NOVATEUR PUBLICATIONS
INTERNATIONAL JOURNAL OF INNOVATIONS IN ENGINEERING RESEARCH AND TECHNOLOGY [IJIERT]
ISSN: 2394-3696 Website: ijiert.org
VOLUME 7, ISSUE 6, June-2020

WHAT IS THE SIGNIFICANCE OF CONDUCTING DIDACTIC GAMES IN TEACHING ATOMIC PHYSICS COURSES IN HIGHER EDUCATION

ANVAR ABDULLA OGLI MAKHMUDOV,
Assistant, Tashkent State Transport University

ABDULLA MAKHMUDOVICH KHUDAUBERGANOV
Associate Professor, Tashkent Institute of Architecture and Civil Engineering

ABSTRACT
This article discusses the importance of the use of didactic games, which can be used in atomic physics lessons in higher education.

KEYWORDS: atomic physics, didactic game, Kruglikov, Makarenko, Perelman, educational didactic games.

INTRODUCTION

Physics occupies a special place among the disciplines of higher educational institutions. As an academic subject, it creates an understanding among students about the scientific picture of the world. Being the basis of scientific technological progress, physics shows the humanistic essence of scientific knowledge, emphasizes their moral value, forms the creative abilities of students, their worldview. This contributes to the education of a highly moral personality and a good specialist, which is the main purpose of training. It is achieved only if the following condition is met, if in the learning process an interest in knowledge is formed. Students' training should be built in such a way that they understand and accept the goals set by the professor and were active participants in their implementation. Among the many ways students of higher educational institutions have an interest in learning, one of the most effective is the organization of gaming activities.

Didactic games are one of the types of training organized in the form of educational games that implement a number of principles of game, active learning and differ in the presence of rules, a fixed structure of game activity and a rating system, one of the methods of active learning (V. N. Kruglikov, 1988) . It stimulates the cognitive activity of students, causing them positive emotions in the process of learning activities. Remembering the words of A. S. Makarenko that “a good game is like good work”, each professor-teacher needs to learn how to skillfully use didactic games in a lesson in the course of atomic physics. Didactic games give students the opportunity to study and analyze the tasks of atomic physics on their own. Didactic games help develop the ability to listen, speak in turn, and also acquire skills that are important for a modern person, respect and tolerance for another person.

WHAT IS THE AIM OF SUCH DIDACTIC GAMES?

First argument. Learning the rules, performing exercises is ineffective and boring for the student. He learns much more and learns to accept his knowledge if the lesson is held in the form of a journey using didactic games as interactive exercises.

Second argument. The task of our days is becoming more tangible not the giving of ready-made knowledge (this is simply not possible at the modern pace of development of science and technology), but the development of skills to independently acquire this knowledge throughout a person’s life.

The third argument. For the effectiveness of teaching at such lessons, trusting relationships between professors and students are important. A professor who, together with students, explores the so-called “eternal questions” of humanity, analyzes situations, cannot but arouse trust among students.

FEATURES OF A DIDACTIC GAME

Distinctive features of didactic games is the presence of a game situation, which is usually used as the basis of the method. The activity of the participants in the game is formalized, that is, there are rules, a rigid

system of assessment, a procedure is provided, a regulation. The difference between didactic and business games is, first of all, the absence of a chain of solutions. Didactic games - specially created or adapted games for learning purposes. In higher education institutions, classes in the course of atomic physics can usually be carried out in order to repeat, consolidate and verify the mastery of the past (dictations-competitions, crosswords, "traveling" on the physical map, role-playing games, dramatization, then other).

Promising is the use of didactic games based on imitation and modeling of real or life situations. These games are characterized not only by cognitive, but also by ideological and emotional-personal impact. Also, a didactic game is a game only for an adult student, it is a way of learning, communicating knowledge to him, developing his skills. In contrast to the role-playing game, where the student's actions have no result, the actions performed in the didactic game always have one or another result, and the observance of the rules is necessary to achieve this result. The result of actions in a didactic game is attractive to students either on their own (contains a surprise moment, resolves a plot situation), or due to its competitive nature (be the first to reach the finish line, score more points than others, then other).

The main difference between a didactic game and direct learning is that it is the result that attracts its participant, that is, student, makes for him the performance of actions according to the rules is interesting, exciting. The assimilation of knowledge in this case acts as a side effect. In this regard, many outdoor games are similar to didactic games, the place for mastering knowledge in which is mastering certain types of movements, physical development (although there are outdoor games that contribute to the development of the eye, ingenuity, then other).

In didactic and moving games much more direct forms of leadership by the professor are possible than in role-playing games. A professor and student of a certain group who is good at nuclear physics, speaking as the organizer of a didactic game, poses a game task, explains the rules, monitors their implementation, evaluates the result of the game. Such students are halfway from an equal partner to a professor.

