

INNOVATIVE METHODOLOGY IN HIGHER EDUCATION

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INTERACTIVE LEARNING METHODS IN HIGHER EDUCATION INSTITUTIONS

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ABSTRACT

The article is devoted to the actual problem of using interactive learning methods in the educational process in institutions of higher education. Attention is focused on the fact that student-centred learning requires teachers to use innovative methods that ensure the maximum connection of theoretical information with its practical application, and the development of professional skills by directly solving cases and problem situations. With this in mind, the authors analysed some modern methods of interactive learning and found that a characteristic feature of modern higher education is the development of students' critical thinking using such methods as 'Fishbone', Bloom's daisy and cube, and Brainstorming.

It was determined that an integral component of the modern educational process is the use of various digital applications that help the teacher to develop interesting lessons. Usually, they are aimed at solving several tasks: gamification of learning, consolidation of learned material and evaluation of learning results. The tutorial was analysed as an interactive form of independent work. It is aimed at in-depth familiarization of students with the studied subject, discussion of creative projects during classes and development of creative potential. This form of independent student work allows you to teach them to think, for example, to synthesize various sources, formulate their own theses and prove them, anticipate criticism of their arguments and answer questions. At the same time, the authors emphasize that active methods should be organically combined with passive ones. In view of this, the teacher should carefully consider the procedure for using traditional and interactive teaching methods, not to abuse a significant number of the latter, as this can lead to a decrease in motivation.

Keywords: *interactive learning methods; digital applications; higher education institutions; student-centred learning; creativity.*

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INTRODUCTION

One of the main features of the development of modern higher education is the use of innovative technologies that contribute to the active assimilation of theoretical information by students and the development of practical skills that are necessary for a specialist to implement the tasks set by the employer. Currently, the main mission of the teacher is to build an educational process that is as close as possible to professional life situations. The teacher systematically forms in students a creative approach to solving professional tasks, critical and strategic thinking, the ability to work independently and in a team, and the desire for self-education and self-improvement throughout life.

Interactive learning is a special form of organizing cognitive activity, which involves the creation of comfortable learning conditions under which the student feels his success and intellectual ability (Turkot, 2011). A teacher acts as a manager of the organized acquisition of knowledge by students, for whom information becomes a means of acquiring professional skills and abilities. Therefore, the goal of interactive learning is the teacher's creation of such learning conditions under which the student himself will discover, acquire and construct knowledge and his own competence in various spheres of life (Radchenko, 2014).

A specific feature of interactive learning is the constant, active interaction of all participants in education (teacher-student, teacher-student, students-students). In this way, a partnership interaction is established, during which an analysis of complex professional situations and ways of solving them is carried out by one or another participant, who has an opportunity to be

as close as possible to the future professional activity (Vroom et al., 2022; Smit et al., 2023; Xia & Qi, 2023).

Scholars state that interactive methods make it possible to bring the educational process as close as possible to a real practical activity of a professional, develop analytical thinking, creativity and the ability to solve complex professional problems, and are also stimulated to self-development and self-education (Lozynska & Tsikhotska, 2016). Interactive methods are effective in teaching foreign languages (Ivashko, 2019; Pappas, 2020), primarily in developing competencies (Slipchuk et al., 2020; Spivakovskyy et al., 2020).

Giorgdze & Dgebuadze (2017) also emphasise the effectiveness of interactive learning and highlight the following methods: Creative tasks; Games (role-plays, imitations, business and development games). Use of human resources (excursions, inviting experts); Social Projects; Use of new material (interactive lectures, video-audio materials, student in the role of a 'teacher', Socratic dialogue, asking questions); Solving tasks (associative maps, brainstorming, case analysis). Other scholars highlight ICT utilizing; dialogue, discussion, brainstorming; games, projects, and teamwork (Yuzkiv et al., 2020).

RESEARCH METHODS

The research used a complex methodology, which involves a successful combination of general scientific methods, namely analysis, synthesis, comparison, generalization and highly specialized methods. In the process of theoretical elaboration of Ukrainian and foreign scientific sources, general scientific methods were applied. The experience of using interactive teaching methods as a means of increasing motivation to study any subject, and creating an open environment for interpersonal interaction between the teacher and students, has been summarised. The methods of observation and pedagogical experiment were used during the use of interactive methods in the learning process.

RESULTS

Interactive learning is based on a personal-activity approach, which is oriented on the use of both situational and non-situational learning methods. The teacher, having chosen one of these methods, organizes and coordinates the acquisition of new information, and cooperation between students. Thus, learning outcomes are achieved through the mutual efforts of participants in the learning process, students take responsibility for learning outcomes (Ostapchuk & Mironchuk, 2014).

