ASSESSMENT OF STUDENTS' LEVELS OF STUDYING PHYSICS

Fozil Irmatov Muminovich
Jizzakh State Pedagogical Institute
Teacher of the Department of Physics and Methods of Teaching It
E-mail address: irmatov-fozil-84@jspi.uz

Abstract: This article explores the specifics of teaching physics in nonphysical specializations. In the areas of non-physical specialization of pedagogical higher education institutions, it is emphasized that the physics program should be radically different from the curriculum of physics, which is a specialized subject. Many other modern educational technologies are based on the teaching of physics for students of non-physical specialties, the organization of the educational process. The main focus in the teaching of physics to students of non-physical specialties is the content of theoretical materials necessary for the formation of scientific thinking among students, the creation of opportunities for independent study of physics.

Keywords and phrases: physics, nonphysical specialization, modern educational technologies, levels of mastery, activity, feature, form, method, theory, experiment.

INTRODUCTION

In the current socio-economic conditions, it is especially important to cultivate an entrepreneurial, active, independent person, focused on his future professional activity. In the process of modernization of education, there is a need to introduce such an important area as specialized education. Each form of education is created by combining different academic disciplines, that is, in an integrative way, imposing specific tasks. It has the advantages of the content of the material with its own peculiarities, the peculiarities of the meta-thematic relationship. However, regardless of the form of study, the student must have an idea of physics as a science, methods of scientific knowledge, the world around him and the role of the individual in it, the relationship between theory and practice in the learning process. The purpose of the study of physics as a science in higher education is to provide fundamental knowledge of physics on the basis of

education, to form a scientific worldview in students, to apply it in their activities, to create a basis for further education [1].

In order to form theoretical knowledge, practical skills and abilities in students, it is necessary to pay special attention to the performance of laboratory work by students in the plan, as well as demonstration experiments on all topics, problem solving. In teaching physics in higher education institutions, it is important to take into account the professions of students and to focus on teaching [2].

MATERIALS AND METHODS

It is important to systematize teaching materials around the basic ideas of scientific and technical development of teaching physics in higher education students studying in higher education institutions in the field of non-physics. This shows, first of all, that the study of technical objects has a "detailed" description, that is, in the minds of students, ultimately, during the study of the whole topic, section and course to create a complete picture of a particular field of technology, the direction of technical development. This technique offers a systematic approach to object selection and the selection of appropriate teaching methods.

The teacher should pay special attention to the issues of independent learning, development of logical thinking, and professional orientation of students studying in higher education institutions in the field of non-physical specialization. The teacher should, first of all, carry out differential teaching, taking into account the specialization prepared by the educational institution in which the pedagogical activity takes place. Differentiation of the content of teaching means the role of the knowledge acquired by the student in the future, the unity of theory and practice, ensuring the integrity of the individual through the implementation of educational integration [3].

To achieve these goals, the physics teacher is required to use modern educational technologies in the pedagogical process to create situations based on learning problems and ensure their successful solution in lectures, seminars, discussions, conferences, problem-based lessons.

Differentiated education of students majoring in non-physical specialties in higher education institutions involves not only the content of education, but also information about the future profession, the formation of knowledge, skills and abilities required by this profession, as well as personal qualities and attributes.

The purpose of the study of physics as a science in higher education today is to provide fundamental knowledge of physics on the basis of education, to form a scientific worldview in students, to apply it in their activities, to create a basis for further education.

In teaching physics in higher education institutions, it is important to take into account the professions of students and to focus on teaching.

In order to form theoretical knowledge, practical skills and abilities in students, it is necessary to pay special attention to the performance of laboratory work by students in the plan, as well as demonstration experiments on all topics, problem solving.

The physics program should have a system of theoretical materials and tasks necessary to create the student's interest in the subject, the opportunity to study science independently.

Learning is a pedagogical concept that refers to the level of completeness, depth, awareness and strength of knowledge, skills and competencies acquired by students. Levels and indicators of mastering in Uzbekistan are determined in the form of five points (grades) based on the requirements set for students in the State Standards of Education and curricula. Mastering in higher education is determined by the scale of academic semesters. Achieving increased assimilation is one of the most important tasks facing national practice. Because the intellectual development and professional training of students directly depends on their level of mastery. In order to increase the level of mastery, it is necessary to organize the educational process in accordance with the direction of students, the widespread use of advanced pedagogical technologies, especially modern technologies, the

application of the latest achievements of science, to make students active participants in the teaching process.

