

Application of interactive forms of learning in innovative educational activities of universities

Marina Modina^{1,*}, Valentin Shkoda², and Natalia Shtyrkhunova¹, Natalia Ksenzova¹, and Natalia Shtyrkhunova¹

¹ Admiral Ushakov Maritime State University, 93 Lenin Ave., Novorossiysk, 353924, Russian Federation

² Krasnodar Higher Military Aviation School of Pilots named after Hero of the Soviet Union A.K. Serov

Abstract. The article analyzes the problems of using interactive methods of learning in the modern process of education and training in higher education. The foundations of innovative approaches to the use of interactive forms of learning are defined. Methodological recommendations for conducting classes involving interactive forms of learning.

1 Introduction

The change in the strategic orientation of higher education and its goals causes radical changes in the modern education of specialists in any field. One of the main directions of modern education is the development of independent thinking and the ability to self-education as a basis for continuous professional growth. The current new requirements for the training of specialists in the field of electronic and information resources and systems, electrical communications can be defined as an innovative education. The fundamental position of the innovative component of the modernization of the educational process is to expand the content and methodology for a more complete mastery of the knowledge system.

2 Materials and Methods

Forming an integral personality, the innovative educational and pedagogical activities of the departments contribute to the development of its qualities at all levels of competency-based approach implementation: instrumental, communicative, systemic; and also they prepare a personality for determining the essence meanings of professional activity.

The use of new knowledge, methodological approaches, technologies in an active, democratic contact “teacher – student” trains students, positively assessed by them, and the technical means of informatization of the educational process are perceived by students as the most progressive means of communication.

Thus, with the available opportunities of informatization of education, it is possible to consider asynchronous student-teacher communication, in

particular via e-mail, so the most important task is to create a system that will provide conditions for the dynamic development of future military specialists and in technological terms. Hence, there exist several interrelated directions for solving this problem:

- improving the quality of education through the fundamentalization and application of new approaches to learning with the use of new information and communication technologies, including networking;
- ensuring the advanced development of the information system of education;
- providing greater accessibility of education through the use of distance learning technologies.

In the process of training specialists of any specialty, the issues of ensuring high quality of training on the basis of advanced technologies of education are relevant. Reflecting the needs of social production in qualified specialists, advanced higher education satisfies these needs. In this system, the main attention should be focused on developing the ability to act independently in conditions of uncertainty. It is also necessary to develop the ability to learn, the acquisition of new knowledge using interactive forms of learning [2, 9, 10].

The current condition of information and educational environment of the university is represented by a variety of electronic books and textbooks, works of scientific classics, special scientific and educational literature from the leading Russian military publishers, at the same time there are such educational multimedia, as:

- interactive tests and simulators designed to practice the acquired knowledge and skills;
- audiobooks and video materials that cadets use to listen to lectures by instructors, both in specially equipped classrooms and in independent work;
- presentations, diagrams, spreadsheets, etc.

* Corresponding author: marishamodina@yandex.ru

Every student at any university is usually provided with access to the electronic library system, with publications on the studied disciplines and formed in accordance with the copyright holders of educational and methodological literature. The digital library system provides individual access for each learner from anywhere with Internet access [3, 5].

We single out the following aspects as promising directions for the development of the innovation model:

- expanding the functionality of the information and educational environment within the framework of an innovative model that improves quality;
- organization of effective educational resources using the electronic model;
- interactive technologies that make the educational space individualized.

Interactive technologies are a real chance to organize independent work of students. Resources of specialized software allow creating multi-variant multi-level educational content. Equipment, technical teaching aids make it possible to restructure the educational program for the educational task, and this allows the teacher to be more free and mobile.

The use of modern technical means and information technologies makes it possible to intensify, improve the efficiency and quality of education.

Methodological recommendations for the application of the interactive forms of training

Three forms of teacher-student interaction have taken shape, become established, and become widespread in modern education.

1. passive methods;
2. active methods;
3. interactive methods;

Each of them has its characteristics.

The passive method is a form of teacher-student interaction in which the instructor is the main actor and manager of the class, and students act as passive listeners, subject to the instructor's directives. The teacher-student communication during the passive classes is carried out through quizzes, independent, test papers, quizzes, etc. Considering modern pedagogical technologies and the effectiveness of students' learning, the passive method is not very effective, but despite this, it offers some advantages. It is relatively easy for a teacher to prepare for a class and to present a relatively larger amount of learning material within the limited time frame of a class.

The active method is a form of interaction between students and the instructor, in which they interact with each other in the class and the students are not passive listeners, but active participants; the students and the instructor are on an equal basis.

Many people equate active and interactive methods, but despite their similarities, they have differences. Interactive methods can be seen as the most modern form of active methods.

