



METHODOLOGY AND STRUCTURE OF INDEPENDENT EDUCATION IN PHYSICS FOR STUDENTS OF HIGHER EDUCATION

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ABSTRACT

In this article, the use of innovative and interactive methods in the teaching of physics in higher education institutions in the credit module system and the promising aspects of these methods in the process of independent education are highlighted. It is one of the forms

of education that implements the formation of knowledge, skills and competences that must be mastered, and the level of mastery is carried out outside the auditorium based on the teacher's advice and recommendations, preparation for the distribution of knowledge. In this article, independent education is discussed. information about ways of organization is collected, and pedagogical technologies used in the organization of independent education today are discussed.

KEYWORDS: Credit, module, independent education, electronic textbooks, blended learning, flipped learning.

INTRODUCTION

The methodology of teaching physics at the higher educational institution has its own research methods, which develop and change in harmony with the development of society. At present, training on the credit module system has been launched at TKTI. The training of advanced personnel, increasing their competitiveness in accordance with the requirements of the cocktail market, and the cultivation of creative thinking specialists are closely related to the educational process established in the educational institution. The credit module system is

the process of organizing education, and it is an evaluation model based on the collection of module technologies of teaching and credit measurement.

Problem statement

In the credit module system, two main issues are given importance in teaching physics: ensuring the independent work of students; assessment of student knowledge based on rating. Independent education is one of the forms of education, which is defined in the curriculum of physics, and which includes the formation of knowledge, skills and competences that must be acquired by the student, as well as the level of mastery, teacher's advice and based on recommendations, it is done outside of class. Today's fast era demands excellent education from young people. The development of modern science and technology requires that knowledge, practice and experience interact seamlessly. If physics is taught separately from production, students cannot understand why this science is needed, why it is necessary to study it. Therefore, in teaching students, practice, experience and independent education should be carried out together. When teaching physics.

1. Scientific evidence, concepts, laws, theories, research methods of physical science, practical application of knowledge and formation of knowledge about the scientific landscape of the world, introduction to the main aspects of scientific and technical development - complex automation, electronics and microprocessors, technology, to acquaint students with atomic energy, production and information technology, and production processes of new materials.
2. Explaining the independent acquisition of knowledge, forming methods of working with textbooks, informative scientific literature,
3. Forming experimental skills, working with equipment, measuring, using measurement results and drawing conclusions
4. It is necessary to increase the professional training of students as a result of interest in physics and technology, development of knowledge opportunities, direct connection of physics with life.

The main goal of independent education is to prevent the formation of gaps in the process of student learning, to identify and eliminate them. Recommendations for organizing independent work.

- Subjects of independent education are given;

- Information about the deadline and form of submission of the work will be provided;
- The knowledge, skills and qualifications to be acquired on the subjects are given in the form of recommendations;
- Literature on the topic is recommended;
- Continuous monitoring of the implementation of independent work and plans is carried out and recommendations are made;
- Assignments will be viewed within the specified period;
- A test or question-and-answer session will be conducted on the assignment;
- Presentations are protected and technical devices made by students, laboratory works are demonstrated;

New educational technologies Blended learning and Flapped learning can be used to organize independent education. Blended learning is mixed education, which was first used in 1980 by employees of the Boeing company in the organization of training courses. Blended learning is organized in the form of independent education both in the classroom and online. Flapped learning is a flipped education, where the student gets acquainted with the literature on the given topics, studies and completes the assignments at home. The teacher makes a conclusion based on the student's performance and mastery of the tasks in the lesson.

These educational technologies lead to the development of independent work and increase self-confidence in students. For example, if flipped learning technology is applied to the students in the chapter on magnetism, if the topic is given to the students a week in advance, the students will independently learn about the magnetic field of currents and their interaction, Ampere's law, Bio-Savar-Laplace's law, in the magnetic field The movement of a charged particle, Lorentz force, magnetic flux, magnetic absorption of the environment, Dia-, para-, and ferromagnets, the law of electromagnetic induction, Lens' rule, the phenomenon of self-induction, inductance, magnetic field energy and energy density. and learn using internet information. Students acquire certain knowledge and learn by studying. In class, they get answers from the teacher only to questions they don't understand. He conducts the lesson together with questions and answers and discussions, studying the opinions and opinions of students. Different pedagogical technologies are used when expressing opinions and opinions. If brainstorming, Swot - analysis method, Venn diagram methods are used, students will have a wide content about the topic. Using the brainstorming method In the flipped classroom lesson, theoretical information (lecture text, video materials) is presented to the

student in advance. The student studies them and prepares for the lesson in advance. At the beginning of the lesson, the teacher gives a lecture for 10-15 minutes, then the lesson is conducted using the method of brainstorming. SWOT analysis method - develops the student's systematic thinking, comparative analysis skills. It highlights the strengths, weaknesses, and opportunities of the student object. Venn diagram is widely used in practical exercises and monitoring of student knowledge. Venn diagram is used to compare the studied objects, find similar and different aspects, and analyze them. Circles in the diagram are separate objects, and intersections indicate their common and similar aspects.

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- To acquire the skills of independent assimilation of new knowledge.
- Finding the necessary information, identifying convenient methods and tools for learning.
- Targeted use of information sources and electronic educational literature, the Internet.
- Defense of assignments given in practical training between teacher and students.
- Learning to explain natural phenomena based on physical laws.
- They will acquire knowledge, skills and abilities in making various technical and electrical devices and circuits.

There are the following factors that have a positive effect on the improvement of students' knowledge together with independent education. full provision, implementation of sanitary-hygienic, safety conditions for effective organization of teaching, satisfaction of material and spiritual needs of teachers, training to be humane in not violating the rights of students and fulfilling their obligations. These factors also have a high place in the formation of a student as a person and staff.

CONCLUSIONS

One of the great goals of the society is the formation of students as a well-rounded generation in their field of expertise. These factors also have a high place in the formation of a student as a person and staff. One of the great goals of the society is the formation of students as a well-rounded generation in their field of expertise.

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