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Development of Professional Competence of Students of Energy Studies Based on Case Technologies

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Introduction

In modern society, the training of highly qualified specialists in the energy sector is one of the most pressing issues. Technological changes and global challenges in the energy field require students to possess practical skills alongside theoretical knowledge. From this perspective, the application of innovative pedagogical techniques, particularly case study methods, in the educational process is of paramount importance. This article analyzes the potential for developing the professional competence of energy engineering students through the use of case study technologies.

Literature review

Case study methodology guides students towards independent thinking, analysis, and problem-solving by creating conditions closely resembling real-life situations in the educational process [1]. This approach yields particularly effective results in technical fields, including the energy sector [2]. Some studies have found that through case studies, students deepen their knowledge of technical and managerial decision-making [3]. Several studies have also been conducted on the use of case study methodology in the education system of Uzbekistan, which have noted that this approach has a positive impact on enhancing students' knowledge [4].

Main part

Teaching based on case study technology serves to develop both theoretical and practical knowledge of students in the energy sector. The main advantages of this method and its application in energy education are detailed below:

- ***Teaching based on real situations*** - Case technology introduces students to real energy problems and encourages them to develop solutions. For example, practical cases on electricity conservation are analyzed, and students develop alternative solutions. Through such practical exercises, students can formulate specific recommendations for reducing energy losses in electrical networks, utilizing renewable energy sources, and improving energy efficiency.
- ***Finding solutions to problematic situations*** - Students develop skills in analyzing problems and devising their optimal solutions by studying real-life situations. For instance, cases on increasing the efficiency of power plants or reducing environmental issues are analyzed. This plays a crucial role in their professional activities and broadens the opportunities to apply theoretical knowledge in real-world practice.
- ***Teamwork and communication skills -*** Teaching based on case study technology trains students in collaborative work, conducting discussions, and exchanging ideas. Through group work, students learn from one another, engage in mutual communication, and analyze various

approaches. Such skills are particularly beneficial for students, especially since project development and implementation in the energy sector are fundamentally based on teamwork.

- ***Gaining practical knowledge and experience*** - Through this method, students have the opportunity to apply theoretical knowledge in practice. This is particularly crucial in the energy sector, as it enhances students' understanding and application of technical processes. For example, students can carry out practical projects such as simulating the operation of power plants, studying energy-saving technologies, or evaluating the efficiency of alternative energy sources.
- ***Creative thinking and innovative approach*** - The use of case technologies encourages students to think creatively, develop innovative approaches, and propose their own alternative solutions. For example, students can develop new ideas for implementing novel technologies in the energy sector or modernizing existing systems.

Conclusion

Teaching through case study technologies is an effective method for developing the professional competence of students in the energy sector. This approach serves to reinforce students' knowledge, form practical skills, and enhance their ability to think independently. Therefore, broader use of case study technologies in the education system will contribute to further improving students' level of preparedness. In the future, it is important to conduct more in-depth research on this methodology and refine it further.

List of used literature:

1. Jonson, P. (2020). "Case-Based Learning in Higher Education." New York: Academic Press.
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4. Karimov, A. (2021). "O‘zbekiston ta’lim tizimida keys metodikasining rivojlanishi." Toshkent: O‘zbekiston Milliy Universiteti nashriyoti.