Interactive method. Interactive ("Inter" is mutual, "act" is to act) means to interact, to be in a mode of conversation, dialogue with someone. In other words,

unlike active methods, the interactive ones are focused on a broader interaction of students not only with the teacher, but also with each other and on the dominant activity of students in the learning process. The teacher's place in interactive classes is limited to directing students' activities to achieve the goals of the class. The teacher also develops a lesson plan (usually interactive exercises and assignments in the course of which the student learns the material) [2, 4, 5, 7, 8, 9].

Interactive learning is a special form of organizing cognitive activity. It has quite specific and foreseeable goals:

- increasing the effectiveness of the educational process, achieving high results;
- enhancing of motivation to study the discipline;
- formation and development of professional skills of students;
- developing communication skills;
- developing skills of analysis and reflexive manifestations;
- developing skills in the use of modern technical means and technologies for perception and processing of information;
- formation and development of the ability to independently find information and determine its reliability;
- reducing the share of classroom work and increasing the amount of independent work of students.

Interactive forms are used in classroom instruction, in the independent work of students and other types of training at all levels of training, as well as in professional development. The proportion of classes held in active and interactive forms is determined by each Basic Educational Program (BEP), the characteristics of the student population and the content of specific disciplines, and in general in the learning process, it should be at least 20% of the classroom. The volume of hours deducted for interactive forms of learning should be provided by the curriculum and reflected in the syllabus of the educational-methodical complex of the discipline.

The teacher can use the following interactive forms to address educational and learning objectives:

- psychological and other trainings;
- computer simulations;
- computer modeling and practical analysis of the results;
- presentations based on modern multimedia;
- interactive lectures;
- interactive board;
- network informational educational resource (network resource).

Training is a method of active learning aimed at the development of knowledge, skills, and social attitudes. Training is a form of interactive training, the purpose of which is to develop competence of interpersonal and professional behavior in communication.

The advantage of training is that it ensures the active involvement of all participants in the learning process.

Computer simulation is a process simulation involving mechanical or computer devices; the word “simulator” is most used to refer to computer programs.

3 Results and Discussion

Computer modeling is performed with a computer program running on a computer (interacting computers) that implements an abstract model of some system. Computer models have become a common tool for mathematical modeling and are used in physics, astrophysics, mechanics, electrical engineering, chemistry, biology, and other sciences. Computer models are used to gain new knowledge about the simulated object or to estimate approximately the behavior of mathematical systems that are too complex for analytical investigation.

Presentation based on modern multimedia. Presentation is an effective way to deliver information, to visualize the content, to highlight and illustrate the message and its meaningful functions.

Interactive lecture is a speech by the lead trainer in front of a large audience using the following active forms of learning:

An interactive board is a touch screen connected to a computer, the image from which is transmitted to the board by a projector. Interactive board provides teachers and students a unique combination of computer and traditional methods of organizing educational activities: with its help it is possible to work with virtually any software and simultaneously implement various techniques of individual, collective, public ("answer at the board") students. The main form of displaying materials to the audience is a presentation.

Network information educational resource (network resource) is a didactic, software and technical complex designed for training with the predominant use of the Internet, regardless of the location of the students and trainees. Learning with the help of online resources can be seen as a purposeful, organized process of student-teacher interaction, with each other and with the means of learning.

Structure of methodological recommendations for preparing for classes in an interactive form

It is recommended to include the following algorithm in the structure of methodological recommendations to prepare students for interactive classes:

1. Class Preparation;
2. Introduction;
3. Basic part;
4. Conclusions (reflection).

The following key points should be included in the guidelines:

- how the student can prepare for this type of lesson (study of certain material, obtaining certain special skills, learning different techniques for solving the problem, etc.);
- what literature should be used in preparation;
- knowledge of which sections of the discipline (interdisciplinary connections) should be used;
- what tools will be needed to conduct the class;

- how the lesson will be conducted (proceeding of the lesson, scenario, topics for discussion, etc.)
- which special tools will be used in the interactive lesson (information, special equipment, etc.);
- how to behave in this class;
- the role of each student in the class.
- Conducting an interactive class includes the following rules of student behavior:
- students should be encouraged to analyze a variety of issues carefully, recognizing that the respect for everyone and tolerance are core values all people should care about;
- to encourage and inspire the search for the truth, rather than a mere exercise in rhetoric;
- to spread the ideal of tolerance of other people's points of view, promoting the search for common values by accepting the differences that exist between people;
- competition and the desire to win should not dominate the willingness to understand and investigate the problems discussed;
- when discussing sides, avoid personal attacks on their opponents;
- to argue in a friendly manner;
- to be honest and accurate to the best of their knowledge, providing support and information. Students should never intentionally misrepresent facts, examples, or opinions;
- listen carefully to their opponents and try to do everything not to distort their words during the debate;
- the language and gestures used by students should reflect their respect for others.

