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Nutzung pädagogischer kompetenzen beim entwicklung technischen wissens von studierenden im e-learning-umfeld

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Anmerkung. Der vorgestellte Artikel beschreibt den Einsatz pädagogischer Kompetenzansätze bei der Entwicklung von fachlichem Wissen von Studierenden im E-Learning-Umfeld und seinen aktuellen Stand.

Schlüsselwörter: Bildung, E-Learning, Physik, Ingenieurwissenschaften, Pädagogik, Kompetenz

Use of pedagogical competences in the development of technical knowledge of students in e-learning environment

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Abstract. The presented article describes the use of pedagogical competence approaches in the development of technical knowledge of students in the e-learning environment and its current state.

Keywords: education, e-learning, physics, engineering, pedagogy, competence.

Introduction. Today, the rapid development of science and technology in our country creates certain skills and abilities through the reception and analysis of

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information, drawing conclusions, which requires improving the pedagogical competence of teachers working in the field of science and technology. Taking into account the dynamics of development in the modernization of practical and laboratory classes in the teaching of physics, the pedagogical approach plays an important role. Given the demands of the times, there is no doubt that the transition from traditional methods in the conduct of practical and laboratory classes in physics, the transition to new models, will increase the quality and effectiveness of teaching. At the same time, it is a key factor in improving the technical and pedagogical competence of teachers.

Today's practical and laboratory classes in higher education institutions, if focused on the problems of a comprehensive scientific nature, give specific results, will play an important role in the training of scientific potential in the future.

Improving the technical and pedagogical competence of physics teachers is one of the urgent tasks. One of the key issues is to focus not only on the deep knowledge, skills and abilities of future physics teachers, but also to develop their physical competence and talents at the level of modern requirements, to bring it up to modern standards, in short, to improve pedagogical competence. remains. Requires the ability to fully use and apply in practice the relevant scientific achievements in the educational process to ensure the welfare of the people in practice.

Methods. Laboratory and practicum has a great impact on the level and characteristics of preparation of teachers for future pedagogical activities. The process of carrying out the work of the physical practicum is important for the practical activity of future teachers and forms their experimental competence.

In particular, one of the urgent tasks in teaching methods is to improve the content and methods of organization of practical and laboratory classes in physics. The role of physics practicums is also important in the acquisition of a high level of knowledge and skills by physics teachers. During the practicum, teachers increase their knowledge, strengthen their theoretical knowledge, gain a deeper understanding of the basic concepts and laws of physics, acquire skills and abilities to solve

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experimental problems, learn to work with physical instruments, devices and measuring instruments, independently perform, observe and demonstrate physical experiments. master the methods of mathematical processing of experimental results. At the same time, the use of new pedagogical and information technologies leads to positive results. Accordingly, the improvement of teaching methods is based on the psychological, pedagogical, didactic, methodological bases of cognitive theory, science methodology and teaching.

In this regard, practical and laboratory classes of universal character should be given more attention in the study of physics in specialties, especially in pedagogical higher education institutions, as in modern education to strengthen attention to the physical aspects of laboratory equipment, to develop skills and competencies. professional and pedagogical competence is important.

Result. It focuses on the methodology of improving the theoretical basis for the organization and conduct of practical and laboratory classes in pedagogical higher education institutions, taking into account the factors of improving the pedagogical and technical competence of teachers. Figure 1 shows a sequence of factors to improve the pedagogical and technical competence of physics teachers.

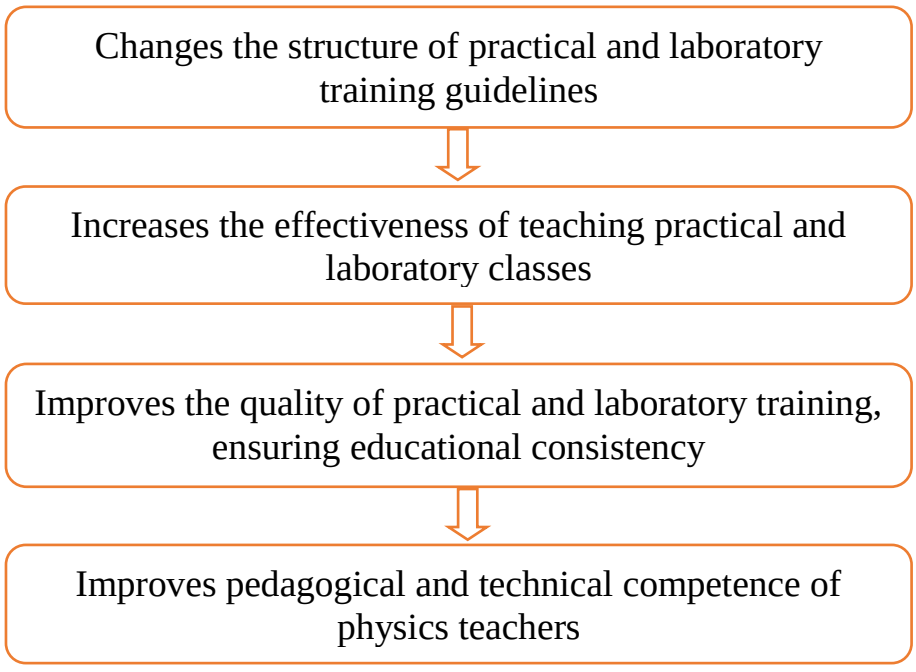

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Figure 1. Factors for improving the pedagogical and technical competence of physics teachers

