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ORGANIZATION OF INDEPENDENT WORK OF ENERGY STUDENTS BASED ON INTER-SUBJECT RELATIONS

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ABSTRACT

This article provides methods for organizing and evaluating independent education using elements of interdisciplinary communication for energy education students in higher educational institutions. Attention is paid to students' independent work using modern information technologies.

Keywords: student, higher education, power energy, independent work, interdisciplinary connection, information technology.

INTRODUCTION

Independent work of students (IWS) is an integral component of the educational process in any subject being taught. A student's weekly workload is 54 hours, of which 30-32 hours are classroom hours. If we take into account classroom independent work, then in the total volume of a student's educational work, independent work takes up more than half of the total time allotted for mastering educational programs. Unfortunately, the developed mechanism for SRS is not used to its full potential, and sometimes completely falls out of the attention of teachers. The proposed scope of IWS requires, first of all, fundamental changes in the content and organization of the teacher's work, the development of new pedagogical technologies and methods of their use in a specific subject.

Information technology is an effective means of preparing a future engineer for independent work. A modern specialist must be armed with a set of knowledge and skills related to the use of computers. Therefore, a teacher of any subject must determine the purpose of independent work and plan it taking into account the use of information technology. For students of technical specialization, great emphasis is placed on preparing handouts for solving problems, exercises, drawing up various diagrams, graphs, and creating electronic information materials.

METHODOLOGY

Practice has shown that interdisciplinary communication between special departments and the Department of Information Technology gives effective results in organizing IWS. Until recently, teachers from different departments worked almost autonomously from each other. Each department sought to ensure compliance with the requirements of state educational standards in its disciplines, but was not responsible for the final result of training a specialist in the educational program of the specialty [1]. Today's curricula, where the amount of independent work of students is much greater than before, requires coordinated pedagogical activities of teachers of different disciplines [2]. In addition, modern students strive to independently set priorities and distribute the time allocated for independent work in accordance with their own assessments of the importance of this or that educational material.

For students specializing in Electrical Power Engineering, one of the fundamental disciplines is Theoretical Fundamentals of Electrical Engineering (TFEE), where the volume of classroom lessons is 260 hours, and IWS is 80 hours. In practical classes and when performing computational and graphic work (CGW), mainly applied problems are considered, which play a significant role in the training of an engineer. Students' independent work includes calculating the parameters of various complex electrical circuits. This is labor-intensive, time-consuming work for the student, where a small error, even in a sign, will lead to incorrect results. This requires a holistic approach to introducing connections and relationships with other courses being studied, such as information technology, higher mathematics, physics, etc. Together with the department of information technology, we planned the IWS in advance, where we paid attention to the correspondence of the calendar and thematic plan of the subjects studied in both departments. In addition, they offered specific examples for compiling or selecting programs and solving problems using a computer [3]. Without a doubt, the student must be armed with a set of knowledge and skills related to the use of computers, and clearly understand the sequence of stages of using computers in practice. Therefore, we highlight the following as the main requirements for students to work with computers: mastery of the modeling method, understanding of the essence and ability to compose algorithms, knowledge of programming languages, and the feasibility of using computers [4].

RESULTS AND DISCUSSION

Before starting to study the TFEE course, students are offered a lecture course in electronic version and a calendar and thematic plan for organizing independent work. At the first practical lesson, each student receives a memo containing detailed planning of extracurricular work in the discipline being studied and teaching aids. Independent work is carried out according to methodological manuals developed jointly with the Department of Information Technology, which contain examples of solving problems using a computer. The main part of independent work consists of individual tasks or RGR in different versions.

When calculating electrical circuits of single-phase and three-phase alternating current, the method of complex numbers is widely used, which allows graphic operations on vectors to be replaced by algebraic operations on complex numbers. According to the curriculum of higher mathematics and for the study of complex numbers, 4 hours are allocated, of which 2 hours are for practical classes. This circumstance also requires the creative collaboration of teachers of both subjects in organizing IWS. A teacher of higher mathematics, when drawing up a calendar-thematic plan for SRS, takes into account the proposals of the teacher of the subject of TFEE, and includes specific practical, but simple tasks that provide an organic connection for students' self-education in these subjects.

Such examples that require the collaboration of teachers from different disciplines. Of course, work of this nature is complex, intense and voluminous, and requires significant preparatory work on the part of teachers and students.

CONCLUSION

By applying the above methods of organizing the IWS process, the student develops fairly stable self-education skills both for studying at a vocational educational institution and for his

professional activities in the future. The methodology of such an organization of IWS ensures the development of a student as a highly qualified specialist who is able to properly organize his activities.

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