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**STEM-ДИСТАНЦІЙНЕ НАВЧАННЯ ДЛЯ ПІДГОТОВКИ ФАРМАЦЕВТІВ
STEM – DISTANCE LEARNING FOR THE TRAINING OF PHARMACISTS**

In recent years, the STEM (Science, Technology, Engineering and Mathematics) method has gained significant popularity - a curriculum that combines classes in natural sciences, technologies, engineering and mathematics. STEM is traditionally associated with natural sciences (chemistry, medicine) and exact sciences (mathematics, computer science).

The purpose of the work is to highlight the use of STEM - education, including when using distance learning to conduct classes in the disciplines of the chemical unit with pharmacist students.

STEM - education is positioned as a field of training specialists who are able to combine acquired knowledge from the disciplines of the natural and mathematical cycle for the formation of critical thinking, research skills in combination with the humanitarian direction of education. STEM - education creates an educational environment for the development of critical thinking, develops abilities for research, analytical, experimental work, etc.

STEM - distance learning is one of the topical topics at the current stage and is actively used to train specialists of various profiles [1]. Distance - education allows students to study flexibly, gaining the necessary professional knowledge and skills at the same time as basic academic education. This increases their competitiveness in the

labor market and, importantly, significantly reduces the time and money spent on training, which is necessary for employment in the uncertain future. In this sense, distance education actually becomes the "answer" of the higher education system to the development of the population's mass need for "lifelong learning" [2, p.32].

STEM - distance learning combines elements of synchronous asynchronous learning based on modern information technologies. At the same time, all the components that are present in the educational process (goals, content, methods, organizational forms, teaching tools) are preserved, but the form of presentation of the material, the form of interaction between the teacher and students is preserved different [2, p. 34]. Distance learning technology is a system of methods, specific means and forms used to implement the content of education [1].

Google Meet was chosen for the implementation of the remote work mode and for conducting online video lectures and video classes in chemical disciplines, as it is a convenient connection format for students. The teachers of the department establish contact with all students in advance, and everyone receives invitations to lectures and practical classes on the specified day and time, by e-mail and in the calendar.

The university's official e-resources updated the schedule of video lessons daily, and active connection links made it easy for students to connect. After the lectures, students had the opportunity to ask questions and get answers. In addition, students who could not join the online lecture for valid reasons had the opportunity to view the video recording at any time convenient for them using the Google Meet link. Undoubtedly, this type of education will not be able to replace the traditional one and create a student atmosphere in any way, but it solves a significant part of the problems.

In order to improve the educational and cognitive work of students, we use various methods of distance learning, firstly, information-receptive, which consists in independent work of students with educational literature, information databases on chemical disciplines. For this purpose, the department has placed in the Moodle electronic system and the university repository methodical instructions for students for practical classes, lecture materials, methodical materials to ensure independent work of students, a database of control questions, test tasks "KROK-1", created a distance

course on chemical Disciplines Below is a reproductive method by which students can perform a variety of tasks similar to those given in the methodological guidelines, which ensures the formation of practical skills. Since students cannot do practical work in a chemical-analytical laboratory during distance learning, this problem is solved by maximizing the visibility of learning. Special attention is paid to the study of methods of analysis of chemical substances, the acquisition by students of theoretical knowledge that allows to implement the planned analysis algorithm at a high level. For this, electronic training manuals, computer training and monitoring programs have been created; an electronic database of laboratory utensils, reagents, physico-chemical methods of drug analysis has been prepared, where everything is presented in the form of photos, videos, etc. In order to intensify the search for new knowledge, we use the method of problem-based presentation of the material, which consists not only in students' understanding of ready-made scientific conclusions, but also in the development of logical thinking in them. The application of the research method, which is based on the formulation of a problem and the formulation of tasks for its solution, helps students to independently study scientific sources on the specified problem, conduct observations or search actions

Chemical disciplines provide interdisciplinary integration links with natural sciences and special disciplines, aimed at familiarizing students with the laws and principles of information processes in systems of various levels in the field of health care, problems of collection, preservation, processing and transmission of signals and images in the field of health care, decision support in medicine and pharmacy, analysis of information technologies, mathematical and computer modeling [2,c.36]. To introduce a remote STEM approach, we have supplemented and modernized the content of chemical disciplines, covering topics related to STEM - knowledge and skills.

We see the didactic possibilities of distance STEM - education in the teaching of chemical disciplines in the development of a holistic scientific worldview, innovative thinking, research, analytical, creative skills, the formation of STEM - competencies, the implementation of innovative, research and experimental skills in students

activities through the integration of knowledge from natural sciences, technologies, engineering and mathematics with a synergistic combination of traditional and innovative teaching methods, implementation of STEM - oriented interdisciplinary projects in order to ensure the readiness of future pharmacists work in the conditions of high-tech digital health care and further use of STEM - knowledge and skills in professional activities.

The leading component of the implementation of the STEM - distance approach in the teaching of chemical disciplines in our study was the implementation of original, project-oriented, professional-oriented tasks, which were based on the application of STEM - knowledge and skills and the implementation of STEM - scientific and experimental activities of students, which provides an opportunity for advanced training acquiring the skills of creative, creative thinking and holistic natural and scientific training of future pharmacists using a powerful toolkit of digital technologies.

The modernization of higher pharmaceutical education in Ukraine is inextricably linked with the development of the entire society, the characteristic features of which at the present stage are the renewal of the structure and content of education, as well as the renewal of the main means of education. – textbooks. So, for example, in accordance with the main blocks of mandatory disciplines of the curriculum of the professional pre-diploma training of pharmaceutical specialists in 2020–2023, 9 training manuals were printed in English, French and Ukrainian languages (authors L.I. Khmelnikova, G.S. Maslak) on the disciplines natural and scientific (fundamental) training (analytical chemistry, physical chemistry, colloidal chemistry). The introduction of STEM - distance approach as a modern and relevant learning paradigm in a high-tech society, in particular, when teaching the chemical discipline, has proven its effectiveness, significant didactic opportunities and the creation of conditions for the formation of the latest STEM - competencies of future pharmacists.

Distance learning allows you to use the best educational resources and innovative technologies, to form students' skills for continuous learning and professional

development in the future professional career, but it requires multifaceted information support and the use of complex educational and methodological support.

The main result of the introduction of information and communication technologies into the educational process is a partial transition to distance learning. Therefore, the innovative nature of higher education institutions is currently extremely relevant, and distance education in many cases becomes the optimal space for practicing such skills. We are convinced that the result of distance learning should be an education that is acquired at a pace and volume comfortable for the student in a safe environment. A student can independently move between courses and disciplines, classes. The student acquires theoretical knowledge in an online format under the supervision of a teacher, and acquires practical teamwork skills through live communication with teachers and classmates. Education should become more flexible, go beyond the university.

Список джерел:

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