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THE ROLE OF INTERSUBJECT INTEGRATION IN PREPARATION FOR THE LICENSE EXAMINATION

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Abstract. The article reveals the peculiarities of preparation for the licensing exam in the example of teaching the disciplines of pharmacognosy and related disciplines in the context of the implementation of interdisciplinary integration. The approaches to improving the results, which consist of the systematization of knowledge, and the step-by-step preparation for the licensing exam, are highlighted, and the features of creating conditions for the systematization and ordering of pharmacists' knowledge obtained during the training process are revealed.

Key words: interdisciplinary integration, pharmacy, integrated exam, Krok .

Formulation of the problem.

In developed countries, pharmacy occupies a special segment of the market [1], the driving force of which is highly qualified, competitive specialists in the labour market. Therefore, institutions of higher education face the task of preparing innovatively trained specialists who can ensure, in the long term, the continued development of the pharmaceutical industry. To achieve this, it is important not only to create a fundamental and practical base of knowledge and skills but also a new system of monitoring and evaluating educational achievements that are oriented towards the wide use of educational and monitoring tests.

One of these types of control is the license integrated exam, a complex means of standardized diagnostics of the level of professional competence, which is a component of the state certification of students of higher pharmaceutical education institutions, and is an important achievement in the standardization of control of knowledge acquisition. Preparation for this certification stage is important and cannot be considered as the study of a separate discipline, but includes the entire complex of professionally oriented disciplines.

Aspects of interdisciplinary integration and substantiation of the possibilities of complex problem solving by the method of broad integration of information acquired during the study of various disciplines are reflected in the works of scientists M. Antonov, M. Artsyshevska, V. Bezpalko, T. Brazhe, O. Vozniuk, E. Glinska, M. Danilov, M. Makhmutov, I. Ogorodnikov, I. Zamorskyi, several scientific publications introduce the methodology and features of preparation for the



preparation of various stages of the integrated licensing exam "Krok" (O. Sorokina, V. Demydenko, S. Gordiychuk), reflect the dynamics and current state of the success of the ILE "Krok" O. Lysechenko, T. Boyko. At the same time, there are still a large number of debatable issues regarding the specifics of the implementation of interdisciplinary integration in the context of preparation for the licensing exam.

The aim of the work is to reveal the peculiarities of the implementation of interdisciplinary integration in the context of preparation for the licensure exam on the example of teaching the disciplines of pharmacognosy and to create conditions for systematizing and organizing the knowledge of pharmacists, which was obtained at a higher education institution.

Research results.

In March 2018, the Cabinet of Ministers of Ukraine adopted a resolution, according to which a integrated licensing exam will be implemented starting in 2019, which will consist of an ILE ("Krok-2") and a structured practical exam, during which the practical skills of the graduate will be tested. The introduction of such an exam allows you to create a comprehensive approach to assessing the knowledge of future specialists [2]. The integrated test exam is conducted by the requirements for the training of specialists by educational and qualification level, the content of which is approved by the Ministry of Health of Ukraine and corresponds to educational and professional programs [3]. The purpose of the exam is to verify the level of professional competencies of applicants of a higher education institution, determined by the requirements of the standards of higher education, developed by the state organization "Center for Testing the Professional Competence of Specialists with Higher Education in the Fields of Training "Medicine" and "Pharmacy" at the Ministry of Health of Ukraine [4]. Professional competence is defined as the ability to apply the knowledge acquired during training, and skills to solve typical types of professional activity of a specialist in a relevant position, including technologies for the production of medicinal products and active pharmaceutical ingredients, pharmaceutical development of medicinal products, development of new and improvement of existing technologies, quality control of raw materials, intermediate products and finished pharmaceutical preparations, as well as consulting, provision of information on medicinal products, regulation of providing the population with medicinal products.

