

FIELD OF PHYSICS BASED ON AN INTEGRATIVE APPROACH METHODOLOGY FOR DEVELOPING PRACTICAL COMPETENCE OF STUDENTS

Mustafoyev Erkin-

researcher of Karshi State University

Abstract

The article describes the special place of modern scientific-pedagogical physics knowledge in the preparation of graduates of higher educational institutions, the methodology of studying physics and the development of practical competence based on an integrative approach, and the stages of the integrative approach created in learning the basic concepts of physics. In this process, students begin conceptual reading of physics by learning basic concepts of laws, formulas, physical events, and phenomena. Hands-on activities give students the opportunity to experience physics concepts in practice. These exercises can be conducted in laboratories, device models or simulations. Students can challenge themselves through these activities by testing physical laws and concepts they have learned.

Keywords: Integrative approach, practical competence, physics education, science education, device models, simulations, Hands-on activities, formulas, physical events, and phenomena.

Introduction

The higher education system is one of the main factors of social development that determines the country's destiny in the long term. One of the main directions of the higher education system is education in physics. An important issue of improving the quality of the modern education system and the training of specialists is to train students based on new educational standards and the requirements of modern society's advanced technologies. Educational activity sets the task of preparing highly qualified specialists for professional activities, forming

responsible, enlightened, active citizens. The goal of education is the formation of an educated, intellectually developed, technologically competent, competent person.

Among the fundamental sciences that determine the modern scientific and pedagogical development, physics occupies a special place in the training of graduates of the Pedagogical University, because physics is not only a theoretical and experimental science, but also the basis of physics and technologies. Pedagogy The purpose of studying physics in HEIs is to create a basis for theoretical training of a future physicist. Physics is the main component of technical education, which helps to further develop various physics specialties in various fields of production.

The methodology of studying physics and developing practical competence based on an integrative approach is based on the following processes:

The first stage of the integrative approach created in the study of the basic concepts of physics. At this stage, students begin conceptual reading of physics by learning basic concepts of laws, formulas, physical events and phenomena. Hands-on activities give students the opportunity to experience physics concepts in practice. These exercises can be conducted in laboratories, device models or simulations. Students can challenge themselves through these activities by testing physical laws and concepts they have learned. Projects and Research: Through physics research and projects based on an integrative approach, students find opportunities to analyze, learn and discuss themselves. This process allows them to challenge themselves in solving problems, applying information and finding solutions to the problems presented. Physics classes are integrated with other subjects, and through instruction or activities, students are required to challenge themselves integratively. For example, learning physics with mathematics, solving physics problems with engineering design, etc.

Literature review:

However, it should be noted that in recent decades, there have been negative trends in reducing the role of fundamental education in physics education. This is reflected in the fact that from the end of the 90s to the beginning of the 21st century,

the volume of physics courses in higher educational institutions of Pedagogy was reduced by half, and its further reduction continued in the 2020s and beyond. Restricting the teaching of fundamental natural sciences in Pedagogical Higher Education Institutions, in particular, physical sciences, not only loses its ideological advantages, but also leads to a serious decrease in the basic training level of students of Pedagogical Higher Education Institutions and lowers the status of technical education.[1]

Methodology

Local diversity is important to students in the study of physics. This integrative approach methodology allows students to explore topics of their own interest through activities, examples, or presentations based on local historical or spiritual contexts. Based on an integrative approach, appropriate requirements and assessment methods are used to monitor students' learning and analysis processes. These methods are done through assessment of student performance, applications, portfolios, or other assessment tools. The methodology of studying physics and developing practical competence based on an integrative approach allows students to implement learning processes, discuss and put skills into practice. These methods ensure that students learn physics in a practical, hands-on and relevant way.

The methodology of teaching physics shows that pedagogy should be integrative in terms of content, taking into account the specific characteristics of the educational institution. The knowledge acquired by students should be integrated with special (specialty) subjects, that is, the physics course should be combined with elements of special subjects. The purpose of teaching physics is to form a physical and technical base for mastering special knowledge.