One of the methods of interactive learning is 'Fishbone', designed by Kaoru (1968). A teacher, using the 'Fishbone' method during a lecture or a practical session, is able, together with students, to schematically depict the problem on which it is based, as well as, in the process of filling in the diagram, to carry

out a brief analysis of it and express ideas for its solution. Thus, a student can easily remember and reproduce a fairly voluminous layer of information.

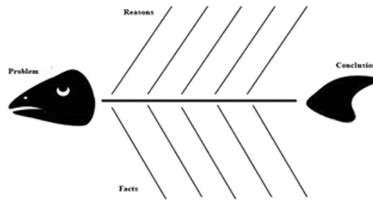


Fig. 1. Diagram by Kaoru, I. (1968)

For interactive learning, it is important to use the technology of critical thinking, which consists of the formation of an active, creative personality capable of critically evaluating information and making appropriate decisions. There are three phases of the development of this technology: revocation — actualisation of cognitive processes, awareness of the learned content, and comprehension. During the educational process at a higher education institution, we recommend using mental maps, Bloom's daisy, Bloom's cube, Brainstorming, and de Bono's six thinking hats.

Mental maps can be used in lectures, practical or seminar classes, for learning new material, its consolidation, generalization and structuring; during processing of new material by students; for the purpose of solving creative tasks, creating presentations, and developing projects.

Compilation by students of their own mental maps is one of the ways to identify gaps in their knowledge, a simulator for independent work with educational and reference literature, a means of developing intelligence, cognitive activity, and structured thinking.

The use of mental maps in higher education institutions gives positive results — it increases the quality and intensity of learning and teaching, highlighting the most important interrelated theses in a huge layer of information.

Chamomile and Bloom's cube contains a range of questions that correspond to the topic of the lesson, and actualise students' knowledge and experience. The teacher can independently ask questions after a certain face of the cube has fallen to the student or a flower petal has been torn off by them, or offer the class participants to independently formulate questions for their colleague. These techniques make it possible to comprehensively understand a phenomenon or problem. Let's see what questions we can put in a daisy or Bloom's cube:

- simple questions (factual) — require knowledge of facts and figures, that is, focused on memory;
- clarifying questions — aimed at eliminating inaccuracies in the understanding of the existing situation that needs analysis (“as far as I understood”, “did I understand you correctly that...”);
- interpretive questions (explanatory) — by pushing students to interpret, we teach them the skills of understanding the reasons for various actions or thoughts;

- evaluation questions (comparison) — questions aimed at comparing different approaches to solving a problem, expressing the positive or negative sides of established existing approaches;
- creative questions (forecasting) — aimed at developing creativity, forecasting possible ways of development of events (“What do you think will happen next ...?”);
- practical questions — aimed at applying experience, expressing one’s own vision of solving a problem (“How can we...?”, “How would you do...?”).

The named types of questions, depending on the learning goals and the hierarchy of mental processes, were divided by Benjamin Bloom into: remembering, understanding, application, analysis, synthesis, evaluation. With this in mind, the analysis of a certain problem should be gradual: answers to higher-level questions (analysis, synthesis, evaluation) are possible only after obtaining answers to lower-level questions (remembering, understanding, application). However, today we quite often observe a violation of the algorithm of using this technique, when in the process of the game, edges of questions of different levels may fall out. However, this does not change the high performance of the daisy and Bloom’s cube, even using the technique in a different interpretation.

Carrington’s “Pedagogical Wheel” (2012) (Fig. 2.) became a kind of modern interpretation of Benjamin Bloom’s methodology, which visualised and systematised computer applications from the point of view of their application to education.

The pedagogical wheel is a way of thinking that helps to apply in education the advantages of digital achievements for the development of students’ knowledge and skills. This visualization of mobile applications helps transform learning, motivates, and develops cognitive skills and future educational goals.

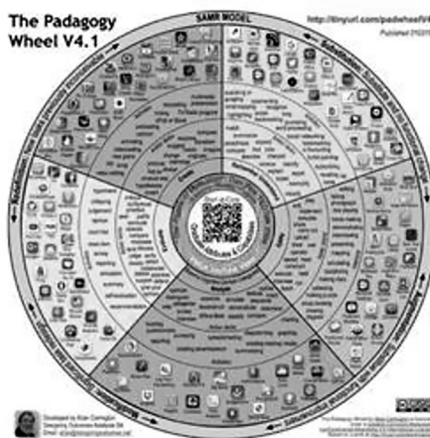


Fig. 2. The Pedagogy Wheel

The *Pedagogical Wheel* is divided into 5 sectors: remember & understand, apply, analyze, evaluate. Each sector contains a list of actions, activities and

applications that will help to complete the proposed task. The wheel is a kind of methodological guide for teachers who plan their own lessons and strive to successfully choose, combine and use various digital applications in accordance with the predicted learning outcomes. “Pedagogical wheel” maximally takes into account the interest of a modern student who cannot live without the Internet, social networks and mobile applications. In view of this, the teacher can use it for the participants of the educational process to acquire the necessary knowledge and develop professional skills in comfortable and familiar conditions for them.

