METHODS OF USING INNOVATIVE EDUCATIONAL TECHNOLOGIES IN INCREASING INTEREST IN LEARNING OF ACADEMIC LYCEUM STUDENTS

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Abstract. *This article talks about the advantages of using innovative educational technologies, including modern information technologies, interactive methods in teaching mathematics and their effective use. The article discusses the role of the use of modern information technologies in the field of education at the time of the development of science and technology, including the practical importance of using ICT tools in geometry classes, using specific examples.*

Keywords**:** *pedagogical technology, information and communication technology, innovative technology, interactive education, differential education, individual, frontal, didactic materials, traditional, illustrative, visual.*

Educational technology is a systematic process of joint activity of students and teachers to design (plan), organize, guide and correct the educational process to achieve a clear result in providing favorable conditions for participants.

Analyzing existing definitions, we can determine the criteria that constitute the essence of pedagogical technology:

determining learning objectives (why and for whom);
content selection and structure (what);
optimal organization of the educational process (how);
methods, techniques and teaching tools (using what);
also took into account the necessary real level of teacher qualification
without (who);
and objective methods of evaluating learning outcomes.

Thus, "pedagogical technology" is such a construction of the teacher's activity, in which the included actions are presented in a certain sequence and offer a predictable result.

Today, there is no generally accepted classification of educational technologies in pedagogy. Different authors approach solving this actual scientific and practical problem in their own way.

Improving the teacher's pedagogical skills through the development of modern technologies of education and upbringing is one of the main goals of education. In my understanding, technology is a symbol of orderliness, consistency, expediency, clarity of goals and means - the basis of pedagogical actions aimed at comprehensive development of the student's personality. Therefore, I consider the purpose of my work to be to teach the student how to learn, to develop interest in reading, along with providing a certain amount of knowledge.

By using new pedagogical technologies in the lesson, it is possible to look at the process of teaching mathematics from a new perspective, master the psychological mechanisms of personality formation, and achieve good results. The special importance of mathematics in mental

education and development was noted in the 18th century. M. V. Lomonosov: "Mathematics should be taught later, it regulates the mind." But mathematics by itself does not regulate the student's mind. All this depends on the direction of education, the method of teaching. And no other subject can compete with the possibilities of mathematics in the education of a thinking person.

In the process of teaching mathematics, students can improve such qualities as thinking, critical perception and evaluation of the happening events, abstracting from the insignificant and distinguishing the main thing, succinct expression and defense of their thoughts and ideas, and finally organization. This makes the most important trend of modern education even more important: it is necessary to look for teaching tools and methods to develop cognitive and creative abilities of academic lyceum students. One such tool is the creation of functional representations in mathematics classes.

Most of the motion, labor and a number of other tasks considered in various lyceum subjects are tasks for the functional relationship of the quantities that appear in the situation. Many of them can be solved using graphs of these relationships, which create a visual representation that facilitates the analysis of the situation and the construction of a mathematical model, and allows you to find several solutions. This approach to solving problems helps to expand the scope of using graphics and increase the graphic culture of students. Understanding the role of relationships between quantities, being able to apply such relationships in simple situations is one of the most important components of general scientific and polytechnic knowledge. Pedagogical technology is not only the use of technical teaching tools or computers, it is the identification of the principles and methods of optimization of the educational process by analyzing the factors that increase the effectiveness of education through the design and application of this technique.

Thus, we can conclude that pedagogical technology is a system that includes the idea of planned educational results, tools for diagnosing the current state of students, various educational models, and criteria for choosing the optimal educational model for specific conditions.

The development of society, science and technology puts the educational system in front of the need to use new educational tools. Serious changes are taking place related to the use of optimal methods and methods of teaching based on psychological and pedagogical research. Therefore, the emergence of the concept of using new technical tools in the educational process is of particular importance.

The issues of systematization of knowledge in the educational process are very important for the academic lyceum in connection with the task of equipping students with a system of knowledge in basic subjects and improving their quality. Not separated from each other, but in a single logical connection, the knowledge obtained in the system serves as an indicator of awareness of learning the educational material. Formation of a new educational culture based on modern ICT is a long-term process.