The primary link in preparing for the exam is a systematic and thorough preparation for practical classes, attendance at lectures, participation in the work of student scientific circles, and preparation of individual works and reports, with the possibility of further speeches at student scientific conferences. The licensure exam is based on the industry standards of higher education, which are determined by the curriculum of the discipline, so the main source for preparing for the licensure exam is the standard educational materials that students use during the study of the discipline - textbooks, lecture texts, practicals, regulatory documents. The complexity of classroom and extracurricular work will ensure that the student acquires thorough basic and professional knowledge, and the systematic study and repetition of the educational material consolidates the acquired knowledge.

One of the disciplines that are professionally oriented and are included in the



assessment of the level of professional competence at the second level (Krok 2) is pharmacognosy, the study of which forms the professional knowledge, skills and abilities of a Master of Pharmacy. It provides the future specialist with comprehensive knowledge of medicinal plants, and medicinal plant raw materials, and contributes to the formation of the necessary outlook on the rational use of natural plant resources, their protection and reproduction. In addition, pharmacognosy is a highly specialized applied science that studies the biological, biochemical and medicinal properties of plants, natural raw materials and their products. Herbal remedies are traditional medicines both in our country and in many other countries, and their use in modern medicine not only remains stable but also has a steady growth trend. In modern medicine, the importance of manufacturing new drugs based on plant raw materials is constantly growing, which is due to the low toxicity and biological safety for the body of most herbal remedies, as well as the specific features of their activity: a significant breadth of the therapeutic spectrum, the gradual increase of the clinical-pharmacological effect, the complexity of the effect on various mechanisms of the pathological process, relatively infrequent manifestations of allergic and other negative reactions even in conditions of their long-term use.

Pharmacognostic training involves theoretical and practical training of a master of pharmacy in the main types of professional activity in the field of medicinal products of plant origin, requires solving tasks, starting from the development of a system of rational natural use of medicinal plant resources, procurement of medicinal plant raw materials, ending with its processing and obtaining in the form of medicinal products. For this, a specialist must be able to correctly and timely harvest, and dry raw materials, bring them to a standard state, process them into various medicinal products, and also conduct their analysis. If necessary, he should be able to provide professional advice to the doctor on the selection of optimal medicinal products of plant origin [5].

Pharmacognosy is based on knowledge acquired by students in the study of Latin, pharmaceutical botany, organic, biological and analytical chemistry, biophysics, physical and colloidal chemistry, and normal and pathological human physiology. The foundation of theoretical basis of pharmacognosy is the accumulated knowledge of the fundamental disciplines of chemistry: organic, inorganic, biological, and colloidal [6,7]. When studying these subjects, knowledge of the physical and chemical properties of natural organic substances, methods of separation, purification and identification of compounds is necessary. In the course of analytical chemistry, knowledge of the theoretical foundations of analysis is acquired: chromatography, titrimetry, photoelectrocolorimetry, spectrophotometry; ability to work on devices, titration and chromatography skills. From the course of physiology with pathology, knowledge of the main physiological processes and an idea of the pathogenesis of diseases subject to phytotherapeutic treatment, knowledge of the basic laws and categories of dialectics, necessary for understanding the constancy and variability of the chemical composition of medicinal plants, the dependence of action on the composition of biologically active substances and other phenomena, are necessary for contribute to the formation of professional thinking. The Latin language



course provides knowledge of the basics of the grammar of the Latin names of medicinal plants and plant raw materials, morphological groups of raw materials, and the ability to write prescriptions. Knowledge of pharmacognosy lays the foundation for students to study pharmaceutical and toxicological chemistry, pharmacology, drug technology, organization and economics of pharmacy, as well as pharmacology and pharmacotherapy, which involves the integration of teaching with these disciplines. Knowledge of pharmacognosy will help when studying the methods of analysis of biologically active substances of plants in the course of pharmaceutical chemistry.

Integration with the technology of drugs occurs in the section of studying the technology of galenic and neogalenic drugs and dosage forms that include objects of plant origin.

Interaction with the organization of the economy in pharmacy is carried out through integration in matters of procurement, storage of medicinal plant raw materials and preparations based on them, as well as the sale of herbal preparations. The issue of the use and pharmacological action of herbal preparations, interchangeability and study of possible side effects is integrated with pharmacology and pharmacotherapy.

