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Activization the cognitive interest of university students through the use interactive teaching aids

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Abstract

The didactic tasks of a higher educational institution are diverse and specific, characterized by a professional theoretical and practical orientation, have integrity and completeness. To solve these problems, an active educational and cognitive activity of students is required, which is facilitated by the integrated use of various interactive technologies (information, expert-teaching, training and others). Based on the analysis, the article identifies approaches to enhancing cognitive interest and individual work of students using interactive teaching aids. It has been recognized that modern innovative processes require new approaches to stimulating cognitive interest, since traditional forms of learning are gradually fading into the background, and individually oriented training based on information and communication technologies are embodied in practical activities. It is concluded that the integrated use of interactive tools and methods helps to increase the effectiveness and quality of training due to the motivation and activation of cognitive interest of students. The process of searching for new information is also being optimized and the field of students' individual activity is expanding, the information culture and the ability to process information, perform modeling and act in non-standard situations are being developed. The professional knowledge and experience of teachers allows to combine qualitatively traditional and interactive teaching aids, to apply them comprehensively, which ultimately increases the cognitive interest of students and thus contributes to more effective completion of educational tasks, the development of professionally significant qualities for future specialists.

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Keywords

Cognitive interest, self-study, students, interactive technology, motivation, education, interactive tools.

Introduction

The didactic tasks of a higher educational institution are diverse and specific, characterized by a professional theoretical and practical orientation, have integrity and completeness. To solve these problems, an active educational and cognitive activity of students is required, which is facilitated by the integrated use of various interactive technologies (information, expert-teaching, training and others).

The problem of the integrated use of interactive technologies in the education system has recently attracted increased interest among teachers. Various problems of using computer and interactive technologies in the educational process are reflected in the works of A. Lekka, M. Tsironi, J. Pange [Lekka, Tsironi, Pange, 2015], P. Kovács, N. Murray, G. Rozinaj, Y. Sulema, R. Rybárová [Kovács et al., 2015], J. Castillo-Manzano, M. Castro-Nuño, M. Sanz Díaz, R. Yñiguez [Castillo-Manzano et al., 2016] and others.

The review of educational literature indicates that some authors imply the integrated use of interactive tools, as a condition necessary for solving didactic problems. From the point of view of the second, the use of interactive tools is necessary to obtain new learning opportunities. While others believe that applying them in a complex way is possible only when they complement each other. A significant number of researchers thinks that complex using informational tools lies in the application of all their varieties in different types of classes on a particular topic and combination with traditional manuals according to the general intentions of training [Miller, Nourbakhsh, 2016, 2116].

The purpose of the article is to analyze and describe the complex application of interactive tools to promote the activation of the cognitive interest of university students.

In order to achieve the objectives and solve the study tasks used a range of methods, namely: analysis, synthesis, comparison, classification and synthesis of information on the research problem that has allowed to systematize the scientific material and to form its own view on the problem posed.

Interactive learning tools as a means of enhancing the cognitive interest of university students

The use of modern interactive technologies for educational purposes is possible in the following areas [Bragina, 2018, 14-15]:

- activation of various levels of the educational process: increasing the cognitive activity of the student, expansion of interdisciplinary connections, accelerating the search for the necessary information, increasing the effectiveness of the entire educational process;
- development of the student's personality: preparing the individual for comfortable health in the

conditions of general informatization, developing the ability to choose the best solution in difficult situations, aesthetic education using multimedia, computer graphics, developing various types of thinking and communication abilities, improving the information culture, developing the ability to process information, simulate a task or situation, carry out experimental or research activities;

- fulfillment of a social order from the side of society: preparing a competent user of information and computer tools, conducting professionally oriented work in the field of computer science.

The complex use of interactive teaching methods and means should be understood as a system of pedagogical influences on the students aimed at solving the holistic learning task, carried out by a teacher using a combination of information and computer tools throughout the education process, ensuring optimal and effective achievement of educational goals.

The main areas of using complex interactive information technologies, for example, can be: the demonstration of phenomena and processes inaccessible for visual observation through physical or mathematical models (virtual laboratory); the study of phenomena, processes, objects in a variety of practical exercises and in preparation for them (a simulation game); solution of problems of diploma and course design; development of various skills, technical support of game forms of employment (role-playing games); stimulation of students' independent work aimed at their in-depth study of educational material and self-control of acquired knowledge etc. [Novolodskaya, 2015, 71].