The implementation of the educational process based on the use of information technologies largely depends on the organizational models of interaction of teachers and students with information technologies. The rapid changes taking place in our society require teachers to direct creatively developed, creatively thinking, well-rounded, active students to a new stage of education and upbringing.

If in the recent past, the main task of the teacher was to impart a certain amount of knowledge to the students, now in the educational process, the task is to develop the creative

thinking of the students, the ability to supplement their knowledge independently, and to move in a fast direction.

According to the modern concept of mathematical education, its most important goal is "intellectual development of students, formation of thinking qualities characteristic of mathematical activity and necessary for a person to live a full life in society."

The increase in mental load in mathematics lessons forces me to think about how to make students interested in the subject being studied. It's no secret that many children have difficulties and sometimes do not want to make a little effort to learn. Currently, there is a tendency to reduce students' interest in knowledge in academic high school education. This is due to the high information content of the subjects and the lack of time allocated for their study. There is a need to apply effective technologies that ensure understanding and assimilation of this large amount of data without losing interest in the subject. The lesson was and remains the main element of the educational process, so the main task of the teacher is to involve every child in learning activities, to make every student feel that he is "informed" in the lesson. A modern mathematics lesson should be the result of creativity not only of the teacher, but also of the students. This goal can be achieved by introducing modern pedagogical technologies into the educational process.

Therefore, the technology used in mathematics lessons should be based on the principle of intensification and high motivation. It is necessary to use methods that ensure easy recall of the material, including all types of memory (visual, auditory, associative). How to maintain students' interest in the studied material and activate them during the lesson, so that the teacher's task is not to give the necessary information more clearly and colorfully than in the textbook, but to be the organizer of knowledge activities. At the same time, the teacher organizes and manages educational activities. All this encourages me to search for adequate pedagogical technologies and use them in my practice. I am constantly looking for ways to improve the effectiveness of teaching, using different methods of knowledge transfer, non-standard forms of personal influence that interest students, stimulate and stimulate the learning process.

The introduction of new technologies leads to fundamental changes in the education system: before, the teacher explained, the student listened. Now the teacher organizes and manages, and the student learns independently under the organization of the teacher and learns from each other. This allows each student to learn at their own pace and ability.

The relevance of the chosen topic lies in the need for wide use of effective innovative technologies in mathematics classes and after-school hours, which allows to achieve the goal of mathematical education faster, more economically and better.

An efficient technology is a technology that can be used to achieve better results faster and at a lower cost than previously used technology.

The purpose of this work is to determine the positive aspects of using innovative technologies in mathematics lessons and after the lesson.

This goal led to the formulation and solution of the following tasks:

consider the feasibility of using certain innovative technologies at different stages of the lesson and outside the school;

determine the effect of introducing innovations on increasing the level of educational motivation;

choosing a reasonable and acceptable level of use of innovative technologies.

In my practice, I use the following modern educational technologies or their elements:

- information and communication technologies (ICT);
- technologies of level differentiation and individualization;
- active technologies;
- person-oriented educational technologies;
- test technologists;
- health technologies.

V.S. Lazarev: "The general goal of innovative activity is to improve the capabilities of the pedagogical system, to achieve high-quality educational results of the educational institution."

Today, ICT is taking more and more place in the educational process. The main advantage of these technologies is visualization, because a large part of information is absorbed by visual memory, and exposure to it is very important in learning. Information technology helps the educational process to be creative and student-oriented. Modern children easily absorb all possible programs with curiosity and a pragmatic goal - to learn quickly. In addition, they are unconsciously attracted to new technologies.

ICT allows effective use of class time and significantly facilitates the teacher's work in the technical preparation of tasks for independent and control work of students, makes the lesson colorful, presents the material in a visual way;

it will be more understandable and convenient for students.

When presentations are used to explain new material, students show great interest in the topic. Even passive students join the lesson with great enthusiasm. I use ICT at different stages of the lesson: oral calculation, explanation of new material, repetition, control stage.