The first step in preparing for the licensing exam is the systematic study and repetition of the educational material using textbooks, study guides, educational and methodological literature (recommended in the learning process) and materials from the most authoritative Internet resources. The availability of online courses is particularly effective for learning the material and ensuring students' preparation for taking the "Krok. 2" because the materials of the discipline are reflected in electronic content, which can be conveniently and quickly obtained at a time convenient for the student and from any gadget. Information provision not only ensures the solution of professional issues but also the creation of an individual trajectory of studying the discipline and perception of information [8]. The use of information and communication technologies in the educational process is extremely relevant in our time, the time of the pandemic and state of emergency, and provides an opportunity to promote the emergence of new forms of work: e-learning and blended learning. The use of Internet conferences makes it possible to involve teachers of pharmaceutical botany and pharmacognosy and medical and pharmaceutical chemistry at the same time for consultation when analyzing tests that contain qualitative reactions, which makes it possible to approach the task more thoroughly.

The second stage of students' training is self-monitoring of their knowledge using test tasks, for which both tasks from official test databases and those created by teachers are used. In the educational institution, tasks composed based on interdisciplinary integration are used. The method of composing test tasks is based on the combination of acquired knowledge in chemistry, since the need to develop tests by teachers is dictated by ensuring the adequacy of the content of the test and the content of the educational material. The next category is the preparation of a content-valid test, an indicator that determines how adequately the studied phenomena are reflected, that is, exactly the results for which it is intended [7, 8]. For this purpose, a permanent "bank" of test exchange between teachers of adjacent departments has been created, which facilitates the efforts of those who develop tests, and also makes



the tests more widespread and convincing. The cooperation of teachers at the stage of developing test tasks is important because when studying a discipline, attention is focused on those points that will be used later in the next stage.

The next stage of creating conditions for the systematization and ordering of pharmacists' knowledge during self-monitoring of their knowledge with the help of test tasks is the use of the "pyramid" algorithm. This scenario consists of the fact that the questions to which the students give the wrong answer appear in the process of testing the student several times, as well as in the testing of the discipline that is involved in the content of the task. This step forces the student to turn to the theoretical base of several disciplines during preparation.

The test database is located in the distance learning server, which allows for constant monitoring of students' self-training and correction of this process. The use of remote computer technologies at the faculty made it possible to quickly return the student to a large body of knowledge from past disciplines and provide him with a tool for independent training.

Distance testing is a technology based on the application of traditional and innovative means and forms of learning that use computer and telecommunication technologies

To successfully pass the integrated licensing exam "Krok 2. Pharmacy", the Bukovyna State Medical University has developed and implemented several measures to improve the quality of student training. In particular, only those students who successfully passed the test control in the discipline were allowed to take the final modular control in the disciplines that are included in the structures of ILE. Schedules of consultations and test sections in the relevant disciplines on paper and electronic media have been developed. The schedule for conducting rector's control works in the computer classroom and on paper, media has been developed. A weekly analysis of the preparation of students of the Faculty of Pharmacy for taking the ILE "Krok 2. Pharmacy" was conducted, as an analysis of the tests from which students made mistakes most often.

One of the leading and final stages is student testing in paper form within the framework of a higher education institution in compliance with the requirements of the Testing Center. Therefore, successful attestation depends on the systematization and ordering of students' knowledge, the application of appropriate teaching methods, the creation of training conditions, appropriate control, as well as the successful contact of the teacher with the student, and the implementation of the principles of interdisciplinary integration during classes and consultations contribute to the effective synthesis of scientific knowledge.

Conclusions.

The proposed mechanisms of integration in the educational sphere ensure the implementation of interdisciplinary connections, which affect both the quality of specialized training and the results of preparation for the licensing exam.

The wide implementation of information technologies based on various computer systems in the educational process provides a technological opportunity to ensure obtaining objective information about the quality of training of pharmacists, contributes to the competitiveness of pharmaceutical education in Ukraine.



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