The following tasks are set for teaching physics to students majoring in non-physics:

• the formation of concepts about physical phenomena and the laws of nature, the discovery of the structural diversity of matter, the interrelationship between experience and theory in the development of natural science;

• provide a simple understanding of the basic principles of operation of technical devices that modern man encounters at every step;

• fostering an interest in the study of ethics, citizenship and physics based on the explanation of the importance of this science in modern life;

• formation of knowledge about the history of development of physics and the life of its creators;

• develop the ability to implement projects of varying levels of complexity in the study of physics;

• formation of a multifaceted image of the universe, in which, along with the classical image of natural science, the elements of modern scientific view of nature are complex, interconnected, non-mechanical, evolving integrity, as well as its artistic perception;

• formation of skills in the use of information technology in the development of the basic curriculum [5].

It should be noted that there are specific requirements and conditions for teaching physics in the field of non-physics. In teaching physics in groups of non-physical specialization of education, the main attention should be paid to the formation of scientific thinking among students. The course program should contain a system of theoretical materials and tasks necessary to create the student's interest in this science, the opportunity to study physics independently [6].

It is advisable to take into account the peculiarities of students' way of thinking when teaching physics lessons for non-physics specialization: it is

important that many laws are studied without formulas (students are given final formulas) without complex computational problems. It is necessary to use information technology that allows you to demonstrate complex schemes of macro and micro processes, the structure and principle of operation of technical devices, fragments of videos, unique photographs, graphics, formulas, animation of studied processes and events, objects in motion and development. For example, it is not possible to directly observe nuclear changes, the motion of electrons in a magnetic field, etc., so it will be possible to demonstrate such phenomena and experiments by modeling. Students act actively and meaningfully with the help of visual aids, which increases the effectiveness of their impact on mental development and mastery of learning materials [9].

RESULTS AND DISCUSSION

Improving the learning strategy based on the results is an important stage of the teacher's activity and plays a special role in the teaching process. High-precision assessment of a student's knowledge in a particular field or subject allows the teacher to refine the learning strategy according to the student's level of mastery. It is known that in the system of higher and secondary special education there are two main methods of assessing students' knowledge:

1) The first method is to assess the degree to which a student has mastered a particular subject;

2) The second method is to assess the extent to which the student is able to apply in practice the knowledge acquired in a particular subject.

While the first method is convenient for assessing a student on indicators such as a serious approach to lessons, as complete knowledge of the subject as possible, the advantage of the second method is that it determines the extent to which the student can apply theoretical knowledge in real life problems. At the same time, the student is forced to fully demonstrate their ability to apply their knowledge to a real-life problem, and it is easier to understand their own shortcomings. In addition, the second method encourages the student to take a

critical look at existing theories in the subject. In this method of assessment, the student is given a situation or problem that can be encountered in real life as an assignment, and the student is required to make a scientific-critical reflection on the situation or problem or give instructions on how to solve the problem based on the acquired theoretical knowledge.

The Kahoot program has the ability to conduct online tests, debates, and surveys among students using various multimedia elements-text, photos, and videos. At the same time, students can use any type of device.

You can attach a photo or video to each question, as well as specify the completion time. It uses a projector when conducting the test process in a playful way. The teacher displays options for questions and answers on the General screen. And the student only determines the options on the screen of a computer, tablet, or their own mobile phone.

The more correct and quick answers to questions, the more points are given. This makes it easy to determine which student is independent and which is moving from their nearest classmate. At the end of the test, the overall results are displayed. each student's answer to a particular question is saved permanently, and the result of each test can be downloaded as an excel spreadsheet at any time. Another aspect of the Kahoot program is that you can use ready-made test tasks to increase the number of your own tests.

The theoretical knowledge, practical skills and skills that the teacher provides using such online services will help to determine the level of students assimilation and their understanding of the material in the shortest possible time. If we analyze the evaluation system of the above-mentioned technologies, they will be included in the rating system of evaluation, this will further enhance the participation of students in training sessions. Using these tools, you can have interesting classes, as well as organize an interactive assessment of students. It is worth noting that mobile phones and tablets serve as auxiliary devices, and do not interfere with the learning process.

Our experience in teaching physics in higher education institutions shows that in order to ensure the effectiveness of education, it is advisable to use the method of step-by-step assessment of practical knowledge, especially in laboratory classes, to assess the theoretical knowledge, practical skills and abilities of students. It is recommended to use the assessment criteria developed according to the defined competency elements in the assessment of the knowledge to be acquired by the student at the stage of laboratory work and the skills and competencies to be acquired by the student at the stage of its implementation. For example, to know the concepts of mass, volume, density as elements of competence, to describe them, to know their mathematical expressions, units, to know the relationship between these quantities as elements of competence in the assessment of knowledge to be acquired by the student in the laboratory work on "Determination of volume and density". In assessing the skills and competencies that the student should acquire at the stage of work, to distinguish the tools and equipment needed to do the work, to know the principle of their operation, to know how to use them, to know the procedure of laboratory work, to assemble the device, the ability to organize, the ability to process the results obtained, the ability to prepare a report on the case. The student's theoretical knowledge and practical skills in laboratory work are assessed on the basis of assessment criteria in accordance with the elements of competence.

