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## Features of teaching the fundamental and optional subjects to foreign applicants for higher education at the Department of Microbiology, Virology and Immunology of the National University of Pharmacy

**Aim.** To generalize the experience in teaching the fundamental and optional subjects at the Department of Microbiology, Virology and Immunology, find new methodological and pedagogical techniques in order to optimize the assimilation of basic medical concepts and skills among foreign applicants for higher education.

**Materials and methods.** Within the framework of this study the modern data on methods and aids in teaching were studied, approaches to teaching the disciplines of the biomedical profile, such as “Microbiology with the basics of immunology” as a fundamental subject, and disciplines “Epidemiology of diseases” and “Tropical infections” as optional subjects for foreign applicants for higher education at the Department of Microbiology, Virology and Immunology of the National University of Pharmacy were systematized and analyzed.

**Results and discussion.** The discipline “Microbiology with the basics of immunology” refers to the fundamental disciplines of the biomedical profile, which is studied by foreign applicants for higher education of the pharmaceutical faculty. At the Department of Microbiology, Virology and Immunology of the National University of Pharmacy various modern methodological techniques are used when conducting lectures, practical classes and seminars. In the educational process modern methods of teaching, monitoring and assessing knowledge are widely used in the form of a computer survey that involves foreign students in the process of mastering computer technologies aimed at forming their knowledge; it helps to successfully solve educational problems within the classroom setting. The widespread use of the test control of knowledge is an important means of increasing the effectiveness of the educational process. The inclusion of interactive forms in the educational process relieves the nervous load of students, makes it possible to change the forms of activity, switch attention to the key issues of the topic of the lessons. It is also methodologically interesting to conduct practical classes in the form of a discussion abstract conference, as well as the use of role-playing games. All this allows an objective assessment of the student’s preparation for the lesson, develops communication skills, creative thinking, an active life position, the ability to formulate thoughts using professional terms, forms public speaking skills, forms stereotypes of professional behavior and their correction in communication.

**Conclusions.** In recent years, the Ukrainian education system has been undergoing modernization of the learning process. Constant changes open up the need for each teacher to search for such pedagogical technologies that will motivate students, will make them interested in studying the discipline. This is especially true for such a category of students as foreign students. Thus, for the successful formation of effective educational activities of foreign students it is necessary to have modern educational and methodological literature, creative organization of the students’ independent work aimed at the wide use of active teaching methods (group discussions, business games), the effective work with information, setting and solving scientific practical problems, the participation of teachers and students in joint research work.

**Key words:** *forms of teaching; applicants for higher education; practical lessons; teaching methods; microbiology; innovative methods*

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### Особливості викладання фундаментальних і факультативних дисциплін для іноземних здобувачів вищої освіти на кафедрі мікробіології, вірусології та імунології Національного фармацевтичного університету

**Мета.** Узагальнення досвіду викладання обов'язкових і факультативних дисциплін на кафедрі мікробіології, вірусології та імунології, пошук нових методологічних і педагогічних прийомів для оптимізації засвоєння базових медичних понять і навичок іноземними здобувачами вищої освіти.

**Матеріали та методи.** У межах цього дослідження було вивчено сучасні дані про методи та засоби навчання, систематизовано та проаналізовано підходи до викладання іноземним здобувачам вищої освіти на кафедрі мікробіології, вірусології та імунології Національного фармацевтичного університету дисциплін медико-біологічного профілю – «Мікробіологія з основами імунології» як предмета обов'язкового і «Епідеміологія хвороб» та «Тропічні інфекції» як предметів за вибором.

**Результати та їх обговорення.** Дисципліна «Мікробіологія з основами імунології» належить до фундаментальних дисциплін біомедицинського профілю, що вивчають іноземні здобувачі вищої освіти фармацевтичного факультету. На кафедрі мікробіології, вірусології та імунології Національного фармацевтичного університету використовують різні сучасні методичні прийоми під час проведення лекцій, практичних і семінарських занять. У навчальному процесі широко застосовують сучасні методи навчання, контролю і оцінки знань у вигляді комп'ютерного опитування, що залучає іноземних студентів до процесу освоєння комп'ютерних технологій, спрямованих на формування знань, і допомагає успішно розв'язувати навчальні завдання під час аудиторних занять. Широке використання тестового контролю знань – важливий засіб підвищення ефективності навчального процесу. Залучення інтерактивних форм у навчальному процесі знімає нервову навантаження студентів, дає можливість змінити форми діяльності, зосередити увагу на ключових питаннях теми занять. Також методично цікавим є проведення практичних занять у вигляді дискусійної реферативної конференції та використання рольових ігор. Все це дозволяє об'єктивно оцінити підготовку студента до заняття, розвиває комунікативні навички, творче мислення, активну життєву позицію, вміння формулювати думку з використанням професійних термінів, формує навички публічних виступів, стереотипи професійної поведінки та їх корекцію у спілкуванні.