The transition from the didactic game to university-type learning is associated with a change in the nature of the tasks set for students. In educational tasks, the result of the performed actions is usually not attractive in itself (a written word, a solved problem in atomic physics, other problems, then other). The center of gravity is now transferred to the student himself for the assimilation of knowledge, abilities, skills. The correct result of solving each individual problem is only evidence of such assimilation. And it is not he who is assessed by the professor and teacher, but the knowledge and skills that manifested when he was received (for the best solution to the problem of atomic physics, a "deuce" is supposed if it is written off from another).

But even in training, especially at first, separate game techniques can be used. This is no longer a didactic game: the tasks themselves are educational in nature. However, in order to make the tasks more attractive, you can, for example, include it in the game plot, offer the student a specific role, enter the moment of competition, then other.

A didactic game is not any action with educational material and not a game technique in a compulsory atomic physics lesson. This is a specific, full-fledged and quite informative activity for students. She has her motives and her own ways of acting.

Developing didactic games contain a ready-made game concept proposed to the student, game material and rules (communication and substantive actions). All this is determined by the purpose of the game, that is, by what it is created for, what it is aimed at. The goal of a game always has two aspects:

1) the cognitive aspect, that is, what we need to teach the student what methods of action with objects he needs to convey in this game;

2) the educational aspect, that is, those methods of cooperation, forms of communication and attitudes towards other people that should be instilled in students.

In both cases, the goal of the game should be formulated not as the transfer of specific knowledge, skills, but as the development of certain mental processes, or abilities of the student.

In order for a didactic game to remain a game, and not turn into an assimilation of knowledge and skills, it must necessarily include a game plan, that is, the game situation into which the student is introduced, and which he perceives as his own. The idea of the game should be based on the specific needs and inclinations of students, as well as the characteristics of their experience. For example, for poorly assimilated students in atomic physics, they are especially interested in objects and actions with them. The attractiveness of

individual things sets the meaning of their activities. This means that the idea of the game can be based on actions with objects or on the desire to get an object in their own hands.

The idea of the game is realized in the game actions that are offered to the student so that the game takes place. In some games, you need to find something, in others - to perform certain movements, in the third - to exchange objects, then other. Game actions always include a learning task, that is, what is for each student the most important condition for personal success in the game and his emotional connection with the rest of the participants. The solution of a training problem requires active mental and volitional efforts, but it also gives the greatest satisfaction. The content of the learning task can be very diverse: do not run ahead of time or name the shape of the subject, manage to find the right answer or picture for a certain time, remember several objects and rules.

Game material also encourages the student to play. It is of great importance for the training and development of the student and, of course, for the implementation of the game plan. And finally, the most important feature of a didactic game is the game rules. The rules of the game bring to the students' mind its design, game actions and learning task. In order for the game to really captivate students and personally affect each of them, the professor-teacher must become its direct participant. By his actions, emotional communication with students, an adult involves them in a joint activity, makes it important and significant for them. He becomes, as it were, the center of attraction in the game. This is very important in the early stages of getting to know a new game, especially for students. At the same time, the professor and teacher organizes the game and directs it - it helps students to overcome difficulties, approves their correct actions and achievements, encourages compliance with the rules and notes the mistakes of some of them. The combination of two different roles by the professor and teacher — the participant and the organizer — is an important distinguishing feature of the developmental game.

Due to the fact that the didactic developmental game is an active and meaningful activity for the student, in which he willingly and voluntarily joins, the new experience acquired in it becomes his personal property, since it can be freely used in other conditions (therefore, the need for fixing new knowledge disappears). The transfer of acquired experience to new situations in his own games is an important indicator of the development of a student’s creative initiative. In addition, many games teach students to act “in the mind”, think, which liberates the imagination, students, develops their creative abilities and abilities.

The developing game is a rather effective means of forming such qualities as organization and self-control. Its obligatory rules for all regulate students' behavior and limit their impulsiveness. If the rules of behavior declared by professors and teachers are usually poorly absorbed by students outside the game and often violated by them, then the rules of the game, which become a condition for an exciting joint activity, quite naturally enter the life of students. Thus, in the university, developmental games contain versatile conditions for the formation of the most valuable personality traits.

In physics lessons, the didactic game becomes especially important, as Ya.I. Perelman, not so much for the friends of physics as for her enemies, whom it is important not to overpower, but to draw to study.

Any game should contribute to the solution of the main educational task of the lesson, for example, consolidation of knowledge, better mastery of problem solving and others. Only in this case the didactic game turns out to be a teaching element of the lesson. However, the combination of cognitive and game element of the lesson presents a certain difficulty in the compilation of didactic games.

The outstanding scientist and teacher S. A. Shmakov figuratively expresses the significance of the game, calling it the eighth wonder of the world: “Everyone knows about the famous Cheops pyramid ... And the game ?! The game is one of the most interesting cultural phenomena ... The game, like a shadow, was born with a child, became his companion, a true friend. "She deserves a lot of human respect, much more than people today give her for those colossal educational reserves, for the enormous pedagogical opportunities laid in her." A similar opinion can be said for those didactic games that are used by a professor-teacher during classes in general physics, that is, in atomic physics.

