



ORGANIZATIONAL AND PEDAGOGICAL CONDITIONS OF DISTANCE LEARNING FOR FUTURE MASTERS IN PHARMACY

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Abstract.

Relevance: the rapid spread of viral diseases worldwide requires a focus on the introduction of distance learning for future Masters of Pharmacy in such disciplines as Microbiology, Virology and Immunology. Hence, it is necessary to determine and substantiate the organizational and pedagogical conditions of distance learning of future Masters of Pharmacy in the period of spread of viral diseases. We are talking about external, internal and technological organizational and pedagogical conditions. The implementation of these conditions involves the creation of information and educational environment as a web resource with electronic audiences in higher medical educational institutions.

Purpose: is to substantiate and highlight the organizational and pedagogical conditions of distance learning of future Masters of Pharmacy during the spread of viral diseases.

Methods: theoretical research methods: analysis of sources and literature on the problem to identify the state of the research question in pedagogical theory and practice, synthesis, generalization.

Results: it has been investigated that the current state of spread of viral diseases determines the search and introduction of new technologies (digital) and forms of training of pharmacists that will contribute to the continuous updating of their knowledge and skills; it has been found that in the conditions of quarantine, distance learning of future specialists of the pharmaceutical industry allows to form professional competencies on the basis of individual training of students of pharmaceutical education.

Conclusions. In the period of spread of viral diseases, the effectiveness of distance learning of future Masters of Pharmacy requires the provision of the necessary external, internal and technological organizational and pedagogical conditions. Their implementation makes it possible to: ensure the individualization of education by students online and offline; form practical skills, master professional competencies. Distance learning of future Masters of Pharmacy has a number of obvious advantages over the classroom form of education: the guaranteed fast and remote access to the latest pharmaceutical content is given; educational information and other materials are constantly updated from official sources of pharmaceutical and medical companies; there is an opportunity to get acquainted with the professional experience of pharmaceutical and medical companies, their professional experience, technological features of the production process in accordance with the needs of students; opportunities are open for the organization of independent work of students.

Keywords: *distance learning, future Masters of Pharmacy, medical institutions of higher education, organizational and pedagogical conditions.*

Introduction. One of the important components of the education system of Ukraine is higher pharmaceutical education, because its functionality is aimed at the formation of professional competencies of human resources in the field of country's health care.

In turn, the trained highly-competent pharmaceutical workers focus their knowledge and skills on strengthening and maintaining public health. However, the current state of coverage of the population of Ukraine with viral diseases encourages the search for

and implementation of new technologies for the training of future Masters of Pharmacy, including distance learning, for the formation of professional competencies. The development of digital technologies in recent years necessitates their introduction into the educational process of training the pharmaceutical workers. This will ultimately meet current trends, demands and the updated needs of the information society.

Materials. Problems of distance medical science and online education of future pharmacists are mentioned in the works of scientists: F. Gizeh, E. Gordienko, J. Gromov, G. Korytari, A. Chirikov, M. Valyashko and others. The issue of digitalization of education is the subject of research by O. Bazelyuk, A. Gurzhiy, L. Kartashova, S. Kravets, V. Kruchek, V. Oliynyk, O. Spirin, N. Stuchynska, O. Piminov and others. The results of research on the development of pharmaceutical education and training of specialists in the pharmaceutical industry are revealed in the works of scientists: K. Amosova, D. Volokh, B. Gromovyk, B. Zimenkovsky, I. Zupanets, Z. Mnushko, T. Kalyniuk, L. Kaidalova, A. Nemchenko, M. Syatin, V. Tolochko, J. Tsekhmister, V. Chernykh, O. Chaly and others. Some issues of the research problem were outlined by the author in the following publications: "Continuous professional training of pharmaceutical industry employees by remote technologies" (Klos, 2019a), "Distance learning of future Masters of Pharmacy: problems and solutions" (Klos, 2019b), "Trends in the training of pharmaceutical professionals: foreign experience" (Klos, 2019c), "Digital learning environment for pharmaceutical professionals: a balance between theory and practice" (Klos, 2019d).

The article aims to substantiate and highlight the peculiarities of distance learning of future Masters of Pharmacy in the context of escalating viral diseases.