**Висновки.** Протягом останніх років українська система освіти зазнає модернізації процесу навчання. Постійні зміни відкривають перед кожним педагогом необхідність пошуку таких педагогічних технологій, що будуть мотивувати учнів, дозволять зацікавити їх у вивченні дисципліни. Особливо це стосується такої категорії здобувачів вищої освіти, як іноземні студенти. Отже, для успішного створення ефективною навчальною діяльністю іноземних здобувачів вищої освіти необхідна наявність сучасної навчально-методичної літератури, креативна організація самостійної роботи, що спрямована на широке використання активних методів навчання (групових дискусій, ділових ігор), ефективна робота з інформацією, постановка й розв'язання науково-практичних проблем та участь викладачів і студентів у спільній науково-дослідній роботі.

**Ключові слова:** форми навчання; здобувачі вищої освіти; практичні заняття; методика викладання; мікробіологія; інноваційні методи

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### **Особенности преподавания фундаментальных и факультативных дисциплин для иностранных соискателей высшего образования на кафедре микробиологии, вирусологии и иммунологии Национального фармацевтического университета**

**Цель.** Обобщение опыта преподавания обязательных и факультативных дисциплин на кафедре микробиологии, вирусологии и иммунологии, поиск новых методологических и педагогических приемов для оптимизации усвоения базовых медицинских понятий и навыков у иностранных соискателей высшего образования.

**Материалы и методы.** В рамках настоящего исследования были изучены современные данные о методах и средствах обучения, систематизированы и проанализированы подходы к преподаванию иностранным соискателям высшего образования на кафедре микробиологии, вирусологии и иммунологии Национального фармацевтического университета дисциплин медико-биологического профиля – «Микробиология с основами иммунологии» как предмета обязательного и «Эпидемиология болезней» и «Тропические инфекции» как предметов по выбору.

**Результаты и их обсуждение.** Дисциплина «Микробиология с основами иммунологии» относится к фундаментальным дисциплинам биомедицинского профиля, которые изучаются иностранными соискателями высшего образования фармацевтического факультета. На кафедре микробиологии, вирусологии и иммунологии Национального фармацевтического университета используются различные современные методические приемы при проведении лекций, практических и семинарских занятий. В учебном процессе широко используются современные методы обучения, контроля и оценки знаний в виде компьютерного опроса, который вовлекает иностранных студентов в процесс освоения компьютерных технологий, направленных на формирование их знаний, что помогает успешно решать учебные задачи во время аудиторных занятий. Широкое использование тестового контроля знаний – важное средство повышения эффективности учебного процесса. Включение интерактивных форм в учебный процесс снимает нервную нагрузку студентов, дает возможность изменить формы деятельности, сосредоточить внимание на ключевых вопросах темы занятий. Также методически интересным является проведение практических занятий в виде дискуссионной реферативной конференции, использование ролевых игр. Все это позволяет объективно оценить подготовку студента к занятию, развивает коммуникативные навыки, творческое мышление, активную жизненную позицию, умение формулировать мысль с использованием профессиональных терминов, навыки публичных выступлений, формирует стереотипы профессионального поведения и их коррекцию в общении.

**Выводы.** На протяжении последних лет украинская система образования претерпевает модернизацию процесса обучения. Постоянные изменения открывают перед каждым педагогом необходимость поиска таких педагогических технологий, которые будут мотивировать соискателей высшего образования, позволят заинтересовать их в изучении дисциплины. Особенно это касается такой категории учащихся, как иностранные соискатели. Таким образом, для успешного формирования эффективной учебной деятельности иностранных граждан, получающих высшее образование в нашем университете, необходимо наличие современной учебно-методической литературы, креативная организация их самостоятельной работы, направленная на широкое использование активных методов обучения (групповых дискуссий, деловых игр), эффективная работа с информацией, постановка и решение научно-практических проблем, участие преподавателей и соискателей высшего образования в совместной научно-исследовательской работе.

