THE EFFECTIVENESS OF INTERACTIVE METHODS IN THE EDUCATIONAL PROCESS

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Interactive teaching methods organize the learning process as the teachers' and students' creativity combination. The use of these methods in the educational process is based on the principles of scientific quality, informativeness and self-development, the relationship between theory and practice, and the optimal combination of individual and collective activity. An important feature of interactive games is their ability to motivate the student for learning, for socialization and professional development promotion. Moreover, teachers should provide an opportunity to test knowledge in practice and in an urgent situation, and integrate students' skills and abilities.

The aim of the work *– to review and justify the use of interactive teaching methods, as well as business and role-playing games in a medical institution of higher education and to propose a brainstorming method for practical training.* **I**nteractive teaching methods *include creative tasks, small group work and educational games, the use of public resources (inviting a specialist, attending thematic excursions), involving students in social projects, studying the material through an interactive lecture, student-teacher and peer-to-peer methodologies, working with visual materials, using and analyzing video and audio materials, the case method, analyzing a situation from the participant's practice, testing, questionnaires, an exam with further analysis of the result. The use of interactive teaching methods ensures the activation of mental activity, leadership qualities of the student, develops clinical and critical thinking of the future specialist. The practice of applying the «brainstorming» method is considered to be promising for improving the quality of knowledge acquisition, it is a simple technique; its methodology is easy to understand and also to apply in the course of practical activities of the teacher.*

Conclusions. *Game-based teaching methods in higher education can be the basis for purposeful modeling of the integral structure of the future doctor's professional activity. The main advantages of interactive teaching methods are the possibility of activating students' independent cognitive and mental activity, increasing motivation to study the discipline, increasing self-esteem in the process of obtaining positive results, and developing skills in modern information technology. The main goal and essence of the brainstorming method is to improve the training of specialists, their training and development of professional skills to a high level of qualification. This method stimulates the intuitive thinking in the process of searching for ideas and suggestions, develops communication skills and group work, develops clinical thinking, and increases the effectiveness of decisions.*

ЕФЕКТИВНІСТЬ ЗАСТОСУВАННЯ ІНТЕРАКТИВНИХ МЕТОДІВ У НАВЧАЛЬНОМУ ПРОЦЕСІ

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Інтерактивні методи навчання організовують навчальний процес як спільну творчість викладача та студентів. Використання у навчальному процесі цих методів базується на принципах науковості, інформативності та саморозвитку, взаємозв'язку теорії та практики, оптимальному поєднанні індивідуальної та колективної активності. Важлива особливість інтерактивних ігор – їх здатність мотивувати навчання студента, сприяти соціалізації та професійному розвитку, надання можливості перевірити знання на практиці та в ургентній ситуації, розвивати й інтегрувати навички та здібності. До інтерактивних методів навчання відносяться творчі завдання, робота в малих групах та навчальні ігри, використання суспільних ресурсів (запрошення фахівця, відвідування тематичних екскурсій), залучення студентів до участі у соціальних проєктах, вивчення матеріалу шляхом інтерактивної лекції, методології «студент у ролі викладача» та «кожен вчить кожного», робота з наочними матеріалами, використання та аналіз відео-, аудіо- матеріалів, «кейс метод», розбір ситуації з практики учасника, тестування, анкетування, іспит з подальшим аналізом результатів тощо.

Застосування інтерактивних методів навчання забезпечує активізацію розумової діяльності, лідерських якостей студента, розвиває клінічне та критичне мислення майбутнього фахівця. Практика застосування методу «мозковий штурм» вважається перспективним для покращення якості засвоєння знань, це проста техніка, в методологію якої легко вникнути і так само застосовувати під час практичної діяльності викладача.

Мета роботи *– обґрунтувати доцільність використання інтерактивних методів навчання, навчальних ділових і рольових ігор у медичному закладі вищої освіти, а також впровадження методу «мозковий штурм» під час проведення практичного заняття.*

Висновки. *Ігрові методи навчання у закладі вищої освіти можуть бути основою цілеспрямованого моделювання цілісної структури професійної діяльності майбутнього лікаря. Головними перевагами інтерактивних методів навчання є можливість активізації самостійної пізнавальної і розумової діяльності студентів, посилення мотивації до вивчення дисципліни, підвищення самооцінки в процесі отримання позитивних результатів, розвиток навичок володіння сучасними інформаційними технологіями. Головна мета і суть методу «мозковий штурм» – покращення підготовки фахівців, їх тренування і розвиток професійних навичок до рівня високої кваліфікації. Завдяки цьому методу в процесі пошуку ідей та пропозицій стимулюється інтуїтивне мислення, розвиваються комунікабельність та вміння роботи в групі, розвивається клінічне мислення, підвищується ефективність прийнятих рішень.*

Introduction

Interactive teaching methods (ITMs) are methods that organize the learning process as a teachers' and students' common creativity. The teacher himself acts not only as a source of knowledge, facilitator, mentor, coach, but also as a moderator of the learning process [1]. The term «interactive» is borrowed from the English language and comes from the word interact (inter – mutual, act – to act). Interactive means the process of interaction, being in the process of conversation, debate, and dialogue. The educational process takes place through constant interaction between teacher-student, student-student, lecturer-student, etc. The use of ITMs allows students interacting in such work both the teacher and students are subjects of the educational process [1, 2]. Thus, interactive learning is co-learning and mutual learning, a process of dialogic learning, when there is a constant, active interaction between tachers and students.

