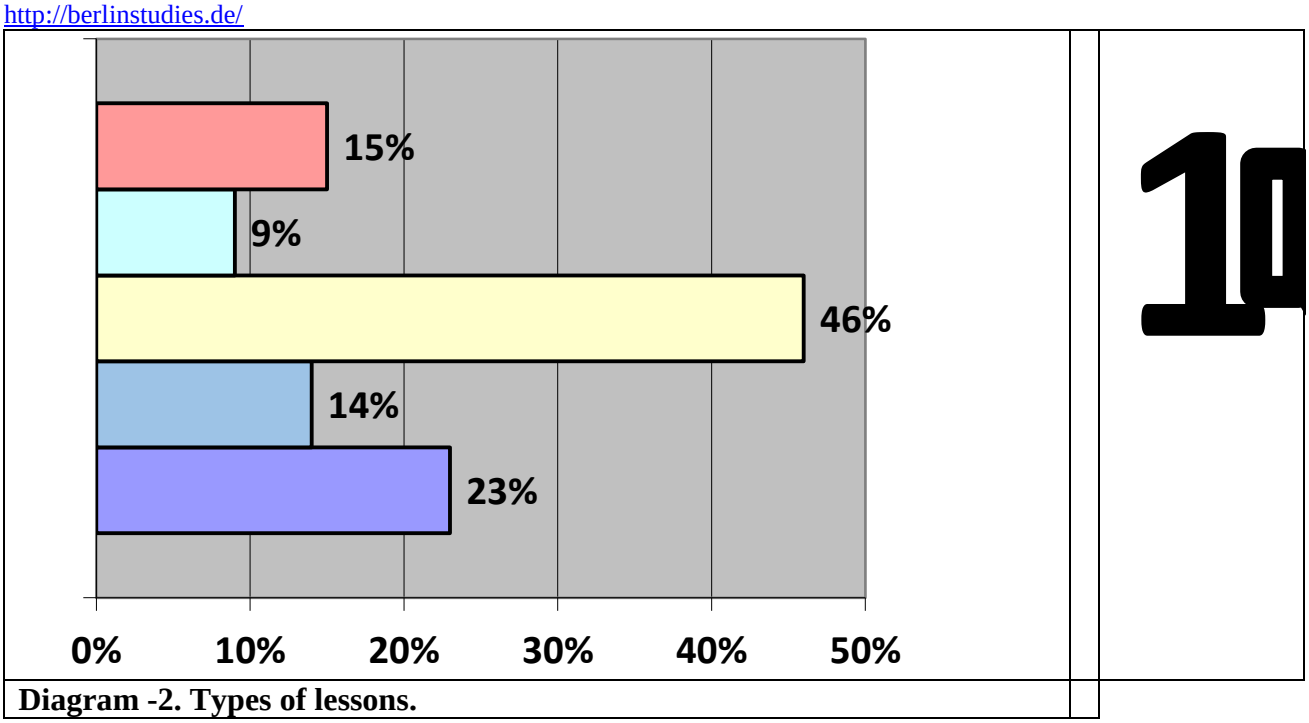


Diagram -2. Types of lessons.

When distributing the forms of the training course according to the degree of their importance, 53% of respondents noted the video of practical skills in general as important (very important, important, rather important), in other forms: 23% - situational tasks, 14% - presentations, 46% - practical assignments with examples, 15% - tests, 9% - independent work (diagram -2).