**Ключевые слова:** формы обучения; соискатели высшего образования; практические занятия; методика преподавания; микробиология; инновационные методы

**Introduction.** The National University of Pharmacy has been teaching foreign citizens for more than half a century; every year more and more students come to us to receive training of a high professional level and become a competitive specialist in their country.

According to the Ministry of Education of Ukraine, about 48 thousand foreign students study at various higher educational institutions of Ukraine [1].

Foreign students are trained in Ukraine on the basis of the state "Regulations on the admission of foreigners to study in higher educational institutions". Foreign citizens are admitted to higher educational institutions without restrictions on racial, political, religious, social or ethnic grounds, on the basis of international state treaties and contracts concluded directly with individuals and legal entities [2].

Training of foreign students in higher educational institutions has many features. Among them, we can note the change in the usual way of life in psychological, moral, spiritual and cultural aspects. Foreign students adapt to the lifestyle in a new country, people around them, the norms of behavior in the student collective and at the university, peculiarities of an independent life away from their families and the need to rationally manage a budget, organize life, learn to cope with the language barrier, productively organize preparation for classes in a higher school. The adaptation period for foreign students sometimes drags on for several years, coinciding with the period of studying the most difficult basic, theoretical disciplines [3]. Often there is poor preparation in specialized and special subjects, the lack of independent work skills, difficulties in taking notes of lectures, working with textbooks and other sources of information, which makes it difficult to provide high-quality education [4].

Thus, there is a need to create the optimal conditions for the painless integration of foreign students into the student life, the university education system. At the same time, it is necessary to form such a system of relationships that will allow them to freely and comfortably operate in a foreign country, obtaining relevant pharmaceutical and medical knowledge, professional skills of the international level. For this purpose, it is necessary to make the right choice in selecting methods and teaching aids [5].

The **aim** of our work was generalization of the experience of teaching fundamental and optional subjects at the Department of Microbiology, Virology and Immunology, the search for new methodological and pedagogical techniques to optimize the assimilation of basic medical concepts and skills among foreign applicants for higher education.

**Materials and methods.** Within the framework of this study the modern data on methods and aids in teaching were studied, approaches to teaching the disciplines of the biomedical profile, such as "Microbiology with the basics of immunology" as a fundamental subject, and disciplines "Epidemiology of diseases" and "Tropical infections" as optional subjects for foreign applicants for higher education at the Department of Microbiology, Virology and Immunology of the National University of Pharmacy were systematized and analyzed.

**Results and discussion.** The National University of Pharmacy has been training pharmacy specialists for foreign countries since 1960. To date, more than 5000 Masters of Pharmacy have been trained for 80 countries of the world, including for the CIS countries.

Students begin their studies at the Preparatory Department of the University, and when studying at the University, academic groups are formed mainly by country of origin.

The discipline "Microbiology with the basics of immunology" refers to the fundamental disciplines of the biomedical profile, which is studied by foreign applicants for higher education of the pharmaceutical faculty in the second and third years according to the standard program and curriculum, on which basis the working program has been developed. The course "Microbiology with the basics of immunology" consists of lecture hours, practical classes and hours for independent extracurricular work of students in accordance with the credit-modular training system. The program for the discipline for foreign and Ukrainian students is identical in the number of hours for practical classes, lectures and independent extracurricular work of students [5].

The discipline "Tropical infections" refers to the subjects of the choice of students of the Faculty of Pharmacy in the second and third years according to the model program and curriculum, on which basis the working program has been developed. The course "Tropical infections" consists of lecture hours, seminars and hours for independent extracurricular work of students in accordance with the credit-modular training system.

The course "Tropical infections" was created at the Department especially for the existing contingent of foreign students of the National University of Pharmacy. It includes the up-to-date information on the causative agents of the most common and epidemically significant diseases of viral, bacterial, protozoal and parasitic nature.

The academic discipline "Epidemiology of infectious diseases" is also an optional subject, it provides the acquisition of theoretical knowledge and skills, as well as practical skills, with an in-depth study of the role of biological and socio-economic factors in the development of the epidemic process, methods of epidemiological research.

For foreign students, mastering these two disciplines is relevant taking into account the geography of the countries from which they came.