The aim of the study – to review and substantiate the interactive teaching methods use, as well as educational business and role-playing games in a medical institution of higher education, and to propose a method of «brainstorming» during a practical lesson.

Main part

Creative tasks, activities in small groups and educational games belong to the ITMs. The use of public resources, such as inviting a specialist in a particular field, attending thematic excursions, etc. are also considered to be ITMs. Involvement of students in social projects (competitions, exhibitions, performances, etc.) is also a component of ITMs. Studying new information material through an interactive lecture, student-teacher and face-to-face methodologies, working with visual materials (textbooks, mind maps, interactive posters, etc.), using and analyzing video and audio materials, practical tasks, case studies, and analyzing a situation from the participant's practice. The presentation and the discussion of complex and controversial problems, work with documents (drafting documents, written work on justification),

testing, questionnaires, exams with further analysis of the results are also considered as ITMs [3, 4, 5].

The teacher's arsenal includes a variety of educational technologies, methods and ITMs. For example, a practical lesson can be conducted in the form of a training, debate, brainstorming, business and role-playing games, small group methods or a WebQuest [6, 7, 8, 9]. It is also possible to conduct a lesson with the use of simulators, imitators, computer simulation. Lecture material can be presented through the use of computer training programs, interactive posters, scribing, or mind maps. Classes with an invited specialist can be held in the form of a round table, conference, or master class. The defense of a project or independent work can be offered in the form of a regulated report followed by a forum-type discussion. An integral part of the ITMs is participation in subject Olympiads, educational and research projects, scientific and practical conferences, congresses, symposia, and congresses. Excursions to anatomical museums, attendance at medical conferences, consultations, analysis of clinical cases, preparation and defense of medical history will help in the development of clinical thinking of a future specialist in many ways [10, 11, 12].

The use of ITMs in the educational process is based on the principles of scientism, informativeness and self-development, the relationship between theory and practice, and the optimal combination of individual and collective activity. An important feature of interactive games is their ability to motivate students' learning, to promote socialization and professional development, to provide an opportunity to test knowledge in practice and in an urgent situation, develop and integrate skills and abilities [13]. Educational games in the pedagogical process have a clearly defined ultimate goal and a corresponding result. The result of the educational game is emphasized by the professional orientation, that is why the game methods, used in higher education institutions, are professionally oriented. Games develop intelligence, logic, spatial imagination, and thus teach creativity.

Educational games have also proven to be very effective in simulation medicine. Thus, game methods

include, for example, game discussion and educational business or role-playing game, game exercises, game situations, etc. [14, 15]. A game discussion involves a collective discussion of a problematic issue, an exchange of ideas between participants in the educational process. The main principle of a game discussion is the process of friendly dispute, as a result of which the most optimal solution to a problem is chosen from the existing options. A business game simulates the activities of a specialist by solving a complex professional problem and making a specific decision by the student. The educational business games organization should be based on several important principles – the appropriateness of application, concentration on solving the problematic issue, dynamism (involves a high rhythm of game activity), realism, optimization of game details (includes a balance of detailing the described situation), interaction and modeling of professional activity [16]. Still, business simulation games are the most widely used. The most common scenarios are «doctor-patient» and «conference». The «doctor-patient» scenario involves a rather limited part of the training group, while the «conference» scenario provides for mass participation. The role of the teacher is to offer learning situations that are professionally valuable for the student. It is in such simulation-game situations that the student will be able to associate himself or herself with a surgeon or doctor of any specialty, acquire the necessary practical skills, and essentially «try on» the specialty.

Compared to a real professional activity, when a decision leads to certain results, in game interaction, it is possible changing the course of actions, the way of acting, thinking, etc. In fact, in the event of a negative outcome, it is possible to «rewind» and start from the beginning to ensure a positive way out of the problem situation. In general, this enables future specialists to choose the most optimal and effective way to form their own professionalism and professional competence [17].

The use of ITMs ensures the activation of mental activity, leadership qualities of the student, develops clinical and critical thinking of the future specialist. Let us consider the practice of «brainstorming» method use. It is considered promising for improving the quality of knowledge acquisition [18, 19]. So, the brainstorming method is a simple technique, its methodology is easy to understand and apply in the course of practical activities of the teacher. One of the most important advantages of the brainstorming method is that it encourages students' creative thinking and overcomes their dependence on stereotypes. The advantages of using the brainstorming method are shown in Table 1.