Game, teaching, work - these are the three main types of human activity. The game prepares both a child and a student for learning and for work, while the game itself is always a little learning and a little work. Those teachers who present the game only as fun and entertainment are deeply mistaken.

For the professor, the game is a means of studying students. K.D. Ushinsky wrote: “We attach so much importance to children's games that if we organized a teacher’s seminary, we would make theoretical and practical study of children's games one of the main subjects there.”

Didactic games must be used in physics lessons in order to develop the cognitive interests of students, that is, students, and to increase the effectiveness of training.

Didactic games on the content and methodology of their development are developed by a professor and teacher. Its task is to, given the importance of the game, find it an appropriate place in the university (in the classroom or additional classes).

Didactic games used in classes or additional classes should be very diverse both in the content of the proposed material and in the form of the meeting.

Classification of physical games depending on the game goal:

1. Creative games based on introducing elements of an imaginary situation and used to repeat and generalize the material studied. For example: "Protecting a topic."
2. Games - competitions related to the identification of the winner (individual, collective, for example, relay races on knowledge of formulas, units of measurements, then others.).
3. Games aimed at fulfilling an entertaining task.
4. Games with handouts.

Let's consider students' creative games in more detail. Sometimes they are called imitation-procedural, because their content is borrowed by students from the environment. Many psychologists attribute these games to the number of games in which the students' imagination, their use of imaginary situations and figurative meanings are most pronounced.

It is important to note that these games are basically creative, not artificial or template reproduction of reality. An example of creative games can be the trial of a physical phenomenon or physical quantity.

This game is organized as follows: a few days before the game, the class is divided into two groups - defense witnesses and prosecution witnesses. The chief judge, people's assessors, prosecutor, lawyer, defendant and scientific secretary of the court are elected.

The educational goal of this game is to repeat the physical laws that underlie this phenomenon, and learn as much as possible about its significance in people's lives. In a creative game, all student actions are determined by the role that he plays in this game. In such a game, their character is revealed, their understanding of phenomena, facts of the world, physical laws.

The place of the game in the atomic physics classes of a university may be different.

1. When interviewing students in order to diversify the survey and at the same time teach them how to apply the acquired knowledge, one can conduct such a game. A student called to the board is asked to leave the audience. The professor-teacher calls the position of the theory. Within 1-2 minutes, students come up with examples confirming this situation, then they invite the called student to the audience and give them examples, that is, guessing this physical law, bring evidence in favor of their answer.
2. When consolidating knowledge, you can use the game "Third Extra". The principle of the game: two of the three phenomena are logically connected, the third figure depicts a phenomenon not directly related to the previous one. For example, on one of the maps one can depict two figures depicting a demonstration of Rutherford's experiment and its atomic model, and a third figure illustrating the de Broglie hypothesis.

The student's task is to determine the "extra" pattern in this complex. This game allows you to develop the ability to think logically, analyze, justify the propositions put forward.

3. In the process of repeating the past. A number of games pursuing this goal can be compiled on the same factual material - the same atomic phenomena, the laws of the formula, meeting a student in two or three games, make him remember, compare, establish similarities and differences and thereby contribute to active rather than mechanically consolidating knowledge. For example, a game: “Do you know the formulas of atomic physics?”. Students of any group of the faculty who study atomic physics can play this game with success. Players are distributed equally cards with the characteristics of the devices. In the "cauldron" - 30 - 40 clean chips. It is determined by lot who will be the first to read out the formula of atomic physics aloud. The person to his left should give an answer and explain the physical nature of this formula. If the answer is correct, the player takes the chip from the boiler and reads out the following formula. If the answer is incorrect, the next player answers. The player with the most chips wins.

When conducting this game in the audience, you can arrange a presentation of these formulas. Then the student, in addition to the correct answer, must show the formula to all the players.

The use of such didactic games in atomic physics lessons leads to students' interest in studying the physics of the microworld.

REFERENCES

1) I.P. Arfeev. “Zanimatelnaya texnologiya”. Chast 1. Shuya. 2000.172 s.

2) “Metodika obucheniya texnologii”. Kniga dlya uchiteley. Pod redaksiey V.D. Simonenko. Izdatelstvo Ishimskogo gosudarstvennogo pedagogicheskogo instituta. NMS "Texnologiya". Bryansk-Ishim. 1998. 296 s.

3) E.V. Myravev. “Metodicheskaya podgotovka uchiteley texnologii i predprinimatelstva”. Monografiya. Pod redaksiey V.D. Simonenko. Izdatelstvo BGU. Bryansk. 2002.214 s.

4) E.V. Myravev. “Obshie osnovi metodiki prepodavaniya texnologii v obsheobrazovatelnix uchrejdeniyax”. Posobiya dlya prepodavateley. Shuya. Izdatelstvo Shuyskogo pedagogicheskogo universiteta. 1998. 114 s.