The main task of the laboratories of the higher educational institutions of pedagogy is aimed at the application of the knowledge and methods of experimenting in the production process, that is, the development of practical competence.

Physics experiment is used not only as a visualization tool in the hands of the

teacher, but also as a research method, a source of knowledge, a criterion for testing propositions and theoretical conclusions by students. We can cite five directions of the most important trends in changing the content of laboratory work. We can say that the first three of them are traditional, and the other two are new.

1. Determination of physical quantities by direct and indirect measurements.
2. Examination of physical laws.
3. Performing fundamental experiments.
4. Understanding and studying laws of physical phenomena, processes.
5. Studying the design and assembly of technical devices, electrical circuits, devices, their working principles and characteristics.

Physical experiment brings teaching closer to production conditions, makes the connection between science and production. From the point of view of modern didactics, the most reasonable way to prepare a specialist for professional activity is the formation of generalized competencies. Generalized skills, which have a broad nature, are skills that students can use not only within one discipline, but also in other disciplines to solve related problems. The experimental skills formed during laboratory work can be used later in the study of technical sciences and in the future professional activity of a physicist. Such experimental skills are generalized.

Based on the above, we can conclude that currently the purpose of physics laboratory training in technical HEIs should be the formation of generalized experimental skills of a scientific and research nature among students, these skills can be used in the mastering of technical sciences and in the future professional allows use in activities.

Conclusion

Thus, the teacher of physics of higher educational institutions should pay attention to the following:

1. Selection of laboratory works in which it is possible to fully implement the connection of laboratory training from physics with technical sciences;
2. Working on the formation of general skills necessary in the process of

learning professional sciences while performing laboratory work in physics;

3. Solving issues aimed at encouraging professionally relevant knowledge and skills that can be used in practical activities on equipment management and technical maintenance in practical training from physics.

High of education important from directions one of students independent their work organize is to reach Students independent work for separated time , specialty come came out without , study of time common time 40-50% of the budget organize does , from that about 40-45% are teachers to individual work under the leadership is separated . Independent the work of training characteristic features of the following consists of : to students independent work for to be given of assignments individuality, them to perform creative approach necessity , student and the teacher in the middle what 's up in the style of regularly respectively contact installation .

Independent the work in efficiency right organize done control big role plays XXI century work fundamental knowledge and modern to thinking have, labor in the market sharp competition conditions efficient creative to the activity able was high qualified physicists need.

References :

1. Махманов Э. Б. Бўлажак муҳандисларни тайёрлашда мантикий фикрлаш компетенцияларини такомиллаштириш //Наманган давлат университети-2021. – Т. 1. – С. 581.
2. Binoqulovich, Makhmanov Ergash. "The development of laboratory practice-trainings in the identification of comparative specific heat capacity in liquids and solids." *European Journal of Research and Reflection in Educational Sciences Vol 8.9* (2020).
3. Ишмуродова Г.И., Махманов Э.Б. Талабаларнинг физикадан мантикий масалалар ечиш кўникмаларини шакллантириш //”Замонавий таълим журнали”, 2020, 3-сон 16-23-бет
4. Махманов Э. Б. Физика таълими жараёнида талабаларнинг ўқув компетенцияларини ривожлантириш //А ИЛМ. – С. 75.
5. Ишмуродова Г. И., Махманов Э. Б. Физика фанидан лаборатория машғулотларини инновацион ёндашув асосида утказиш //Современное образование (Узбекистан). – 2019. – №. 8 (81). – С. 16-22.
6. Ишмуродова Г. И., Махманов Э. Б. Мастер-класс асосида физикадан масалалар ечиш машғулотларини ташкил қилиш //Современное образование (Узбекистан). – 2020. – №. 10 (95). – С. 11-17.

7. Беспалько. В.П. Слагаемые педагогической технологии. - М.: Педагогика, 1989. — 192 с.