Table 1

Advantages of using the brainstorming method

Advantages of using the brainstorming method	
1.	The material of the method is the result of the common efforts of all group members
2.	The method summarizes the experience and skills of the group members
3.	The process is likely to generate a greater variety of ideas
4.	The chance of detecting an error increases, since a certain number of participants are involved in the process
5.	The degree of the responsibility of all group members for the decisions made increases

The concept of «brainstorming» comes from the English word «brain storm», which means a method of expert evaluation, one of the most popular, frequently used methods of stimulating creative activity, allowing to find solutions to complex problems by applying special rules of discussion. The method is one of the most well-known and used for collective spontaneous search for solutions; in fact, it is a method of finding alternative ways to solve a problem [20, 21]. The brainstorming became known to a wide range of specialists with the publication of A. Osborne's book «Guided Imagination: Principles and Procedures of Creative Thinking». The brainstorming procedure consists of two stages: the first one is where ideas are generated, and the second one is where ideas are developed.

Despite the possible fear of failure or fear of looking ridiculous, all participants are encouraged to generate and express as many solutions to the problem situation as possible. No one should judge or criticize any idea that comes up during the discussion. All the ideas proposed by the participants may look unrealistic or fantastic [22, 23]. The main task is to ensure the process of generating ideas without critical analysis and discussion. The method is useful and widely used in practical classes in morphological disciplines around the world [24]. Thus, the brainstorming method is the freest form of discussion. The step-by-step scheme of conducting classes using the brainstorming method is shown in Table 2.

Table 2

Step-by-step scheme for brainstorming sessions conduction

№	Name of the stage	Essence of the stage
1.	The formulation of the problem	The problem is substantiated to find a solution. The conditions of group work are determined, familiarization with the rules of behavior in the process of work. Formation of working groups.
2.	The warm-up session	The main task of the second stage is to help participants to free themselves from the influence of psychological barriers (embarrassment, shyness, isolation, stiffness, etc.). We offer exercises to quickly find answers to questions.
3.	The working session	The main stage of the brainstorming method. The tasks are clarified once again, and the rules of behavior are reminded. The generation of ideas begins at the signal of the teacher in all working groups. Each group is assigned one expert (an independent person) whose task is to record all the ideas put forward on a whiteboard or large sheet of paper.
4.	The expert evaluation	The collected ideas are evaluated and the best ones are selected.
5.	The results summarizing	General discussion of the results of the groups' work, presentation of the best ideas and their justification.

The brainstorming is a quick method of solving a problem by stimulating students' creative activity. The list of rules that apply to all participants in the process of brainstorming is shown in Table 3.

Table 3

Rules that apply to all participants in the process of brainstorming

№	Rules during the brainstorming process
1.	Within a strictly limited time, everyone has the opportunity to speak during all stages of the work (lasting no more than 1-2 minutes).
2.	Free discussion of the problem by students.
3.	No criticism is allowed at the stage of generating ideas (skeptical smiles, gestures, facial expressions).
4.	Relaxed, informal atmosphere.
5.	All ideas are recorded in a protocol list.
6.	Ideas creative analysis.

Due to the rapid development of distance technologies and distance education, online brainstorming, which in English means «electronic brainstorming», has become widely used. The «electronic brainstorming» method has the greatest advantage of not having the effect of «productivity blocking» [25]. Thus, in offline mode, group members present ideas in turn, and while a participant is waiting for his or her own, he or she may change his or her mind, become embarrassed, afraid to publicly express his or her idea, or simply forget. Also, given the IT capabilities, you can share your ideas in the form of text, using the «scribble» methodology, uploading images or videos. Thus, multimedia content will more clearly demonstrate the essence of the group member's idea. Undoubtedly, this method is useful when students are in quarantine or when they are in different countries. Even if several students and the teacher are in the classroom, and several students are in distance learning, the method allows remote or mixed teams to easily connect, create ideas, and collaborate without being in the same room. This method is also important because today's workplace is becoming more and more remote and it is necessary to look for ways to adapt to a remote work environment [26].

Conclusions

The game-based teaching methods in higher education institutions can serve as the basis for purposeful modeling of the integral structure of the future doctor's professional activity. The main advantages of interactive teaching methods are the possibility of activating students' independent cognitive and mental activity, increasing motivation to study the discipline, increasing self-esteem in the process of obtaining positive results, and developing skills in modern information technology. The main goal and essence of the brainstorming method is to improve the training of specialists, their training and development of professional skills to a high level of qualification. This method stimulates intuitive thinking, develops communication skills and group work, develops clinical thinking, and improves the effectiveness of decisions.

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