Understanding the etiology of tropical infections, the characteristics of pathogens, the mechanisms of occurrence, spread and transmission of bacterial, viral and protozoal infections gives future graduates the opportunity to predict the spread of infectious diseases. Students study the spread of the disease over time (by years, months, weeks, days), across the territory and among different groups of the population (age, sex, professional, household, ethnic), get an idea of the development of recommendations for the prevention and control of infections; as a result, they can determine the medical and socio-economic significance of the disease and its place in the structure of the pathology of the population.

The course "Microbiology with the basics of immunology" previously studied provides students with the basic

knowledge in general and specific microbiology, which allows them to consciously and reasonably study “Tropical infections” and “Epidemiology of infectious diseases”. These disciplines include diseases that are most common in the regions where our foreign students come from; thus, they are very interested in mastering these subjects, assessing their high importance for their future profession and for their work at home where these infections occur.

The knowledge gained at the Department of Microbiology, Virology and Immunology provides students with relevant and necessary knowledge regarding the origin and spread of emergent and re-emerging infections, which are becoming more and more common today.

Teaching in groups of foreign students requires a careful organization of the educational process. While conducting classes teachers must take into account the difficulties in overcoming language barriers, the texts of lectures, the presentation of the topic material and checking of the material assimilation are adapted for perception and do not contain complex speech patterns, carry scientific information in a clear, concise form, at the same time, the vocabulary of foreign students is enriched [6].

The manuals used at the Department of Microbiology, Virology and Immunology of the National University of Pharmacy include questions for students, a set of typical test problems, a list of practical skills that a student must learn, advice on paper design and literature that a student can use in self-preparation. The manuals also contain tables, diagrams and figures [1, 6].

For the professional training of pharmacists when studying the discipline “Microbiology with the basics of immunology” the students’ attention is focused on the presentation of the following topics in the section “General microbiology”: “Morphology and biology of viruses”, “Phytopathogenic microorganisms. Microbial contamination of drugs”, “The infection studies”, “Antimicrobial chemotherapy”, “The immunity studies”, “Immunobiological preparations”, “Immunity reactions”. When studying the section “Special Microbiology” the key questions in mastering the material are: antigenic properties of pathogens, their resistance, mechanisms and routes of infection transmission, the basics of pathogenesis, as well as methods of diagnosis, prevention and treatment of major diseases included in the program [5, 7].

On the basis of studying the subject “Microbiology with the basics of immunology” foreign students continue to study infectious diseases of tropical countries. In the study of the discipline “Tropical infections” a special attention is paid to the study of issues of epidemiology, pathogenesis, diagnosis, treatment and prevention of infectious and parasitic diseases of the tropics. Moreover, students gain in-depth knowledge about the epidemiological features of infectious diseases and current anti-epidemic measures in the conditions of epidemics and pandemics of our time by studying the discipline “Epidemiology of Diseases”.

For effective study of disciplines at the Department of Microbiology, Virology and Immunology of the National University of Pharmacy, various modern methodological techniques are used in conducting lectures, practical classes, seminars and extracurricular work.

Practical work is presented by classical methods of microbiological diagnosis and is an important stage in mastering the discipline, consolidating the knowledge and mastering the skills of microbiological research; it helps to better understanding and mastering the material of the topic. Therefore, depending on the topic of the lesson, students prepare micropreparations from bacteria, and fungi; study nutrient media and the nature of growth of microorganisms on them; conduct and register serological reactions; determine the microbiological purity of non-sterile medicines, sterility of medicines; the sensitivity of microorganisms to antibacterial drugs by various methods. Students also learn to prepare an inactivated vaccine, titrate the serum and calculate its strength. In classes on special microbiology demonstration drugs applied for immunoprophylaxis and etiotropic therapy are used [8].

A special attention is paid to the observance of safety rules when working with microorganisms. In this regard, at the first practical lesson, safety instructions are given, and during the training process the mandatory control over compliance with the rules is carried out.

Practical classes help the teacher to understand the individual characteristics of each student; taking them into account in the future it is possible to adjust the student’s skills and abilities, allowing students to demonstrate their achievements [9].

In the process of overcoming the language barrier, an important factor is constant feedback between the teacher and students, which provides the necessary pace of explanation. It is often slower than usual in a class with Ukrainian students. Time constraints make it necessary for the teacher to highlight the most important issues on the topic for oral discussion [7].