The indicated methods and tools can be applied both individually and in combination, depending on the tasks of training, but their complex use is more effective.

It should be stated that you need to develop a holistic didactic system in the learning process. First, to combine a traditional form of learning with computer technology. Secondly, to provide an educational information and communication environment in which students would feel comfortable. Thirdly, to find the best uses of these technologies, while avoiding conflict of the different forms of education.

To provide a complex solution of educational problems the authors suggest educational business games as one of the most effective methods. They make it possible to form and develop both professional and universal competencies demanded by employers today — the ability to solve a problem independently, to apply existing knowledge in a practical activity, to adapt quickly to the changing situations, to act in a team, etc. The educational business game provides an opportunity to preset socially oriented context of future activities in the specialty and, thus, to simulate future employee competence more effective in comparison with the traditional training. The business game is an effective means of the educational process, which oriented on the competition principles, effectiveness, initiative, which allows students to acquire, demonstrate and apply skills, knowledge, skills and experience in professional activities, stimulate corporate solidarity and collective creativity. The results of the game effectiveness can be summarized by a comparing expert estimates obtained at the end of the game. Also, the students get practical skills during the game. They develop organizational abilities, stimulate initiative, the ability to analyze and make decisions in non-standard situations independently. At the same time, the business qualities of each individual person are manifested. The effectiveness of gaming educational technologies in any situation is determined after applying the acquired knowledge and skills of real life in practice. Business games are an effective means of professional training for modern specialists, which is based on the integrated use of interactive information technologies.

Another striking example of cognitive interest formation among university students based on the integrated use of information interactive technologies is a virtual training or research laboratory. In the

framework of educational process, it provides:

- the choice of interesting educational tasks;
- the organization of cyclic management of cognitive interests of students;
- the heuristic method of solving problems with the subsequent comparison of results;
- the creation of competitive situations for stimulating cognitive interest.

The experience of implementing these principles attest their high pedagogical effectiveness [Shangaraeva, 2017, 695].

Moreover, we consider the complex approach to the creation and using a virtual educational research laboratory as the most effective at all stages of the cognitive process. Such laboratories have a number of advantages: they allow obtaining data that are not available in traditional educational experiments; make it possible to carry out convenient processing of experimental results.

It is necessary to create such a situation in which motivation and interest in educational material would play a major role.

Interactive learning tools as a means of enhancing the independent cognitive work of university students

Since the learning process aimed at increasing the hours of students' individual work of, it must be organized in such a way that consolidate their knowledge, skills most effectively and use them into practice in the future. Modern innovative processes require new approaches to the organization of individual cognitive work, since traditional forms of learning are gradually moving into the background, and individually oriented training based on information and communication technologies are embodied in practical activities.

We proposed the activization of individual work as one of the directions of improving student learning, based on interactive learning tools (the electronic content) on the principle of modular learning technology, that will help to generate the knowledge independently, which are necessary for the professionalism of future specialists.

Modern pedagogy considers students' individual work as a leading form of training organization in the system of professional training of future specialists. The proportion has significantly increased and the role of individual cognitive work in the educational process has been strengthened. Moreover, methods and didactic means of its implementation have become more diverse.

Today, this problem is being tackled by a wide circle of academia. The works of T.V. Maltseva [Maltseva, 2018], A.A. Shcheviev [Shcheviev, 2016], B. Gana, T. Menkhoff, R. Smith [Gana, Menkhoff, Smith, 2015] and many others indicate that the widespread adoption of the modern achievements in the conditions of society informational glut is impossible without using new pedagogical technologies with interactive learning tools among them.

Some researchers interpret the individual cognitive work as a teaching method, others as a form of organization of educational activity or a learning tool, and more recently, as an educational technology. We can agree with the opinion of L.K. Raitskaya, that the individual student's cognitive activity is an activity they carry out in the process of academic work. It corresponds with the requirements of curricula and programs, thanks to which students acquire knowledge, leading skills, with or without the teacher guidance that consequently leads to new cognitive results [Raitskaya, 2012, 41]. Scientists also consider students' individual cognitive activity as a way to independence in thinking and character [Parkhomenko, Krotov, 2018, 272]. The most common types of individual educational cognitive activity are work with the textbook, study guides, didactic materials, problem solving, preparation of

essays, reports, laboratory work, research, modeling, design, self-observation, using student's personal computers or tablets [Alieva, 2018, 244].