It is difficult to imagine a modern lesson without the use of ICT. One of the ways to increase interest in science and deepen knowledge in these sciences is the use of modern information technologies, in particular, computer technologies, at various stages of the educational process. Lessons using computer technology not only enliven the learning process, but also increase the motivation to learn. The main educational value of information technologies is that they allow creating a brighter interactive learning environment with unlimited possibilities at the disposal of the teacher and the student.

There are many advantages of information technology over traditional technologies. In addition to illustrative, visual presentation of material, effective knowledge testing and all other possibilities, they include various organizational forms in the work of students, methodological techniques in the work of the teacher.

Unlike traditional technical teaching tools, information technologies allow not only to fill the student with a large amount of knowledge, but also to develop intellectual and creative abilities, to acquire new knowledge independently, to work with various data sources.

If the student has difficulty with this or that question, he can return to the theory at any time and study the material again.

It should be noted that the bright picture on the screen is just a way of presenting the material. It's a one-way act. The most important thing in the lesson is the live communication between the teacher and the student, the constant exchange of information between them. Therefore, an indispensable attribute of any classroom is the blackboard. The blackboard is not a simple piece of surface on which both adults and children can write, but it is an area of information exchange between the teacher and the student. They combine projection technologies with a touch device, so this electronic board not only shows what is happening on the computer, but also allows

you to control the presentation process (two-way traffic!), make corrections and corrections, make color notes and comments. , it will be possible to save lesson materials for future use and editing.

Of course, it is not possible to say for sure that the results of students will increase due to working with an interactive board, but my observations have shown that students are more interested in what is happening in class. They actively discuss new topics, strive to participate in work, remember the material faster.

Thus, the use of an interactive whiteboard helps to ensure a stable motivation for students to learn, and to increase their knowledge activity. These observations also apply to new computer technologies in general.

There is no doubt that in a modern school, the computer does not solve all problems, it remains only a multifunctional technical educational tool. Modern pedagogical technologies and innovations are of great importance in the educational process, they not only allow each student to "invest" a certain amount of knowledge, but also, first of all, create conditions for the manifestation of students' knowledge activity. Information technologies together with properly selected (or developed) educational technologies create the necessary quality, variability, differentiation and individualization of education and training.

Slide presentations are effective at different stages of the lesson. Visual perception of the studied objects allows a quick and deep perception of the presented material. An opportunity is created to present the material emotionally and figuratively.

In mathematics lessons, the computer can be used for various tasks and, therefore, purposefully: as a method of diagnosing students' cognitive abilities, as an educational tool, as a source of information, as a means of monitoring and evaluating the quality of learning. The capabilities of a modern computer are huge, which determines its place in the educational process. It can be connected with solving many didactic tasks at any stage of the lesson, in collective and individual mode. Even during the quarantine period, when the corona virus broke out, we gave our students the knowledge they wanted remotely using ICT (computer, tablet, electronic board, phone, internet, ZOOM).

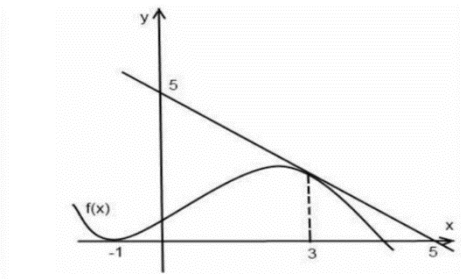
Differentiated education is not dividing children into classes according to their level, but the technology of teaching children with different abilities in the same class. Creating the most favorable conditions for the development of the student as a person. Besspor

Differentiation helps to acquire knowledge stronger and deeper, to develop individual abilities, to develop independent creative thinking. Multi-level tasks facilitate the organization of classroom activities, creating conditions for students to study according to their abilities. When I work with students differentially, I see that they are not focused on the lesson, because everyone has a task to take on, "strong" students are not bored, because they are constantly given a task to think about. Students are always busy with possible activities. As a teacher, I have the opportunity to help the weak in terms of knowledge, pay attention to the strong, and the desire of strong students to move faster and deeper in education emerges. Strong students can demonstrate their abilities, weak students have the opportunity to succeed in education and the level of motivation increases.