The next method of six hats, suggested by de Bono (1969), refers to the development of creative and constructive thinking in a changing world, when solving one or another problem requires making quick and non-standard decisions. This technique suggests considering the issue from six sides. With this in mind, six students or six teams in the classroom analyse a certain aspect of the problem, complement each other’s answers, summarise and find a common rational solution. In our opinion, the method of six hats allows students to develop the ability to work in a team, in which everyone’s opinion is an extremely valuable component of the final decision. There are other methods of latent thinking (“Plus Minus Interesting”, “Other People View”, “Consider All Facts”, “Consequences and Sequel”, “Random Input”, “Six Value Medals”) that contribute generation of new ideas, departure from stereotypes, make changes in the problem-solving.

In addition to active learning methods that we use in face-to-face or distance learning, we provide a tutorial, aimed at organizing, correcting and controlling the autonomous learning of students. The teacher interacts with the group or individually with the student by assigning tasks and giving detailed instruction.

Tutorials contribute to the development of:

- students’ basic skills (for example, identification and evaluation of relevant resources, confident oral or written communication, effective time management, critical self-evaluation);
- ability to think and act as a professional;
- productive interaction between the student and the tutor during the solving of tasks, which contributes to the support of his personal development during the entire period of the educational process.

Furthermore, information and communication technologies are an innovative driving force because they provide the opportunity to combine digital technologies and resources to expand horizons and improve the quality of education, teaching and training than all previous educational technologies from the blackboard to television (Slipchuk et al., 2020).

Therefore, along with the interactive methods that we use in the classrooms of a higher education institution, educational platforms that allow you to develop and use interactive exercises while studying a particular topic are interesting. They usually offer a form of game, which is a significant driving force for the development of students’ cognitive abilities, because the desire

to win is organically combined with the use of existing knowledge and contributes to the filling of information gaps. One such modern platform is Baamboozle. This interactive platform allows you to create questions and tasks for one student or eight teams. Each question is placed under a certain number, so the teams do not know which task they will receive. Along with task numbers, teams open numbers under which additional possibilities are placed: students can take points from another team or their points can go to another team, they can gain or lose a certain number of points. The developer of the interactive task on the Baamboozle platform can score each question differently, thereby marking more difficult tasks. Another interesting feature of this platform is that we can create exercises for self-testing. When preparing the task, the developer enters the correct answer in the column on the right, which allows individual performance of the task. So we can ask each student to complete an exercise on Baamboozle on their own, and then determine the winner using the resulting ranking points. We use the exercises developed on this platform to check homework or generalize the studied topic.

More opportunities are provided by the interactive Wordwall platform, which allows you to quickly and easily develop educational resources. The advantage of this resource is the presence of a significant number of different templates, which allows you to diversify your classes. Wordwall can be used both for group and individual work when consolidating or summarizing new material. On the platform, you can not only develop your own tasks, but also find ready-made ones in the bank of tasks.

Similar to Wordwall is also the interactive learning service LearningApps.org, which offers a variety of templates for developing exercises. The service allows the participants of the educational process to communicate, as the teacher can send tasks both to one student and to the group as a whole, and later receive the results of their implementation, analyse errors and work on them in class. LearningApps.org also has a bank of educational activities, but we can only use them directly during the lesson, because they belong to other teachers, so you will not be able to remotely check the proposed assignment.

Kahoot's online service can be used for testing, allowing a teacher to create interactive learning games that consist of a series of questions and multiple answers. This form of testing is of interest to students who can complete online assignments, both independently and in teams, using any mobile device connected to the Internet (Marchenko et al., 2021). The teacher uses the platform for formative, ongoing or summative assessment. To prepare texts, you can construct questions of various types: Quiz itself, True or False, Open-ended, Puzzle. But it is better to vary the test questions, which will allow a comprehensive assessment of students' knowledge.

