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TEACHING CHEMICAL DISCIPLINES IN THE CONDITIONS OF STEM EDUCATION

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In order to train highly qualified modern specialists and modernize education, the principles of STEM education have been widely implemented in recent years.

The purpose of the work is to use elements of STEM education when conducting 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 [1,2]. STEM education creates an educational environment for the development of critical thinking, develops abilities for research, analytical, experimental work, etc.

It is impossible to list absolutely all educational disciplines that belong to STEM education and are tangential to pharmacy, but even an incomplete list of them makes it possible to understand how important such an education is in the preparation of a future pharmacist. Knowledge related to STEM contributes to the development of bio- and medical-pharmaceutical technologies, the development of new medical-pharmaceutical and diagnostic devices. Creating a reliable and high-quality basis for STEM education through well-thought-out educational programs and filling training courses is one of the most important tasks of teachers of natural disciplines, such as chemistry, biology, physics. It should be noted that Western countries actively popularize STEM education and encourage its development even in primary school [3]. We will give an example of how this direction of education is motivated in the training of medical and pharmaceutical specialists. The main thesis is that specialists can analyze and treat diseases on an individual level thanks to technologies based on statistics, informatics and chemical-biological studies; the study of the protein structure in three-dimensional space and the modeling of changes in this structure

have become possible thanks to mathematical modeling methods, the advent of powerful computers, and also thanks to chemical and biological research.

STEM technologies require students to acquire and develop critical thinking skills, the ability to work both independently and in a team [4]. Before the teacher, one of the main tasks becomes the organization and support of purposeful cognitive activity of students, formation of abilities, skills of scientific and research activities, preparation of educational and teaching-methodical materials containing integrated information of profile disciplines with STEM technologies.

The teachers of the Department of Biochemistry and Medicinal Chemistry, when studying the courses of disciplines of the chemical unit, during preparation for classes, encourage students to develop presentations on the relevant topic, during classes, students demonstrate presentations and comment on them, while acquiring the ability to present their work, connect their research with life, to show independence, purposefulness, perseverance in achieving the solution of the task.

The development of scientific and research skills in students is important, so students participate in various scientific conferences. An example of such activity was the participation of pharmaceutical students in: the second international symposium "Education and health of the younger generation", 2018; VIII and X All-Ukrainian scientific and technical conferences of students, postgraduates and young scientists "Ecological problems of the regions", Dnipro, 2019, 2020; XX All-Ukrainian Conference of Young Scientists and Students on Current Problems of Modern Chemistry, Dnipro, 2022; XVI Mendeleev Readings", March 14-15, 2023, Poltava, 2023; XXI All-Ukrainian conference of young scientists and students on topical issues of modern chemistry, Dnipro, 2023.

In the process of preparing for conferences, students performed a large amount of search and research work aimed at forming general (informational, multicultural, speech, social) and professional (ability to collect, register and analyze data of medical and biological research using appropriate methods and technological means), ability evaluate and interpret the obtained results competencies. Students go from the birth of an idea to its practical implementation and presentation in the form of a presentation. In the process of searching, students develop the ability to think and use the principles of metasubjectivity. Thanks to this, the principles of STEM education are implemented, which combines interdisciplinary and project-based approaches, the basis of which is the integration of natural sciences with technology, engineering skills and mathematics. By creating their reports based on the conducted research, students lay the seeds of future professional competences, namely the ability to: pose a problem, find the connection of the problem with all possible disciplines, formulate the direction of the research and think of ways to solve it, formulate and defend one's own point of view on the existing problem. In this way, the educational process approaches the real, diverse areas of research and professional activity.

We believe that the main goal of science-oriented education in a medical university is to create a personnel training system based on a competency-based approach, focused on the formation and self-realization of a young scientist's personality. Working in this direction, we build classes in chemical disciplines in

such a way that students are not passive observers of the learning process, but act as searchers, which contributes to better memorization of educational material, which was studied independently. Using the elements of STEM education, teachers create appropriate opportunities to activate students' work, increase interest in their own education, use interdisciplinary and project approaches with the aim of integrating natural sciences into modern technologies used in pharmacy. When studying a certain specific topic, educational information is presented in the form of an interdisciplinary integration of several studied disciplines, the material of which is closely related to each other and has practical application in pharmacy. At each lesson, students analyze the studied material, draw conclusions, connect the educational material with life situations, demonstrate the application of the topic's provisions in real life, offer their own vision of the practical use of the acquired knowledge.

Thus, students acquire the skills of critical thinking, formulating and expressing opinions, defending their point of view on the problem being solved, presenting the results of their work in the practical field, revealing creative potential, own abilities, to become interested in studying the disciplines of the natural cycle. Working in the main directions of STEM education, students form important qualities of a future competent specialist.

The use of elements of STEM education in medical and pharmaceutical education contributes to the implementation of state policy, taking into account the new requirements of the Law of Ukraine "On Education" regarding the strengthening of the development of the scientific and technical direction in educational and methodical activities at all levels of education; creation of a scientific and methodological base for increasing the creative potential of young people and the professional competence of specialists.

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