When using the level differentiation and individualization technology, a special pedagogical tactic of the teacher is necessary in order not to humiliate the student in front of his peers, not to give him an easier task, but to give him the opportunity to experience the joy of a

correctly completed task together with everyone, it is necessary to "inspire" him to work on a more complex task.

Each student has the right to voluntarily choose one or another level of assimilation for himself. It is this approach that contributes to the student's psychological comfort in the classroom, forms a sense of self-respect and respect for others, develops responsibility and decision-making ability. The ability to choose the level of assimilation helps not to overload the student and directs his actions to the field of inclinations and interests, helps to develop and fully reveal his abilities. For example, we ask academic lyceum students the following questions, taking into account their level of knowledge:



Level 1 Question: Find the trial equation?
Level 2 question: Find f '(x).
Level 3 Question: Find $\int_{-1}^{3} f'(x) \cdot f''(x)dx$

The essence of interactive education is that the learning process is organized in such a way that almost all students are involved in the learning process. In the process of studying and mastering the educational material, the joint activity of students means that everyone makes their own individual contribution, exchange of knowledge, ideas, methods of activity. In addition, it happens in an atmosphere of goodwill and mutual support, which not only allows to acquire new knowledge, but also develops cognitive activity itself and interaction skills, transferring it to higher forms of cooperation and cooperation.

In other words, interactive technologies are aimed at the wider interaction of students not only with the teacher, but also with each other and the superiority of student activity in the learning process. Therefore, the use of interactive technologies in educational activities serves the student's self-awareness, increases his motivation to study and adaptation to the educational environment, develops communication skills, and leads to an increase in internal self-esteem.

Interactive education is a special form of organizing cognitive activity. It has very clear and predictable goals. One of these goals is to create favorable learning conditions, that is, conditions in which the student feels his success, aspiration.

"Third plus" game: Teams take turns showing the names of different objects. Two of them have common property, and the third does not. For example: (hectare, weave, meter); (yard, ton, quintal); (cone, square, circle); (triangle, rectangle, square), (straight line, segment, angle). I also developed quizzes, fun math lessons. All this is aimed at expanding students' worldview, developing their cognitive activity, forming certain skills and competencies necessary in practical activities, and developing general educational skills and competencies.

In the process of game technology, the student encounters situations of choice that show individuality, freedom in choosing tasks, content and organizational forms of activity. The inclusion of didactic games and play minutes in the lesson makes the learning process interesting, creates a cheerful working mood in children, helps to overcome difficulties in mastering the learning material, and increases students' interest in science.

If the traditional educational process is related to the transmission and reception of information, the development of reproductive skills, then in the game the participant sets a goal,

looks for ways to achieve it, chooses the material, and is responsible for his behavior and results, but also for the success of the whole group. That is why the educational value of the game is great.

Person-oriented education is such education, in which the child's personality, his uniqueness, self-esteem are put in the first place, the subjective experience of each is revealed first, and then it is coordinated with the educational content.

Studying the personality of the student, determining his condition in the initial period of education and after the implementation of pedagogical influence is one of the central issues of production technology. In 1867, K. D. Ushinsky wrote in the book "The Subject of Human Education": "If pedagogy wants to educate a person in all aspects, it must first recognize him in all aspects." When designing pedagogical technology, it is appropriate to take into account the characteristics of each student - individual conditions that provide his "resistance" or, on the contrary, support the influence of teaching.

Differentiation and individualization of the educational process, as well as the use of interactive methods (project method, game methods) are the methodological basis of the student-oriented approach in the educational process.

Student-oriented educational technology helps create a creative atmosphere in the classroom, and also creates the necessary conditions for the development of individual abilities of students.

Test technologies. An important and extremely sensitive aspect of the organization and management of the educational process is the control of student knowledge. Control, which is an integral part of the educational process, is designed to determine the level of achievement of educational goals, to check the extent to which students' knowledge and skills have been formed. An effective system of monitoring and diagnosing students' knowledge is the use of test technologies. The main advantage of the test form of control is the simplicity and speed of the first assessment of the level of preparation for a certain subject, which allows for a realistic assessment of readiness for the final control in other traditional forms.