The effectiveness of practical and seminar classes largely depends on the level of training of students. The organization and conducting of classes with foreign students are based on the principle of an individual approach to each student. It is provided by the use of tasks of different difficulty levels in the classroom, a special attention is paid to the application of visual aids and technical teaching aids [10].

At the beginning of the practical lesson, a teacher highlights the relevance of the topic, motivates students to master it. This takes into account the geographical spread of infectious diseases, which causative agents are being studied, and the home country of the students. This greatly motivates students to study the main symptoms of the disease, the principles of laboratory diagnosis and prevention. In practical classes, students actively work with the teacher, and ask questions (including the vocabulary used). In order to form basic knowledge from the first days of the study at the Department of Microbiology, Virology and Immunology, a special attention is paid to creating a dictionary of special terms. This makes it easier to memorize the basic definitions, promotes a better understanding of the topic, forms the basis for mastering the material of the subsequent sections, allows the use of the acquired knowledge in further studies and professional activities, and contributes to this. In practical classes in microbiology, we also use methods

that are typical for teaching a language, namely writing terms and phrases on the board, reading them out loud [7, 9].

In the process of overcoming the language barrier it is important to establish constant feedback between the teacher and students, and it provides the necessary pace of explanation. It is often slower than usual in a class with Ukrainian students. The limited time of the practical lesson makes it necessary for the teacher to highlight the most important issues on the topic for oral discussion.

In the classroom, the complex control of knowledge is used: traditional control through oral questioning, assessment of the practical work implementation, as well as the ability to analyze research results and draw conclusions [6, 11].

Thus, at the Department of Microbiology, Virology, Immunology, especially for foreign students, taking into account all their features, a manual has been created for the independent work and self-preparation for practical classes. In full, the manual presents training sessions according to the thematic plan with the mandatory tasks included in them in the process of self-training. Using this publication a student can get acquainted with the goals and the preparation plan for each lesson, check the level of his knowledge with the help of test questions, prepare for the upcoming practical work in the laboratory. In addition, the study guide contains a lot of new material on the course of microbiology, which harmoniously complements the lecture material and is included in the heading "Additional material for the lesson".

Also, especially for foreign students, a special edition "Microbiology in Schemes and Tables", which includes concisely and colorfully illustrated material on general and special microbiology, has been developed. Schemes and tables enable students to clearly visualize the main, key aspects of each topic, help to actualize and systematize the knowledge gained in lectures and when studying the basic educational literature [7, 10].

For the purpose of systematic preparation for classroom studies and control of the independent work the workbooks for the disciplines studied are successfully used at the Department. The sections of the workbook follow the thematic outline of the study material in the curriculum of the course "Microbiology with the basics of immunology" and "Tropical infections". The structure of the workbook may differ depending on the content of the subject studied, the degree of its complexity, the need for recording. The workbooks in disciplines are structured and have: a thematic plan of practical lessons; rules for working in the bacteriological laboratory; material for practical lessons on topics that provide for the mandatory fulfillment of tasks for self-preparation and the student's practical work in the current lesson, which includes filling in schemes, tables, completion of drawings. Tasks for each topic are structured in such a way that a student can use visual and mechanical memory, logic, sequentially performing drawings, filling in schemes and tables. A teacher necessarily controls the correctness of filling in the workbook, a special attention is paid to the registration of the protocol for the practical lesson and,

if necessary, indicates the shortcomings. The use of the workbook improves the quality of education, increases the efficiency of the educational process [6].

In the educational process modern methods of teaching, monitoring and assessing knowledge are widely used in the form of a computer survey that involves foreign students in the process of mastering computer technologies aimed at forming their knowledge; it helps to successfully solve educational problems within the classroom setting [7, 12].

The widespread use of the test control of knowledge in practical and final lessons is an important means of increasing the effectiveness of the educational process. The discipline "Microbiology with the basics of immunology" is one of the eight compulsory disciplines included in the licensed exam "KROK-1" introduced in the universities of Ukraine for students of the medical profile. In this regard, at each lesson test tasks compiled by the "KROK-1" examination type are used, being the key to a positive passing of this examination by students.

The use of educational videos created by teachers and students at our Department for practical classes also contributes to the cognitive activity of foreign students [6, 7].

The organization and conducting of practical classes with foreigners at our Department is based on the principle of the individual approach to each student, and it is provided by the use of tasks of different levels of complexity in the classroom. Moreover, the effectiveness of a practical lesson largely depends on the level of training of students. Therefore, an important link in the educational and methodological work of the Department is the organization of self-preparation of students for classes [4], which is carried out using educational and methodological literature, technical teaching aids, the possibility of obtaining individual advice from a teacher [5, 10].