At the same time, we consider the individual cognitive work – planning, organization, and a system for evaluating results – as one of the weakest places in higher education and one of the insufficiently explored aspects of pedagogical theory, especially in relation to the current realities in the field of education.

The research works, devoted to the organization and planning of individual students' work [Dvoryankina, 2017; Ovchinnikova, 2019; Shibaev, 2019, etc.], as well as didactic, psychological, organizational-active, logical, methodological and other aspects have been considered, various aspects of the problem have also been discovered. At the same time, the tasks of the process, technological and motivational support of students' individual cognitive activities deserve a special attention during learning inside or outside classrooms. This should be a holistic system that considers the individual interests, inclinations and abilities of students.

Each university student can be registered as a user of the university website and have a personal login and password. Only students, the head of the department and teachers have access to the educational support of certain disciplines of the curriculum.

There is a virtual classroom on the university's website where you can get acquainted with the curriculum, take tests, download homework useful for the program, select literature for term papers or thesis, use useful links to educational resources for individual work, etc.

This approach creates the conditions for improving the quality management of educational and methodological support of disciplines and the process of assimilation of their content. This is due to such aspects as:

1) the content of the discipline (the lecture material, additional didactic material in accordance with the topic) and the methodology of its study (discipline program) will be presented in electronic form, they are available for a reviewing and analysis not only to the student, but also to the teachers. It will be possible the process discipline modernization, which changes the content, if necessary;

2) the basis of the development and presentation of the material is the algorithm and the amount of student learning activity. The program of the discipline is a methodological recommendation on the actions of the student as a subject of the educational process. It clearly reflects: what the student must learn, in what forms, by what methods, the level of assimilation, its quantitative and qualitative indicators will be checked;

3) considerable attention should be paid to individual tasks, which, in combination with the lecture material, means of control provide the necessary conditions for a student to move from the level of knowledge to the level of skills. Performing the individual task and discussing it in the practical exercises leads to the expansion and deepening of knowledge, develops and consolidates professional skills, develops creative thinking and oral speech of students, and promotes self-realization of a person. Scientists understand self-realization as a particular activity, which implies the ability to plan, program, and determine the personal regime in learning. This is the process and result of the holistic development of the personality;

4) the presence of test forms of knowledge testing (lecture material) will provide a certain objectivity of the level of the final learning outcome;

5) an electronic journal will allow you to quickly track the dynamics of educational activities of students and the level of assimilation of the discipline content [Khristidis, Mozhaytseva, 2017, 356-357].

The teacher should consider the following indicators while planning this type of individual work:
– necessary knowledge, skills that a student must acquire as a result of completing all tasks intended

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- for individual assimilation (in accordance with the goals and objectives of the discipline);
 - developing professional competencies, which should be manifested through the assimilation of educational material;
 - developing students' creativity in the process of studying the discipline, while doing individual work;
 - development of an active students' research position;
 - training the responsibility for task time [Grechnikov, 2018, 97].

Such individual knowledge acquisition is not passive while in learning tasks, on the contrary, students will be involved in the active cognitive work from the very beginning, which involves the use knowledge acquisition to solve various communicative tasks in common activities in practical classes [Patel, Purohit, Gadhavi, 2016, 22]. Therefore, a student must possess not only computer skills in such form of organization of individual work, but also skills of work with a variety of information from various Internet resources (electronic directories, dictionaries, textbooks, articles, etc.). It will provide the possibility of comparing the material, its generalization and effective assimilation, because students, while searching a material in the Internet also have the opportunity to acquire the methods of analysis, synthesis and generalization of information.