Research methods: theoretical research methods – analysis of sources and literature on the problem to identify the state of the research question in pedagogical theory and practice, synthesis, generalization.

Results and discussion. The important task in the formation of professional competencies of future Masters of Pharmacy in the medical institution of higher education is to provide the latest knowledge in Microbiology, Virology and Immunology. The importance of these sciences is associated with the anthropogenic impact on the microbiological world, the spread of opportunistic diseases, emergent viral infections. Pharmacists should always be informed about the health status of the population, the types of diseases and pathogens that cause them. This is explained by the fact that pharmacists (quite often, simultaneously with the sale of medicine) have to deal

with the selection of their analogues, search for alternative solutions, provide pharmaceutical care to patients. Pharmacists must be able to independently and responsibly determine over-the-counter medicine, especially in times of mass morbidity – epidemics and pandemics. Also, the content of professional training of future Masters of Pharmacy involves taking into account compliance with the norms, regulations and standards of the European Higher Pharmaceutical Education Area. The result of such training will be highly qualified pharmaceutical specialists who, in addition to professional qualities, will have a high level of mobility and competitiveness not only in the national but also in the world labor markets.

The need for such pharmaceutical workers is due to:

– first, clear progressive lines of development of medical and pharmaceutical industries – there are trends in updating industry technologies, tools and devices for professional use;

– secondly, relevant demographic trends, such as: an increase in the number of diseases associated with people's lifestyles; state of ecology; life expectancy; chronic diseases, etc.

Constantly, variable requirements to the professional competencies of specialists in the pharmaceutical industry actualize the introduction of distance learning in the training of future Masters of Pharmacy. After all, during the studies at the medical educational institution, they must acquire a fairly comprehensive system of integrated knowledge and skills in such subjects as Microbiology, Virology and Immunology, which will be used in further professional activities. At the same time, it should be noted that events related to the epidemic spread of influenza, measles, tuberculosis, coronavirus and other diseases determine the need for future Masters trained to provide informational assistance to patients in choosing prophylactic medicine.

Due to the introduction of quarantine, in order to prevent the spread of coronavirus infection in Ukraine, higher educational institutions (HEIs) have introduced distance learning for all students. That is why our study focuses on the features of distance learning of future Masters of Pharmacy. Currently, the process of teaching Microbiology, Virology and Immunology requires the development of innovative learning technologies taking into account the specifics of viral diseases, improving the forms of learning and interaction of teachers and students at a distance mode.

The observance of the provisions of the Code of Ethics for Pharmaceutical Workers of Ukraine (2012) is quite important for future Masters of Pharmacy. Among the provisions the main ones are: disease prevention, preservation and promotion of human

health. To this end, they must be competent in the pharmaceutical industry, constantly deepen their professional knowledge and skills, provide quality pharmaceutical advice on the issue of possible spread of counterfeit medicine, take an active part in health education.

The professional activity of future Masters of the pharmaceutical industry necessitates the formation of professional knowledge (Microbiology, Virology and Immunology), skills, responsible attitude and medical values. According to the "Standard of Higher Education of Ukraine", the ability of future Masters of Pharmacy to carry out professional practice in the interests of public health safety is updated. They should also be able to work with other health safety professionals. Regarding the concept of professional competence of provisor, I. Koniashyna (2017, p. 208) notes that it is "a personal formation that provides quality professional performance and includes analytical, communicative processes and provides the process of development and self-development of the individual. It consists of experience, theoretical knowledge, practical skills, personal qualities that ensure the effective implementation of professional activities, the ability to solve problems of varying complexity on the basis of existing knowledge and experience.

Based on the above, future Masters of Pharmacy should have continuous access to new content of pharmaceutical education through electronic resources. In addition, innovative learning technologies aimed at introducing changes in the educational process of medical higher educational institution (MHEI) should be applied, the derivative of which will be a rethinking of attitudes to future professional activities.

The analysis of the process of training pharmacists and the obtained results allow us to believe that the current state of use of digital technologies (DT) in higher medical education needs to be improved. That is why there is a need to use digitalization tools, the properties of which will allow not only to quickly select, analyze, systematize, accumulate and continuously update innovative information as educational material. Future Masters of Pharmacy should have open access to scientific material to be obtained from the latest information sources – this will contribute to the continuity of their professional development, increase the level of professional competencies and provide innovation with theoretical knowledge and practical skills (Radkevych, 2019, pp. 128-139).