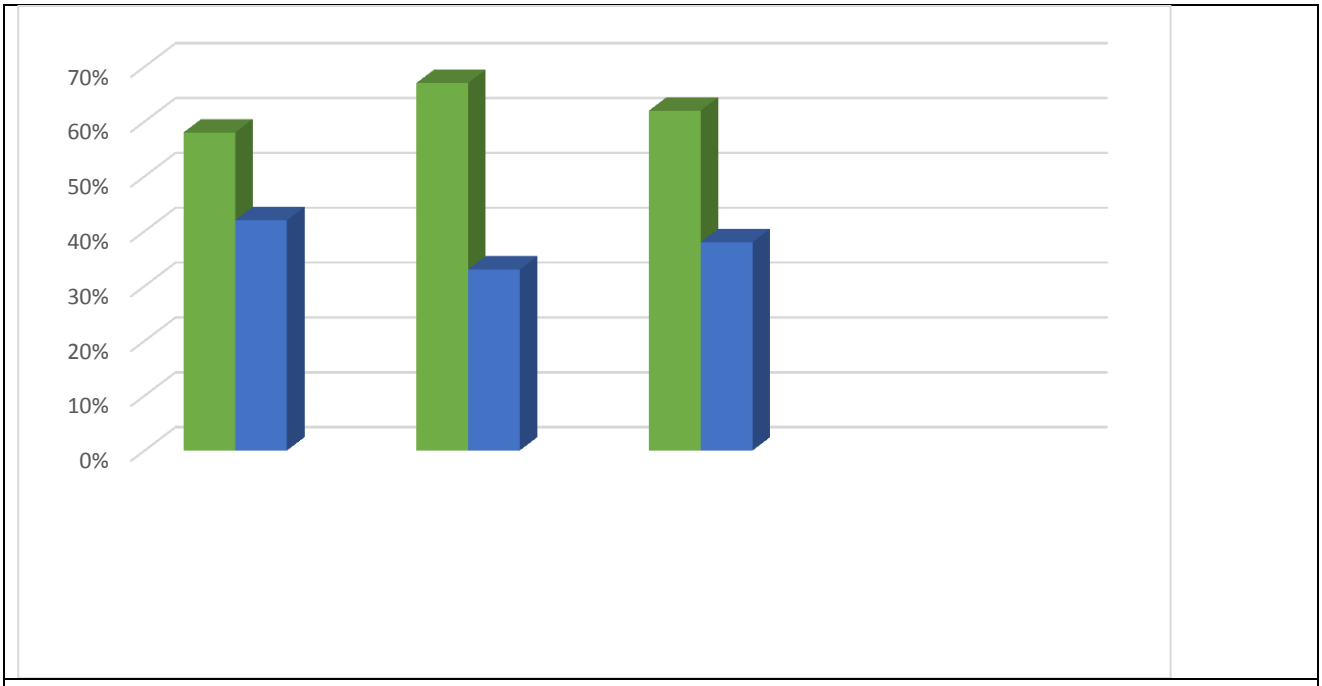


Diagram - 3. The most difficult topics.

The greatest difficulties, according to the students' answers, were caused by the following topics (diagram 3): "Intensive therapy" (62% of bachelor's and 38% of graduate students), "Emergency medical care" (67% of bachelor's and 33% of master's students), "Surgical manipulations" (58% of undergraduate students and 42% of graduate students).

The existing advantages of this course are the provision of great opportunities for medical education in work on improving the quality of medical care, reducing the number of possible complications and medical errors, and also allows for certification of students, objectively determining the level of their professional qualifications, increasing the level of internal motivation for further self-education, rather than the level of external motivation, because a real environment is created that a student can face in his future professional activity.

The disadvantages and problems of introducing and modernizing the curriculum are: the complexity of creating an integrated simulation center that provides a systematic improvement in the quality of medical education; high cost of creating a simulation center that meets international requirements; psychological barriers in the operation of innovative educational technologies on the part of the teaching staff; the need to adapt traditional educational processes (programs) to the conditions of the created simulation centers.

Conclusion. Thus, the experience of creating a course in simulation education indicates that the distance teaching format does not always contribute to the achievement of the set goals for the development of practical skills, the formation of competencies related to knowledge and skills in using modern international and legal documents, as well as principles, rules, approaches to solving urgent problems in the field of medicine.

Conclusions. 1. When improving the methods of simulation training, it is also necessary to foresee the problems that may arise in connection with ensuring the process of full implementation of the future specialist.

2. The introduction of simulation technologies into the practical training of students of medical universities will make it possible to bring all the skills to the degree of automatism and in the future to reduce the level of medical errors.

3. In our opinion, simulation training is not opposed to traditional training “at the patient's bedside”. No matter how high-tech the patient simulator is, it cannot replace a real patient.

4. Education obtained only with the use of simulation technologies will be one-sided, since the multifaceted "patient treatment" will be replaced by the implementation of a limited set of practical skills, albeit worked out in detail. Simulation and bedside learning are complementary parts of modern medical education.

When implementing a simulation learning process, the following **suggestions** should be taken into account:

In the process of implementing a simulation training program in the preparation of students, masters, clinical residents, it is necessary to study the impact of simulation training on the quality of mastering practical skills, especially in the provision of emergency medical care.

To study the characteristics of the survival of practical skills after passing the simulation training. Develop a system of assessment and "check list" for the step-by-step implementation of practical skills and to determine the level of automatism.

It is advisable to implement the process of simulation training in conjunction with the examination of patients in a polyclinic and / or clinic.

Opportunities for the future:

1. Positive results of the pilot project - the course can be adapted to the conditions of the educational process in other medical higher educational institutions.
2. Further development of international cooperation.
3. Implementation of international standards for the quality of medical education.
4. Raising the rating of a medical educational institution.

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