

INTERACTIVE METHODS OF TEACHING IN CLASSES OF BASIC MEDICAL AND BIOLOGICAL SCIENCES

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ABSTRACT

Interactive learning is widely used in more than 115 countries around the world. It has already gained recognition in a relatively short period of time. The main methodological innovations today are connected with the use of interactive teaching methods and techniques when almost all the students are involved in a process of learning, each of whom makes their individual contribution to the solution of the task through the exchange of knowledge and ideas.

The widespread introduction of innovative methods in the study of pharmacology and microbiology at the departments of Dnipropetrovsk medical academy is caused by difficulties in studying these subjects traditionally.

Among the games in medical universities "Simulation" is preferred. The most common scenario is a "doctor - patient", which reveal questions of clinical manifestations, treatment and prevention of certain diseases, or "concilium", where the focus is on the features of the disease, methods of its diagnosis and choice of treatment and prevention, considering features of pharmacodynamics, pharmacokinetics and side effects of drugs. Tasks for independent work of students on practical lessons can be designed for both, individual and group execution (meaning not only an academic group in general, but also dynamic division into small "creative" or "working" groups / teams). "Contest" game goes well with other progressive teaching methods, such as audio and video demonstration. At studying of medical microbiology demonstration of real objects is often impossible because of their danger to life and health of students, and implementation of a number of laboratory research - because of the complexity and duration.

Thus, the benefits of interactive forms of learning are the ability to activate the self-cognitive and mental activity of students, involvement of students in the learning process as active participants in the development of skills in analyzing situations, increased motivation to learn discipline and increase self-esteem in the process of getting positive results, development of skills of teamwork, the increase of independent work of students, the development of proficiency in modern technical equipment and information processing technologies. The use of such forms of work, as the computer testing, provides a more precise objective assessment of students' knowledge and learning to obtain information from different sources and the formation of the needs in this - to get a well trained modern specialist with a high level of qualification.

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Introduction. Interactive learning is widely used in more than 115 countries around the world (USA, Europe, Japan, China, CIS) and has already gained recognition in a relatively short period of time. The main methodological innovations today are connected with the use of interactive teaching methods and techniques when almost all the students are involved in a process of learning, each of whom makes its individual contribution to the solution of the task through the exchange of knowledge and ideas.

The widespread introduction of innovative methods in the study of pharmacology and microbiology at the departments of Dnipropetrovsk medical academy is caused by that it was under such forms of teaching students - study of these, traditionally, one of the most difficult subjects for mastering.

Results. The organization of productive interaction between students is a characteristic feature of interactive teaching methods. Tasks for independent work of students on practical lesson can be designed for both, individual and group execution (meaning not only an academic group in general, but also dynamic division into small "creative" or "working" groups / teams). Their use changes the basic function of the teacher from broadcast of certain knowledge to the interaction with learners. Online training is implemented, especially in games that simulate professional and social relationships and take into account specialization of students (general medicine, dentistry). Business games have a

great didactic potential to form significant professional skills and creative abilities of students, render a significant impact on their emotional and moral sphere. Academic games, especially competitive, contribute to the development of will to act and the ability to brake, required in future professional activities and professional communication [1]. These games are able not only to awaken activity, confidence, ability to compete among students, but also to use these behavioral qualities within human and professional ethics in future [2].

Among the games in medical universities Simulation is preferred [3]. The most common scenario is a "doctor - patient", which reveal questions of clinical manifestations, treatment and prevention of certain diseases, or "concilium", where the focus is on the features of the disease, methods of its diagnosis and choice of treatment and prevention, considering features of pharmacodynamics, pharmacokinetics and side effects of drugs. Most mass involving games are simulation games with scenario "conference", suitable for generalization and systematization of knowledge of a specific chapter / thematic module, as well as establishing interdisciplinary connections.

For educational topics, which contain a significant amount of material, and the logical connections between the elements are not expressed clearly (eg topics on antibiotics), suitable will be competition game "last word". On a practical level it can perform the same function as the traditional frontal survey. It's simple rule is that the teacher determines the order in which students should name the properties of an object one by one (such as a specific pathogen infection, or a specific drug for mandatory study). Anyone who missed the "move" or gave the wrong answer penalty points are awarded and the winner is the one who left for the "last word". In counting the positive and negative points, during the game lecturer may express comments or leading questions.

When using the interactive learning in the form of work in small groups (2-3 people), their composition is chosen in such way that they include a well-prepared student-leader, who organizes and manages the solution of the problem, with the help of the teacher. The groups are given case studies (the so-called "case method"), for example, on the selection of the most appropriate pharmacological agents in a particular clinical situation, the solution of which requires the integration of knowledge in both pharmacology, and clinical disciplines.

In solving of the task interactive teaching method "Decision tree" is often used so that can be considered as a practical way to evaluate the advantages and disadvantages of various options. At the stage of the options and at the stage of estimation it is possible to use of technique "Brainstorming" (small groups offer the most complete answers). It is known that human creative activity is often hindered by certain barriers (psychological, social, etc.) and in the conditions of group, this "gateway" is opened, and the ideas, generated in the group, are more efficient, allowing to reveal weaker students.

One of the purposes of this training form is to create a comfortable learning environment where students feel their success, their intellectual independence, which makes the learning process more productive [4; 5].

If the lesson study process consisting of consecutive stages (eg. reproduction of viruses, mechanisms of immune response or laboratory diagnosis of certain diseases, algorithm of analysis of drugs' pharmacological features), the script of the game is transformed into a "sequence of events": students must name these stages in the correct order. The winner in this game is difficult to be determined because of the rather limited number of stages, at least for those phenomena that are considered in the course of medical microbiology. The winner can be considered a student who scored the least number of penalty points for wrong answers or no answer, or the one who gave the correct answer after several unsuccessful attempts of other students [6].