This involves determining the organizational and pedagogical conditions of distance learning of Microbiology, Virology and Immunology of future Masters of Pharmacy, the content of these subjects.

Under the organizational and pedagogical conditions, the author understands a set of factors that provide: regulation, interaction of objects and phenomena of the educational process to achieve this goal; improving interpersonal relationships of participants in the educational process; solving specific didactic tasks; intensification of educational activities of future pharmaceutical specialists, formation of their self-study, motivation and professional interests.

In providing organizational and pedagogical conditions for distance learning of Microbiology, Virology and Immunology of future Masters of Pharmacy, it is advisable to take into account the specifics of the educational process of higher educational institution and the essence of the professional activity of pharmacists; as well as the possibility of their implementation as individual components of the education system and the educational process as a whole.

Organizational and pedagogical conditions can be conditionally divided into necessary (mandatory) and sufficient. Under the necessary conditions of distance learning of Microbiology, Virology and Immunology of future Masters of Pharmacy we understand the conditions without which the purpose of training can not be achieved; and under sufficient conditions we mean the ones, which are sufficient to obtain positive results. These organizational and pedagogical conditions are divided into three categories – external, internal and technological. External organizational and pedagogical conditions are aimed at creating an innovative learning environment – information and educational environment in order: to form theoretical and practical knowledge of Epidemiology, Morphology and Physiology of pathogens of infectious diseases, the pathogenesis of infectious diseases; providing professional knowledge and practical skills to determine the effectiveness of antimicrobial, antiviral and immunobiological medicine; pharmaceutical competencies in the health care system (including specific prevention of infectious diseases, promotion of the healthy lifestyle, advice on issues of safety and rational use of medicine and medical devices); competencies in the field of providing pharmaceutical care to the population; organizational, managerial competencies; professional and personal competencies, as well as content optimization, updating the forms and means of organizing the educational process.

Internal organizational and pedagogical conditions are determined by the personal capabilities and abilities of each individual student and are aimed at forming: the ability of the individual to carry out professional practice in the interests of public health safety; motivation to obtain professional knowledge through

the inclusion of Masters of Pharmacy in professionally oriented practice; positive attitude to the future profession.

The importance of providing technological organizational and pedagogical conditions, namely: technical and scientific-methodological support (educational and instructional materials) of distance learning of Microbiology, Virology and Immunology of future Masters of Pharmacy is updated in accordance with the priorities of the digital society, the introduction of information and digital technologies in the educational process, the use of electronic education management systems.

Thus, the organizational and pedagogical conditions of distance learning of Microbiology, Virology and Immunology of future Masters of Pharmacy as a set of tools, methods, actions and technologies are reasoned. They ensure the achievement of effective changes in the training of Masters of Pharmacy in higher educational institution and promote the level increase of formation of their pharmaceutical competences, stimulation of their cognitive activity of future Masters of Pharmacy and increase motivation to study.

According to the author's vision, organizational and pedagogical conditions of distance learning of Microbiology, Virology and Immunology of future Masters of Pharmacy will positively contribute to the formation of innovative orientation of educational activities, motivational atmosphere, creative approach to innovation introduction. The unifying factor of all categories of organizational and pedagogical conditions (external, internal, technological) is the development of information and educational environment (IEE) in higher educational institution (HEI), continuous access to which is provided to future Masters of Pharmacy (Fig. 1). The structure of IEE as a web resource should have an internal subject (disciplinary) distribution to electronic audiences, where students have access to reliable scientific information about infectious diseases, pathogens that cause them, their specific and nonspecific prevention, treatment methods, as well as online consultations from tutors (Fig. 2).

Professionally oriented information and educational environment is a space for real interaction of participants in the educational process, where the professional development of everyone is optimized. The mission of IEE is to provide practical and theoretical assistance to future Masters of Pharmacy in acquiring knowledge, developing skills and abilities; to be able and mobile to lifelong learning (Hurzhii, 2019, pp. 22-26).