An important means of developing the students' cognitive activity is a lecture, which has an educational value. At lectures, to assimilate better the material by foreign students, teachers choose the optimal forms of presenting the material in the form of multimedia presentations, schemes, graphological structures, drawings, educational films; all these forms facilitate the perception of the new material, activates the work of several analyzers (visual, auditory, motor) of each student. At lectures, teachers use an active presentation of the material, asking questions on the topic of the lecture, involving students in the discussion [6, 9]. As in practical classes, the pace of presentation of the material and the use of comprehensible vocabulary is very important (it is often necessary to write the terms on the board for easy understanding). This allows a student to ask questions on the topic of the lecture, as well as to answer the questions of the lecturer himself.

This form of work allows better assimilation of the lecture material, develops logical thinking and improves the student's vocabulary [7, 13].

Technical teaching aids solve problems, such as intensifying the educational process, increasing interest and motivation for learning, introducing such means into the educational process that would transfer the students' knowledge

to a higher level of assimilation, and providing a rational system for monitoring the student's cognitive and creative activity [6].

To intensify education, foreign students are engaged in the work of the student scientific society. Not every student is capable and willing to engage in scientific work, but interesting research topics can attract anyone. Research work is carried out annually under the supervision of teachers – scientific advisers; the research results are published in the form of abstracts and scientific articles [7, 9]. At the same time, the skills of research, scientific activity, and oratory are being developed. The results of fruitful scientific work at the Department of Microbiology, Virology and Immunology of National University of Pharmacy were the defense of four Ph.D. theses in the specialty “Microbiology” by foreign graduates of our University.

The pace of modern progress inevitably affects the learning processes, and to implement numerous communicative aspects of education, a continuous update of the “learning technologies” in the modern methods of education and teaching is required [2, 3]. The fundamental principles of teaching at the present stage are awareness, activity of students under the supervision of a teacher, visualization of teaching; combination of various methods and aids depending on the tasks and content of training [4]. This is due to the need to move from informative forms and methods of teaching to active ones, with the search for opportunities for the synthesis of theoretical knowledge of students and their practical needs [10].

A high level of competence in any of the areas is already insufficient for successful activities in the modern conditions of informatization and globalization. Modern education without the use of interactive methods and multimedia technologies is practically impossible. Interactive learning, from our point of view, provides an educational load of practical classes since it teaches us to work in a team, listening to the opinions of friends, helps to establish emotional contacts between students. At the same time, such significant communication and learning skills as creativity, freedom of expression, the value of individuality, an active life position, democracy and mutual respect are developed, the solidity of knowledge and high motivation are provided [5, 14]. The most promising is an interactive method that can be introduced in practical classes, such as a role play [15, 16].

Being a method of the interpersonal communication (purposeful enhanced intersubjective interaction) between students and a teacher, interactive teaching methods create the optimal conditions for an educational environment, which is characterized by the interaction of participants, equality of their arguments, openness, the possibility of mutual evaluation, promotes the involvement of all members of the group in the educational process. The inclusion of interactive forms in the educational process relieves the nervous load of students, makes it possible to change the forms of activity, switch attention to the key issues of the topic of the lessons [6].

The use of role-playing games allows an objective assessment of the student's preparation for the lesson, develops communication skills, creative thinking, an active life position, the ability to formulate a thought using professional terms, public speaking skills, forms stereotypes of professional behavior and its correction in commu-

nicating with others [15]. Situational tasks are of particular importance in teaching microbiology for foreign students. The situational tasks proposed make it possible to use the knowledge accumulated in the process of self-preparation [14] applicable to specific practical situations, develop the ability to reason, stimulate the students' desire to understand the mechanisms and the essence of the processes being studied, and not mechanically memorize definitions and classifications, allow to clearly represent the stages and results of the microbiological research conducted [5,7].

It is also methodologically interesting to conduct practical classes in the form of a discussion abstract conference. Following the plan, a student can build his abstract message based on the use of educational and additional literature, Internet resources. When presenting the material, the student presents it in a visual form using multimedia technologies [13, 14]. The conference participants listen to the report, after that they ask questions on the material heard, and all students and the teacher are involved in this process. At the end of the conference, the best speaker is selected among all the speakers, the results are summed up, and conclusions are drawn.