Teacher ethics include the following points:

- the teacher should facilitate students' personal input and the free exchange of ideas in preparation for interactive learning;
- the teacher should provide a friendly atmosphere for the students and show a positive and stimulating response;
- the teacher should facilitate the preparation of the class, but should not create the arguments in the discussions himself;
- the teacher should emphasize the educational, not the competitive goals of the students;
- the teacher must ensure the relationship between himself and the students, and it must be based on mutual trust;
- the teacher should stimulate interest by raising issues that are meaningful to students;
- to stimulate research work;
- to prepare in advance questions that could be put up for discussion during the class, to keep the discussion going;
- not to allow the problem to go beyond the scope of the problem being discussed;
- to ensure the broad involvement in the conversation of as many students as possible, or better yet, all of them;
- not to omit a single incorrect judgment, but not to give the right answer immediately; students should

be involved in this by organizing their critical evaluation in a timely manner;

- to take the time to answer questions about the material in the class and direct them to the audience;
- to ensure that the object of criticism is the opinion and not the participant who expressed it.
- to analyze and evaluate the lesson, to summarize the results. For this purpose, it is necessary to compare the goal formulated at the beginning of the lesson with the results obtained, to draw conclusions, to make decisions, to evaluate the results, to reveal their positive and negative sides;
- to help the class come to a consensus, which can be achieved by listening carefully to different interpretations, looking for common trends in decision-making;
- to make a group decision together with the participants, while stressing the importance of a variety of positions and approaches;
- in the closing remarks, to lead the group to constructive conclusions of cognitive and practical value;
- to get a feeling of satisfaction from the majority of participants, i.e. to thank all students for their active work, to single out those who helped in solving the problem;
- to show high professionalism, good knowledge of the material within the curriculum;
- to have a skill in speech culture and, in particular, a free and competent knowledge of professional terminology;
- to show communication skills, or rather - communication skills, allowing the teacher to find an approach to each student, interested and attentive to listen to everyone, to be natural, to find the necessary methods of influence on students, to show demanding, while respecting the pedagogical tact;
- to provide a quick response time;
- the ability to lead;
- the ability to engage in dialogue;
- to have predictive abilities to foresee all difficulties in mastering the material, as well as to predict the course and results of pedagogical influence, to foresee the consequences of one's actions;
- to know how to control yourself;
- the ability to be objective.

4 Conclusion

Modern education without the use of interactive methods and multimedia technologies is practically impossible. This makes it possible to present educational material not only in the traditional way, but also in a more accessible perception for students in visual-verbal form. The interactive methods bring the greatest effect for students when they are used in combination in the process of mastering the academic discipline. Combined with traditional types of educational work, a higher efficiency in the training of specialists is achieved [1, 4, 5, 6].

References

1. Sidorenko V.S., Verbal Model of Electronic Information and Educational Environment in Humanities Higher Education Institution. Scientific Readings named after Professor N.E. Zhukovsky (9; 2018). Collection of scientific articles of the IX International Scientific and Practical Conference "Scientific Readings named after Professor N.E. Zhukovsky" December 19-20, 2018 (2019).
2. Sidorenko V.S. The Effectiveness of the Use of Information and Communication Technologies in Educational Institutions of Higher Education Journal "Bulletin of the Kuban Socio-Economic Institute" No. 2-3(82-83) (2019).
3. Sidorenko V.S. , Saliy V.V. The Use of Information Technology as a Tool for Improving the Quality of the Educational Process at the University Professional Competence of the Modern Teacher: Proceedings of the II Festival of Pedagogical Skills (2016)
4. V.F. Tenischeva, Yu.S. Kuznetsova, E.N. Tsyganko, V.A. Filonenko, V.A. Petkov, Technology of interdisciplinary interaction in foreign language environment as a means of professional training of marine specialists, Scientific Notes of the University named after P.F. Lesgaft **3(169)**, 351–356 (2019)
5. V.F. Tenischeva, Y.S. Kuznetsova, E.N. Tsyganko, Possibilities of the simulator in formation of professional competence of the marine specialist in accordance with the requirements of the STCW convention, World of Science, Culture, Education **2(81)**, 77–80 (2020)
6. S.A. Balyaeva, Pedagogical conditions of renovation of marine educational technologies, World of Science, Culture, Education, Scientific Journal **2(87)**, 11–14 (2021)
7. L.N. Borodina, E.S. Klimenko, A.Yu. Rychenkova, On the issue of training industry personnel in maritime universities on the basis of digitalization of the educational environment, Trends in the Development of Science and Education **72**, 430–433 (2021)
8. S.I. Kondratiev, A.L. Boran-Keshishian, A.N. Tomilin, Conceptual foundations of developing a test assignment bank for the state final certification of graduates of maritime educational organizations, Maritime Intelligent Systems **1-2(43)**, 142–149 (2019)
9. A.N. Uglova. Designing methodological support for a general scientific discipline, Theoretical & Applied Science **4(36)**, 138–140 (2016)
10. A.I. Epikhin, A.V. Ignatenko, D.E. Studenikin, E.V. Heckert, Key trends in the introduction of artificial intelligence technologies in the management of marine autonomous surface vessels, Marine Intellectual Technologies **1(98)**, 88–96 (2021)