All IEE components are available on different operating systems; they are intuitively understandable;

easily adapt to the hardware and software of different versions of the user (computer, tablet, laptop, etc.) of any configuration, regardless of the year of manufacture, brand and model; interconnected and at the same time independent of each other (each is a separate platform that is connected with a common system) – this facilitates the problem of loading them; dynamic, may be subject to administrative adjustment; have the same type, simple, clear interface that is attractive to users with different levels of readiness to use digital technologies; do not require special user training courses; open and personally oriented in their didactic and organizational content.

In the e-classroom, the teacher downloads teaching materials, communicates with students both online and offline. In turn, each student receives personal input (login and password), according to which he has free access to the e-audience in which the educational process takes place.

The organization of the process of teaching Microbiology, Virology and Immunology of future Masters of Pharmacy in the conditions of IEE depends on: objective factors (means of managing the interaction of objects and phenomena of the educational process, interpersonal relationships of participants in the educational process to perform professionally oriented didactic tasks, revitalization of educational-cognitive activities of future pharmacists, which encourage the use of the activity approach); subjective factors (taking into account the personal qualities of participants in the educational process, the level of their skills of independent work, motivation, professional interests, which encourage the use of personality-oriented approach).

Conclusions. In the period of spread of viral diseases, the effectiveness of distance learning of future Masters of Pharmacy requires the provision of the necessary external, internal and technological organizational and pedagogical conditions. Their implementation makes it possible to: ensure the individualization of education of students online and offline; form practical skills, master professional competencies. Distance learning of future Masters of Pharmacy has a number of obvious advantages over the classroom form of education: the guaranteed fast and remote access to the latest pharmaceutical content is given; educational information and other materials are constantly updated from official sources of pharmaceutical and medical companies; there is an opportunity to get acquainted with the professional experience of pharmaceutical and medical companies, their professional experience, technological features of the production process in accordance with the needs of students; opportunities are open for the organization of independent work of students.



Fig.1. Information and educational environment for distance learning of Microbiology, Virology and Immunology of future Masters of Pharmacy