From our point of view, this type of activity makes it possible to maximally reveal such personal qualities of students as communication skills, mobility, responsibility, oratory. In addition, the ability to abstract the material develops, as well as the skills of public speaking, the ability to defend the own point of view and present their ideas are refined.

#### **Conclusions and prospects of further research.**

Over the past years, the Ukrainian education system has been undergoing modernization of the learning process. Constant changes open up the need for each teacher to search for such pedagogical technologies that will motivate students, will make them interested in studying the discipline. This is especially true for such a category of students as foreign students.

The teacher's task is to attract students so that in modern conditions they can gain new knowledge with interest and passion, evaluate joint work and their personal achievements, and, most importantly, demonstrate high results in the discipline being studied.

The creation of an innovative educational environment is a prerequisite for new generation standards [6, 8]. The modern teacher must teach the future specialist to be ready for the conditions of a rapidly changing world, which allows looking at the optimization of the educational process in a new way. The need to form the competence “to teach to learn consciously” radically changes the nature of the relationship between a teacher and students, requiring rethinking of the existing teaching methods.

Thus, for the successful formation of effective educational activities of foreign students it is necessary to have modern educational and methodological literature, creative organization of the students' independent work aimed at the wide use of active teaching methods (group discussions, business games), the effective work with information, setting and solving scientific practical problems, the participation of teachers and students in joint research work.

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## REFERENCES

1. Гуменна А. В., Бліндер О. О., Ротар Д. В. Особливості викладання мікробіології іноземним студентам українською мовою. *Актуальна інфектологія*. 2016. № 3. С. 109–113. DOI: <https://doi.org/10.22141/2312-413x.3.12.2016.81724>.
2. Bulakh I. Ye., Volosovets O. P., Voronenko Yu. V. The quality management system of medical education in Ukraine: monograph. Donetsk : ART-PRES, 2003. 212 p.
3. Проблемы адаптации зарубежных студентов. *Медико-биологические, культурологические и психолого-педагогические аспекты адаптации зарубежных студентов* : материалы II Всерос. науч. конф., г. Волгоград, 17-18 окт. 2001 г. Волгоград : Перемена, 2001. 189 с.
4. Kiyaschuk T. V., Selezneva V. N. Theoretical and practical aspects of social and psychological support of foreign students in learning activities : tutorial. 2009. 88 p.
5. Ефремова Н. Н., Медведева О. А., Мухина А. Ю. Особенности методологических подходов в преподавании микробиологии на международном факультете. *Современные проблемы науки и образования*. 2018. № 5.
6. Шляхи вдосконалення викладання медичної мікробіології іноземним студентам / В. П. Ширококов та ін. *Biomedical and biosocial anthropology*. 2014. № 22. С. 229–233.
7. Островцова С. А. Роль смешанной формы преподавания микробиологии в развитии коммуникативных навыков у иностранных студентов. *Современные технологии в преподавании. Методики исследования микроорганизмов* : материалы межвуз. конф. с междунар. участием, г. Гродно, 31 март. 2017 г. Гродно : ГрГМУ, 2017. С.15–17.
8. Voronenko Yu. V. The definition of quality criteria in a system of continuous professional development of doctors and pharmacists based on the concept of loans. *Med. Osvita*. 2007. № 3. p. 11–15.
9. Соколова Т. Н. Мотивационные подходы в обучении студентов общим принципам и специальным приемам при работе с микроорганизмами на практических занятиях. *Современные технологии в преподавании. Методики исследования микроорганизмов* : материалы межвуз. конф. с междунар. участием, г. Гродно, 31 март. 2017 г. Гродно : ГрГМУ, 2017. С. 17–19.
10. Байгужина С. К., Шамбилова Н. А., Николаева А. Б. Особенности проведения практических занятий на кафедре микробиологии. *Медицина и экология*. 2016. № 1 (71). С. 106–108.
11. Sladkih I. A. Ethnopsychological aspect of adaptation US-students in Ukraine. *Проблеми та перспективи формування національної гуманітарно-технічної еліти* : зб. наук. праць. Харків : НТУ ХПІ, 2008. № 18 (22). С. 259–272.
12. Бутенко И. А. Что привлекает студентов в учебном процессе? *Alma Mater (Вестник высшей школы)*. 2000. № 2. С. 21–25.
13. Лобань Г. А., Звягольская И. Н., Полянская В. П. Информационно-методическая поддержка изучения предмета на кафедре микробиологии, вирусологии и иммунологии ВГУЗУ «Украинская медицинская стоматологическая академия». *Biomedical and biosocial anthropology*. 2014. № 22. С. 226–229.
14. Медведь А. В. Управляемая самостоятельная работа студентов как вид активизации познавательной деятельности студента. *Современные технологии в преподавании. Методики исследования микроорганизмов* : материалы межвуз. конф. с междунар. участием, г. Гродно, 31 март. 2017 г. Гродно : ГрГМУ, 2017. С. 13–14.
15. Педагогика и психология высшей школы : учеб. пособие / ред. М. В. Буланова-Топоркова. Ростов-на-Дону: Феникс, 2002. 544 с.
16. Столяренко Л. Д. Основы психологии : учеб. пособие. 8-е изд., перераб. и доп. Ростов-на-Дону: Феникс, 2003. 671 с.