Test-based assignments are widely used in educational practice. I use them at different stages of the lesson, when conducting different types of lessons, in the process of individual, group and frontal work, in combination with other tools and teaching methods. There are various types of tests available today. I create test assignments taking into account the goals of the lesson, the uniqueness of the studied material, knowledge opportunities, and the level of preparation of students. That's why I created tests for each group aimed at developing students' skills and competencies, strengthening knowledge. Test technology helps monitor student learning. The test provides a subjective factor in checking the results, and also develops logical thinking and attention in children. Test tasks differ in the level of complexity and in the form of answer options. The use of test tasks allows differentiation and individualization of learning, taking into account the level of knowledge of students.

Health technologies. "Maintaining health is the most important job of a pedagogue. Their spiritual life, outlook, intellectual development, solidity of their knowledge, confidence in their own power depend on the vitality and strength of children...". V.A. Sukhomlinsky.

A student's health is considered normal if: physically - health allows him to cope with the study load, the child is able to cope with fatigue; socially - he is outgoing; emotionally - the child is balanced, surprised; from an intellectual point of view - the student demonstrates good mental abilities, observation, imagination, self-study; morally - it recognizes basic universal values.

Health-preserving educational technologies are a systematic approach to education and training based on the teacher's desire not to harm the health of students.

The concept of "health care" refers to the qualitative characteristic of any educational technology, which shows how the implementation of technology solves the problem of health care of the main subjects of the educational process - students and teachers.

The use of these technologies makes it possible to evenly distribute various types of tasks during the lesson, change mental activity, determine the time of presentation of complex educational material, allocate time for independent and control work, which gives positive results in the lesson. When preparing and conducting a lesson, I take into account the following: the dose of the educational load; building a lesson taking into account the activity of students, their performance; compliance with hygiene requirements (fresh air, good lighting, cleanliness); positive emotional mood; stress prevention (work in pairs, groups, motivating students); changing health moments and classroom activities that help to overcome fatigue, frustration, dissatisfaction; I observe the organization of educational work (preparation of the blackboard, clear writing on the blackboard, use of ICT).

Extracurricular activities in science using innovative technologies. Extracurricular activities include various forms of education and training that are carried out outside of school hours under the guidance of a teacher. We consider this type of work to be a component of the class-lesson form of education and do not classify it as doing homework in the process of preparing for the lesson.

Extracurricular activities are a natural continuation of classroom work or, on the contrary, preparation for mastering new program material. In any case, it is an integral part of the educational process, although some of its forms have didactic tasks different from the lesson. In the process of extracurricular activities in mathematics, the following main didactic tasks are solved: interest in learning mathematics is developed; deepening and expanding students' mathematical knowledge, skills and abilities; logical thinking, mathematical vigilance, mathematical intuition and ingenuity develop; the most talented children are identified, their abilities are developed.

In my work, I try to help students' cognitive interest in mathematics as much as possible. For this purpose, in the 1st and 2nd years, the "Interesting Mathematics" mathematics club and the "Combinatorics" competitive course were organized. Basics of probability theory", individual lessons, as well as mathematics week, mathematics month are held.

Forms of education outside the classroom, which are built on the principle of discretion, are not regulated by the need to assess students, are relaxed in relation to the lesson, and take place in an environment that requires high professional skills from the teacher. He should have not only solid mathematical knowledge, but also necessary qualities such as communication, pedagogic tact, benevolence. The teacher's high professional skills and interest in learning, optimally combining the student's ability to work, in teaching mathematics, it is possible to achieve the formation of generalized mathematical relationships and the development of the ability to generalize mathematics.

Thus, using these technologies in innovative teaching, the teacher makes the process more complete, interesting and rich. Such integration is simply necessary for the formation of a holistic worldview at the intersection of the disciplines of mathematics, and innovations include the introduction of ICT into the educational process, software provided to lyceums, interactive electronic boards, and modernization projects.

Innovative technologies help to teach students active methods of acquiring new knowledge; to ensure the possibility of mastering a high level of personal social activity; creating conditions that students cannot master during the educational process; stimulate students' creative abilities; helps to bring learning closer to the practice of everyday life, forms not only knowledge and skills in science, but also an active life position.

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