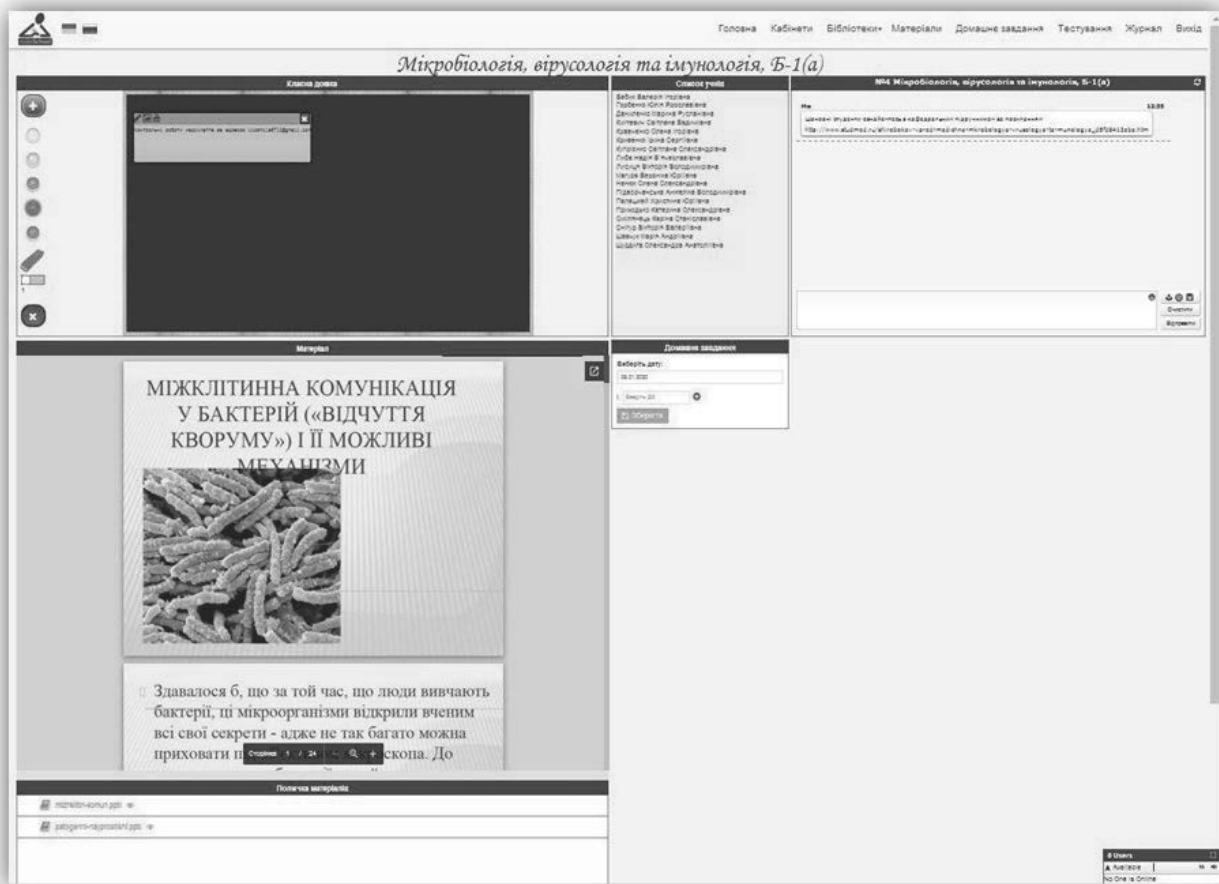


Fig.2. Electronic audience (e-audience) of information and educational environment

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Організаційно-педагогічні умови дистанційного навчання майбутніх магістрів фармації

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Реферат.

Актуальність: стрімке поширення в усьому світі вірусних захворювань потребує зосередження уваги на запровадження дистанційного навчання майбутніх магістрів фармації із таких дисциплін, як мікробіологія, вірусологія та імунологія. З огляду на це, зумовлюється необхідність визначення та обґрунтування організаційно-педагогічних умов дистанційного навчання майбутніх магістрів фармації в період поширення вірусних захворювань. Йдеться про зовнішні, внутрішні та технологічні організаційно-педагогічні умови. Реалізація цих умов передбачає створення у вищих медичних закладах освіти інформаційно-освітнього навчального середовища як веб-ресурсу з електронними аудиторіями.

Мета: полягає в обґрунтуванні та висвітленні організаційно-педагогічних умов дистанційного навчання майбутніх магістрів фармації в період поширення вірусних захворювань.

Методи: теоретичні методи дослідження: аналіз джерел та літератури з проблеми для виявлення стану досліджуваного питання в педагогічній теорії та практиці, синтез, узагальнення.

Результати: досліджено, що нинішній стан поширення вірусних захворювань детермінує пошук і запровадження нових технологій (цифрових) і форм підготовки фармацевтів, що сприятимуть безперервному оновленню їхніх знань та вмінь; виявлено, що в умовах карантину дистанційне навчання майбутніх фахівців фармацевтичної галузі дає змогу формувати професійні компетентності на основі індивідуального навчання здобувачів фармацевтичної освіти.

Висновки. У період поширення вірусних захворювань ефективність дистанційного навчання майбутніх магістрів фармації потребує забезпечення необхідних для цього зовнішніх, внутрішніх та технологічних організаційно-педагогічних умов. Їх реалізація дає змогу: забезпечити індивідуалізацію навчання здобувачів освіти в режимі online та offline; формувати практичні навички, оволодівати професійними компетентностями. Дистанційне навчання майбутніх магістрів фармації має низку очевидних переваг над аудиторною формою здобуття освіти: надається гарантований швидкий та віддалений доступ до найновішого фармацевтичного контенту; навчальна інформація та інші матеріали безперервно оновлюються з офіційних джерел фармацевтичних та медичних компаній; є можливість ознайомлення із професійним досвідом фармацевтичних і медичних компаній, їхнім професійним досвідом, технологічними особливостями виробничого процесу відповідно до потреб здобувачів освіти; відкриваються можливості для організації самостійної роботи здобувачів освіти.

Ключові слова: *дистанційне навчання, майбутні магістри фармації, медичні заклади вищої освіти, організаційно-педагогічні умови.*

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