

MAIN ADVANTAGES IN THE METHODOLOGY OF TEACHING PHYSICS AND ASTRONOMY USING INNOVATIVE TECHNOLOGIES IN EDUCATION

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Abstract. The article discusses the advantages of the main methods of innovative technologies in teaching physics and astronomy in educational institutions.

Keywords: Innovative technologies, physics and astronomy, educational activities, scientific and methodological.

Introduction. Today, innovative pedagogical activity is one of the significant components of the educational activities of any educational institution. Innovative teaching methods in education are understood as the process of improving pedagogical technologies, a set of methods, techniques and teaching aids. Since educational activities create the basis for the competitiveness of any institution in the field of educational services, at the same time, it sets the vector for the professional development of the teacher himself and serves to expand creative potential and ensures the internal growth of students as individuals[1]. The goal of educational institutions is the success and health of the younger generation of students. He needs to be a socially active, dynamic, hardworking, strong-willed, self-confident, competent and highly educated person. The educational system at school for a long time was only scientific and educational and the teacher in it performed informative and knowledge-transmitting professional duties, while the present moment of time requires education to move closer to the position of a scientific and humane system, where the role of the teacher is distinguished by the fact that:

- First of all, he needs to create conditions for the education and upbringing of socially active individuals in his students;
- At the same time, the teacher retains the function of the organizer of the cognitive learning activity itself, and, of course, he manages the cognitive

process itself, in other words, he plans educational activities and organizes the implementation of the curriculum, monitors and analyzes the results achieved. And, of course, the main form of a teacher's work, as before, remains the lesson.

The current educational methods and technologies have a general orientation towards individualization, distance and variability of the learning process itself, and the academic mobility of students, regardless of their age and level of education. The school presents a wide range of educational pedagogical technologies that are used in the educational process, including when teaching in specialized classes in physics.

What are the advantages of using innovative methods of teaching physics and other specific sciences in school? The introduction of modern information and educational methods and technologies into the educational process gives the teacher the following opportunities:

- development of depth and thoroughness of knowledge, consolidation of skills in various fields of activity;
- develop technological thinking, the ability to independently plan your educational and self-educational activities;
- build an individual learning path for each student;
- cultivate habits of strict adherence to the requirements of technological discipline in organizing training sessions.

At the same time, the current introduction of innovative modern educational and information teaching methods in physics and astronomy lessons and other subjects does not mean that they will completely and forever replace the classical traditional methods of teaching in school lessons, but rather, they will serve as its essential components part. Because it is the joint use of innovative teaching methods together with the classical, established teaching system that allows the teacher to use teaching time productively and achieve the highest learning results for his students. And this is one of the main tasks of the school[2].

The existing educational system allows a teacher to choose “his own” among a large number of innovative teaching methods, which will allow him to take a fresh look at his own teaching experience.

The goal of teaching is to develop students’ creative abilities, their thinking, attention and memory. Here are some innovative techniques and technologies that can make the lesson very effective, modern and educational.

Such innovative methods and technologies that give expectedly effective results are:

Problem-based learning.

Here we are talking about creating problem situations during training and organizing active independent activities of students in their resolution groups; as a result of this training, we receive creative mastery of knowledge, skills, abilities, and develop thinking abilities in physics lessons.

Different level training.

In this method, the teacher has the opportunity to help a weak student who is less successful, and pay due attention to a student who is strong in learning, and here the desire of stronger children to move faster and deeper in physics education is realized. Thus, strong students are confirmed in their learning abilities, and weaker students get the opportunity to experience the educational success they need, and this raises the level of motivation among students.

Project-based teaching methods.

Working with this technology makes it possible to develop students’ individual creative abilities and take a more conscious approach to professional and social self-determination.

Research methods in teaching.

This method allows schoolchildren to independently replenish their knowledge in physics and other subjects; it also provides the opportunity to deeply delve into the topic being studied and suggest ways to solve the problems contained in this topic, and that at the same time it is important to form an active worldview of student researchers. This circumstance is extremely important for laying the individual development vector of each student.

Methodology for using gaming methods in teaching: with role-playing, business and other types of educational games. Here we are talking more about younger schoolchildren when teaching physics: we observe a broadening of horizons with its help, and the development of cognitive activity, and the formation of communication skills and abilities of students, which will be so needed in the future in the practical activities of students, is launched, and there is a significant development of general educational skills and skills during such activities.

Collaborative learning (team, group work).

This technique is based on cooperation as the idea of joint developmental cognitive and educational activities of adults and children. The idea of an individual approach in this case is to start not from the educational subject, but from the child himself to the subject being studied, in this case, to start from those opportunities that a student has using psychological and pedagogical personal diagnostics.

Health saving technologies.

The use of these innovative technologies makes it possible, during a physics lesson, to equally distribute different types of tasks, and to use the alternation of students' mental activity with physical education minutes, which is important for younger students when teaching physics, and also makes it possible to present difficult-to-learn educational material at the right time in physics, and correctly allocate time for independent work in order to determine the degree of assimilation of previously studied material, and normatively apply Technical Teaching Tools, and this gives positive results in learning in physics lessons [3-7].

Innovative methods based on the effectiveness of management and organization of the educational process - computer teaching technologies.

- Lack of lesson time for oral and written surveys when monitoring the level of knowledge acquired by students, and one of the foundations of control is its systematicity;
- the presence of a formal approach to solving physical problems - solving them only on paper, and this does not provide an opportunity to test knowledge in practice;
- at each lesson it was difficult to quickly provide feedback from the student and the teacher in order to find out how to organize work with individual groups of students;

Conclusion. A modern physics lesson, combining the traditional teaching system and innovative methods of teaching physics, provides students with the opportunity to independently acquire new, additional knowledge. The independent activity of students in searching and selecting educational information today serves as a very powerful means of motivation and a necessary condition for personal development, dictated by time. Thus, innovative activity is closely related to the scientific and methodological activities of teachers and the educational and research activities of students.

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