Contest games go well with other progressive teaching methods, such as audio and video demonstration. At studying of medical microbiology demonstration of real objects is often impossible because of their danger to life and health of students, and implementation of a number laboratory research - because of the complexity and duration. While training videos give a good glimpse into the microcosm. The problem is that sometimes movies content for students is overshadowed by spectacular side, and in addition, over 80 % of educational films on medical microbiology are presented in foreign language [6, p. 137]. A valuable source of video can be internet resources, on-line access to which is still limited unfortunately. Team game "FAQ" helps to organize productive cognitive activity using video. In the course of demonstration participants team make up questions to video, and then set them to opposing team, and still should be ready to answer their own questions. The teacher conducts account, paying attention to the issues of correctness and thoroughness of responses. As a result, the winning team and most productive players from each team are declared. In case of a tie, the outcome of the game is decided by "penalty" - the question from teacher.

The element of interactivity and competition can bring and perform other academic tasks relating to both, manual and intellectual, skills of the future doctor: mark the best micro-preparation made by student, the most perfect designed studying protocol, rationally drawn diagnostic algorithm, an unusual approach to solving problematic task. Preparation for such practical training is hard to imagine without the

intensive use of individual self-study (self-diagnostic and creative homework, developed by teachers of the department of pharmacology and microbiology to every practical class) and verification of individual preparation in group classes. For clinical disciplines this list will be even more widespread.

You can also name the "Man of the Day" - the best student on the set of academic success in practical lesson, chosen by students. This effect on the emotional sphere, in particular, contributes to the revitalization of contract students, who has no material component of motivation, and therefore usually is quite low.

In junior courses competitions are the most suitable games. They provide high cognitive activity of students on practical classes, creating favorable conditions for learning, "where students have to be active regardless of their desire" [7].

Participation in business games competition as interactive activities, individual and in team, teaches students an adequate combination of competitiveness and partnership, corrects their self-esteem. Self-affirmation in the game, the competition may be additional motivation for students to master knowledge of the discipline. We should also note the correlation for the purposes of teaching methods with the principles of credit-modular system of educational process, where the absolute marks are coming along with the rating assessment of student achievement.

Another way of teaching students is preparing collected material for a public speech with a slide presentation. It is known that presentation is considered to be one of the most effective ways of communicating important information in public speeches, it is a part of professional activity of many experts, and allows to visualize the contents effectively, highlight and illustrate the message that carries the presentation, its key points. Using interactive elements the effectiveness of educational performances, which students need to acquire skills of working with audience, producing a communicative experience can be enhanced.

Conclusions. Thus, the benefits of interactive forms of learning are the ability to activate the self-cognitive and mental activity of students, involvement of students in the learning process as active participants in the development of skills in analyzing situations, increased motivation to learn discipline and increase self-esteem in the process of getting positive results, development of skills of teamwork, the increase of independent work of students, the development of proficiency in modern technical equipment and information processing technologies. The use of such forms of work as the computer testing provides a more precise objective assessment of students' knowledge and learning to obtain information from different sources (Electronic libraries, for example, the Cochrane Library, PubMed database and other internet resources) and the formation of the needs in this - to get a well trained modern specialist with a high level of qualification.

REFERENCES

1. Honcharenko, S. U. *Ukrainskyi pedahohichnyi slovnyk* / S. U. Honcharenko. – Kyiv: Lybid, 1997. – 376 s.
2. Krushynska, T. Iu. *Vykhovannia konkurentozdatnosti v umovakh bezpererвної osvity* / T. Iu. Krushynska // *Vykhovna robota v umovakh bezpererвної osvity: Materialy mizhnar. nauk.-prakt. konf.* - Kharkiv: Narodna ukrainska akademiia, 2009. – s. 172-176.
3. Meshcheryakova, M. A. *Tekhnologii professionalno-orientirovannogo obucheniya v meditsynskikh vuzakh* / M.A.Meshcheryakova. – M.: MGMSU, 2010. – 75 s.
4. *Innovatsionnye metody obucheniya v vysshey shkole: uchebno-prakticheskoe posobie* / Gusakov V. P., Pustovalova N. I., Khrushchev V. A., Kartashova Ye. B., Isakova Ye. K. – Petropavlovsk: SKGU im. M. Kozybaeva, 2007. – 92 s.
5. Krushynska, T. Iu. *Dilovi ihry zmahannia na zaniattiakh z medychnoi mikrobiolohii* / T. Iu. Krushynska, H. M. Kremenchutskyi, D. O. Stepanskyi // *Dosiahnennia i perspektyvy vprovadzhennia kredytno-modulnoi systemy orhanizatsii navchalnoho protsesu u vshchychkh medychnykh (farmatsevtychnykh navchalnykh zakladakh Ukrainy: materialy Vseukr. navch.-nauk. konf. z mizhnar.uchastii: u 2 ch.* – Ternopil, TDMU, 2014. – Ch. 1. – s. 249-250.
6. Krushynska, T. Iu. *Anhlomovni navchalni videofilmy na praktychnykh zaniattiakh z mikrobiolohii* / T. Iu. Krushynska, H. M. Kremenchutskyi, D. O. Stepanskyi // *Movna komunikatsiia: nauka, kultura, medytsyna. Materialy vseukr. nauk.-prakt. konf.* – Ternopil, TDMU: Ukrmedknyha, 2012. – s. 137-139.
7. Borisova, N. V. *Obrazovatelnye tekhnologii kak obekt pedagogicheskogo vybora* / N. V. Borisova. – M.: ITsPKPO, 2000. – 146 s.