Having analyzed the scientific and pedagogical material, based on experience in the system of individual work, we can highlight certain didactic principles:

- 1) phasing – the assimilation of new material, its consolidation and using in practical activities in accordance with each topic of discipline;
- 2) systematic – based on operational feedback, which is embedded in the text of the training material and, in addition, provides for communication with the teacher;
- 3) motivation – enhancing the cognitive activity of students to learn due to the novelty and ensuring the emotional state of learning;
- 4) alternativeness – several options for tasks can be developed for each topic, which provides a student with a possibility to choose the opportunities, that he or she likes most of all;
- 5) the efficiency – an electronic journal provides the ability to monitor the dynamics of the educational activities of students and the level of assimilation of the content of the discipline;
- 6) the objectivity – the presence of test forms of knowledge testing (along with individual tasks), that provides greater objectivity in assessing students' knowledge.

Electronic educational disciplines can have the following structural elements: information about the author of the course and the teachers who are teaching this discipline; links to the curriculum program files; links to additional information resources that are used in the educational process; modular sections.

Let us consider the design of the module-section of electronic discipline. The main structural elements of the module section are: name (topic); target; the requirements for knowledge and skills, that a student should receive based on the results of studying the module for distributing the student's workload at lectures, practical exercises, during individual work and control events; theoretical and methodological material, which study is sufficient to achieve learning outcomes; list of individual tasks for individual work; criteria for evaluating student learning outcomes. The system also provides exchanging of messages between the teacher and students [Bochkareva, Vysotskaya, 2018, 58].

This form of training, being applied to the educational process in a higher educational institution, will certainly provide students with access to educational and methodical materials for each discipline anytime and anywhere, which will positively affect the quality of professional training of future specialists. The introduction of distance learning, based on modern information technologies, will

contribute to the information saturation, create conditions for improving the quality of educational and methodological support, and improve the assimilation of educational material by students.

Thus, the using of interactive teaching aids and the introduction of a coherent modular technology for teaching and learning individual work will contribute to the development of professionally significant qualities of future specialists.

We have to mention that the main place in the process under development is occupied by the role of a teacher in the organization of individual cognitive work of students. He or she directs the cognitive process and analyzes the individual work of students, makes efforts for developing the skills of individual cognitive activity of a personality. The whole process requires a teacher to have high professionalism and skill.

Conclusions

Based on the analyzed material, we can conclude that the complex use of interactive tools and methods helps to increase the effectiveness and develop the basic principles of teaching university students. They are the following:

- increase in motivation of learning through the use of automated means of visualization of the studied phenomena and the management of the studied objects, the possibility of independent choice of forms and methods of training, the implementation of game situations in the educational process;
- intensification of cognitive activity and cognitive forms of interest;
- optimization of the searching new information;
- expansion of the sphere of students' individual activity due to the organization of various types of educational activities (research, experimental, educational-game, informational-educational), including individual, group, and collective;
- development of information culture and the ability to process information, perform modeling and act in non-standard situations.

The professional knowledge and experience of teachers make it possible to qualitatively combine traditional forms of instruction with innovative computing and interactive technologies, to apply them in a complex manner, which significantly increases the cognitive interest of students and thus contributes to more effective completion of educational tasks and learning materials.

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Активизация познавательного интереса студентов вуза на основе применения интерактивных средств обучения

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Аннотация

В статье на основании проведенного анализа определены подходы к активизации познавательного интереса и самостоятельной работы студентов с помощью интерактивных средств обучения. Констатировано, что современные инновационные процессы требуют новых подходов к активизации познавательного интереса, поскольку традиционные формы обучения постепенно отходят на второй план, а в практическую деятельность воплощается индивидуально ориентированное обучение на основе информационно-коммуникационных технологий. Сделан вывод, что комплексное применение интерактивных средств и методов способствует повышению эффективности и качества обучения за счет мотивации и активизации познавательного интереса студентов. Также происходит оптимизация процесса поиска новой информации и расширяется сфера самостоятельной деятельности студентов, формируется информационная культура и умение осуществлять обработку информации, выполнять моделирование и действовать в нестандартных ситуациях. Профессиональные знания и опыт преподавателей позволяют качественно совмещать традиционные и интерактивные средства обучения, применять их комплексно, что также повышает познавательный интерес студентов и таким образом способствует более эффективному выполнению учебных задач, развитию профессионально значимых качеств у будущих специалистов.

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Ключевые слова

Познавательный интерес, самостоятельная работа, студенты, интерактивные технологии, мотивация.

Библиография

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