DISCUSSION

Teachers discuss the effectiveness of using interactive teaching methods. The National Training Laboratories Bethel (USA) found that the most effective methods are those aimed at teaching others, using personal experience, and discussion (Fig. 3).

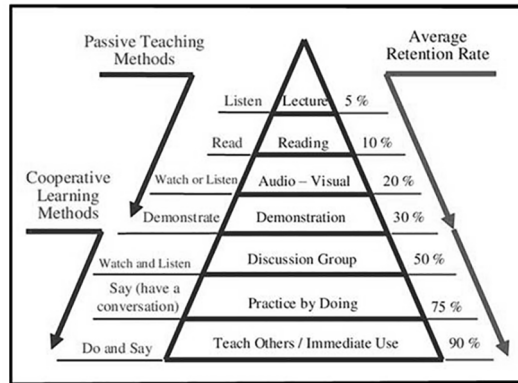


Fig. 3. Learning Pyramid (Al-Badrawy A. Abo Al-Nasr, 2017)

With this in mind, Cooperative Learning Methods (case method, brainstorming, fish-bone, business game, Bloom's and Edward de Bono's methods) are the basis of the modern educational process, as they allow the development of professional skills and abilities, the ability to critically evaluate information and express your own opinion, confirm it with facts. It is worth noting that Cooperative Learning Methods should be combined with Passive Teaching Methods, since the latter cannot be avoided, since during the class there are tasks that require reading or demonstration, holding an interactive lecture.

CONCLUSIONS

Therefore, interactive learning methods diversify the educational process, develop students' cognitive interests and skills to work in a team. These methods will make it possible to create an educational environment in which theory and practice are learned at the same time, which contributes to critical and logical thinking, and the formation of individuality.

Practicing teachers constantly develop new methods of interactive interaction that are as close as possible to real professional situations, which contributes to the formation of specialists in a certain field. These methods are also a good motivator for acquiring and using in practice new knowledge, critical evaluation of information, teamwork and proper discussion.

One of the characteristic features of the modern educational process is the use of interactive digital platforms, which, on the one hand, are aimed at the gamification of learning, and on the other — at the consolidation of the learned material. These platforms provide an opportunity for teachers to use ready-made tasks or to develop their own for both individual and group

performance. Digital platforms have also become good assistants in conducting tests, since the teacher does not waste time checking answers and informing students about the results obtained. Given this, it can be argued that digital resources have become an integral part of the modern lesson.

Prospects for further research can be seen in a detailed analysis of modern electronic resources that cover various didactic tasks: assimilation of new knowledge, development of professional abilities and skills, assessment of learning outcomes, etc.

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ВИКОРИСТАННЯ МЕТОДІВ ІНТЕРАКТИВНОГО НАВЧАННЯ У ЗАКЛАДАХ ВИЩОЇ ОСВІТИ

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Стаття присвячена актуальній проблемі використання інтерактивних методів навчання в освітньому процесі в закладах вищої освіти. Зосереджено увагу на тому, що студентоцентроване навчання вимагає від викладачів використання інноваційних методів, які забезпечують максимальний зв'язок теоретичної інформації з практичним її застосуванням, вироблення професійних навичок шляхом безпосереднього вирішення кейсів та проблемних ситуацій. З огляду на це, авторами проаналізовано деякі сучасні методи інтерактивного навчання та виявлено, що характерною особливістю сучасної вищої освіти є розвиток критичного мислення студентів за допомогою таких методів як «Fishbone», ромашка та кубик Блума, шість капелюхів мислення де Боно тощо. Визначено, що важливою складовою сучасного освітнього процесу є використання різноманітних цифрових додатків, які допомагають викладачеві розробити цікаві заняття. Зазвичай, вони спрямовані на вирішення декількох завдань: гейміфікацію навчання, закріплення вивченого матеріалу та оцінку результатів навчання. Проаналізовано тьюторіал як інтерактивну форму самостійної роботи. Вона спрямована на глибоке ознайомлення студентів із предметом, що вивчається, обговорення творчих проєктів під час занять та розвиток творчого потенціалу. Така форма самостійної роботи студентів дозволяє навчити їх думати, наприклад, синтезувати різні джерела, формулювати власні тези та доводити їх, передбачати критику своїх аргументів та відповідати на запитання. Водночас автори наголошують, що активні методи мають бути органічно поєднані з пасивними. З огляду, на це викладач повинен добре продумати порядок використання традиційних та інтерактивних методів навчання, не зловживати значною кількістю останніх, оскільки це може призвести до зниження мотивації.

Ключові слова: інтерактивні методи навчання; цифрові додатки; заклади вищої освіти; студентоцентроване навчання; творчість.

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