The technological map of the training shows the stages of the usual training, their summary, the time, form and method allocated to them. The methodological development takes the student in the process of performing laboratory work in the part of the guidance map for the student

The activities to be carried out are described step by step, with the help of which tools and in what order each stage should be carried out. Assignments developed to determine whether the expected outcome of each task has been achieved and their evaluation criteria help to assess the knowledge, skills and

competencies acquired by the student in a particular laboratory work with high accuracy.

In our experiments, the use of computer programs in the teaching of physics and short-term courses in physics, the use of animated rounds not only facilitated the teacher and the student, but also helped to understand the mechanisms and stages of physical processes. With this in mind, the organization of computer-generated demonstrations of the mechanisms of physical processes, the stages of their occurrence in an animated tour was found to be a visual, interesting and well-remembered activity for students [7].

If the student is provided with modern educational technologies, knowledge is conveyed through practice, students are constantly explained the need for these materials in real life, the subject is connected with modern educational technologies, the conditions for active expression of students, up to 80% mastery of information on the subject possible [1].

Based on the experience of foreign countries, new methods are entering the education system using modern information technologies. This situation affects not only the formation of new methods of teaching, but also the process of assessing knowledge [8].

Teaching with the help of modern educational technologies can save up to 30% of time compared to traditional teaching methods, and the acquired knowledge will be stored in the memory of students for a long time. It is known that if a quarter of the material heard is memorized, the ability to memorize and visualize information can be up to 25-30% if the material is given to students using Interactive Physics, Crocodile physics, Crocodile technology, PHET and Yenka pedagogical software tools (simulators). increases. In addition, if these learning materials are given to students in the form of audio, video, graphics, memory retention of materials increases by 75% [3].

CONCLUSION

In conclusion, it can be said that as a result of the use of the above programs in the educational process, there is an opportunity to visually present the necessary information to students. This is characterized by the ability of students to think freely, to express their personal views without hesitation, to create mutual intimacy of students in the study of educational materials. This is an important factor in improving learning efficiency.

Appropriate use of modern educational technologies in the process of teaching physics provides ample opportunities for in-depth study of educational materials, leading to an interesting organization of lessons.

It would be expedient to organize appropriate lessons in lectures, practical and laboratory classes using modern educational technologies, which correspond to the topics taught in direct connection with the physical concepts that are important in improving the level of students' mastery of physics and the development of their scientific and physical worldviews [10].

REFERENCES:

[1]. Raximov O.D., Turgunov O.M., Mustafaev Q.O., Ruziev H.J. Modern educational technologies. –Tashkent, 2012. –p. 18-20.

[2]. Dyakova E.A. Methods of physical training in the management of humanitarian profile. Diss ... cand. ped. science. - M., 2002. - 180 p.

[3]. Xamidov V.S. About 4 programs that caused a sharp turn in the education system. http: //uz.infocom.uz/2009/12/21/.

[4]. Irmatov F.M. Improving students' mastery through modern technologies // Tafakkur ziyosi. Scientific-methodical journal. - Jizzax. -2020. – No 1. – Pp.157-159.

[5]. Demin E.V. Methods of using new information technologies in the process of quantum physics and pedagogical VUZax .: Dis. kand. ped. science. - M., 2004.

[6]. Irmatov F.M. Ways to increase the effectiveness of physics education in non-physical specialties // Pedagogy. Scientific-theoretical and methodical journal. - Tashkent. -2020.– Issue 2. - P. 86-90.

[7]. Arias E.A. Differentiated approach to the study of physics students of different non-physical specialties of the university. // Dis. kand. ped. science.
- St. Petersburg. 2004
[8]. Irmatov F.M. Peculiarities of teaching physics to students of non-physical specialties using modern educational technologies // NamSU scientific bulletin. - Namangan. -2020. - Number 7. - P.263-268.
[9]. Abduraxmonov K.F. b. Physics courses. va – Tashkent, 2012.
[10]. Salnik I. V. The use of information and communication technologies in the study of physical students of non-physical specialties of pedagogical universities.
// Journal of information technology in education. –Pp.204-209.
[11]. Umarova G. A. Improving methods of teaching quantum physics based on computer technologies in General education schools: diss... cand. Ped. sciences'. - Tashkent, 2008. –P. 135 .
[12]. Anisimov N. M., Rozhko S. N. Innovative activity of the physics teacher. // At the school of physics n. a. 5. 2002. - P. 64-66.
[13]. Okaemov O. New educational technologies at the University. // Pedagogy.
- No. 6. -2000. - Pp. 71-72.
[14]. Semko G. K. Modern technologies of education. - M., 1998. –P. 178 .
[15]. Malofeev I. R. Problem-based learning of physics in secondary school.
-M.: Education, 1980. –P. 127.