The application of advanced ideas and technologies in the education system requires a special approach in the methodology of teaching physics due to the application of statistical ideas and concepts. While education is one side of teaching and learning, the rest is active learning and assimilation, evaluation, and creative activity of the acquired knowledge.

Our research shows that the development of competence begins with the teaching of physics in secondary schools. Although less time is devoted to physics and laboratory work in secondary schools, the basis of practical and laboratory training in higher education is the physical practicum, which is based on the formation, generalization, deepening and repetition of skills and competencies for its organization and conduct. The technical and pedagogical competence of a physics teacher is achieved by expanding the scope of the norms specified in the standart education country for the implementation of practical and laboratory training in the formation of his worldview. At the same time, in addition to in-depth knowledge of the theoretical and practical aspects of the subject in order to improve the competence of physics teachers in improving their technical training, it is necessary to have methodological competence.

The current state of the problem of a competent approach to the learning process is an important factor in the training of future physics teachers, which includes the following factors: identification of the main categories of technical and pedagogical competence approach and its strengthening through regulations; Creating a national model of a competency-based approach while preserving national values in Uzbekistan, developing a clear and forward-looking plan for teacher training and implementing it in the educational process; improving the basics of educational management in the training of physics teachers, ensuring the effectiveness of its activities in the education system; to develop in the future in the training of spiritually

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mature, competitive physics teachers, their interests, the ability to work on technical equipment and devices in the course of laboratory classes; formation of technical competence, in addition to the level of study of the combination of theory and practice in the professional training of teachers of physics, providing priority in the education system; The complex of competence improvement will be able to independently express their attitude to changes in nature and society, based on the knowledge, skills and abilities of the future teacher in the psychological, pedagogical processes in society by describing the pedagogical and technical competence of teachers in pedagogical higher education institutions.

Discussion. The content of physics education and teaching methods are interrelated, and the process of improvement cannot be studied in isolation. The improvement and renewal of the content of physics education, in turn, requires the improvement of teaching methods and, if necessary, compulsion. We are witnessing the current state of modern technologies in teaching. The updating of the content of education is ahead of the teaching methodology, i.e. the methodology is relatively backward. At a time when the scope of educational information that future physics teachers need to master is rapidly expanding, the teaching time required to master it remains virtually unchanged. This situation objectively creates a methodological problem. The level of methodological training in the training of physics teachers requires, first of all, theoretical and practical knowledge of the specialty. It is not difficult to notice that the role of theory in the physics teaching system has been increasing in recent times and the implementation of physics teaching based on experimental evidence has been declining. This situation should be understood as an objective necessity, which means that the conceptual aspect of the teaching methodology requires work based on this approach. The priority of theory in education is that the future teacher requires the development of abstract thinking. Hence, the content of the methodology is required to be proportional to this aspect in its renewal process. Given the recent advances in science, it is no exaggeration to say that the creation of the content of physics education is on the agenda.

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It should be noted that modern physics supports the reflection of the latest achievements of physics in its content. This approach is conceptual and can bring new changes to the agenda in the world of methodology. We believe that it is necessary to integrate academic disciplines, update teaching materials, develop abstract thinking of future physics teachers, ensure the deductive method of teaching and its priority, improve the abstract thinking of students and future teachers, improve technical and pedagogical competence.

One of the main research methods in science is the object of study and teaching method in teaching physics. This is due to the fact that the learning process takes many forms: demonstration experiments, frontal laboratory work, physical practice. Each of them performs specific didactic tasks. Technical training is associated with its specific features, and pedagogy is one of the important organizers of the competent training of future physics teachers in higher education institutions. Demonstration experiments are conducted in conjunction with the explanation of new learning materials, and one of its main purposes is to demonstrate a particular physical phenomenon, to confirm the correctness of a conclusion derived from the law or theory being studied. In addition, the purpose of the demonstration experiment is to introduce physics teachers to specific aspects of experiments as a research method.

In conclusion, it should be noted that the use of pedagogical competence approaches is important in the development of students technical knowledge in an e-learning environment. The use of e-learning manuals in practical and laboratory classes in the process of physics education serves to improve the quality of teaching. Indeed, the e-learning manual summarizes both video, audio, and theoretical information within a specific topic. The fact that these textbooks can also be used in inclusive education is an achievement of our research.

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