## REFERENCES

1. Humenna, A. V., Blinder, O. O., Rotar, D. V. (2016). *Aktual'naia infektolohiia*, 3, 109–113. doi: <https://doi.org/10.22141/2312-413x.3.12.2016.81724>.
2. Bulakh, I. Ye., Volosovets, O. P., Voronenko, Yu. V. (2003). *The quality management system of medical education in Ukraine*. Donetsk: ART-PRES, 212.
3. Problemy adaptatsii zarubezhnykh studentov. (2001). Proceeding from Mediko-biologicheskie, kul'turolohicheskie i psikhologo-pedagogicheskie aspekty adaptatsii zarubezhnykh studentov: *materialy II Vseros. nauch. konf. (17-18 okt. 2001 g.)*. Volgograd: Peremena.
4. Kiyaschuk, T. V., Selezneva, V. N. (2009). *Theoretical and practical aspects of social and psychological support of foreign students in learning activities*.
5. Yefremova, N. N., Medvedeva, O. A., Mukhina, A. Yu. (2018). *Sovremennye problemy nauki i obrazovaniia*, 5.
6. Shyrobokov, V. P., Paliy, H. K., Vovk, I. M., Prokopchuk, Z. M. (2014). *Biomedical and biosocial anthropology*, 22, 229–233.
7. Ostrovtsova, S. A. (2017). Proceeding from *Sovremennye tekhnologii v prepodavanii. Metodiki issledovaniia mikroorhanizmov: materialy mezhvuzovskoi konferentsii s mezhdunarodnym uchastiem (31 marta 2017 g.)*. (pp. 15–17). Grodno: GrGMU.
8. Voronenko, Yu. V. (2007). *Medychna Osvita*, 3, 11–15.
9. Sokolova, T. N. (2017). Proceeding from *Sovremennye tekhnologii v prepodavanii. Metodiki issledovaniia mikroorhanizmov: materialy mezhvuzovskoi konferentsii s mezhdunarodnym uchastiem (31 marta 2017 g.)*. (pp. 17–19). Grodno: GrGMU.
10. Baihuzhyna, C. K., Shambilova, N. A., Nikolaeva A. B. (2016). *Meditsyna i ekolohiia*, 1 (71), 106–112.
11. Sladkih, I. A. (2008). *Problemy ta perspektivy formuvannia natsional'noi humanitarno-tekhnichnoi elity*, 18 (22), 259–272.
12. Butenko, I. A. (2000). *Vestnik vysshei shkoly*, 2, 21 25.
13. Loban', G. A., Zviahol'skaia, I. N., Polianskaia, V. P. (2014). *Biomedical and biosocial anthropology*, 22, 226–229.
14. Medved', A. V. (2017). Proceeding from *Sovremennye tekhnologii v prepodavanii. Metodiki issledovaniia mikroorhanizmov: materialy mezhvuzovskoi konferentsii s mezhdunarodnym uchastiem (31 marta 2017 g.)*. (pp. 13–14). Grodno: GrGMU.
15. Bulanova-Toporkova, M. V. (Ed.). (2002). *Pedagogika i psikhologiia vysshei shkoly*. Rostov-na-Donu: Feniks, 554.
16. Stoliarenko, L. D. (2003). *Osnovy psikhologii*. (8-e izd., pererab. i dop.). Rostov-na-Donu: Feniks, 671.

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