IMPROVING THE PRACTICAL TRAINING OF STUDENTS IN THE OIL AND GAS SECTOR THROUGH DIGITAL TECHNOLOGIES

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Abstract. This article analyzes the relevance of improving the practical training of students in the oil and gas sector through the use of digital technologies, the existing challenges, and ways to overcome them. It also explores the integration of modern digital tools into the educational process and their role in the development of professional competencies.

Keywords: digital technologies, oil and gas sector, practical training, virtual laboratories, modeling, industrial simulations.

Introduction. Today, technological advancement and digital transformation are bringing about fundamental changes in every field. In particular, the oil and gas industry, which plays a crucial role in the exploration, extraction, and processing of global energy resources, is recognized as one of the leading areas of digital innovation. The complexity of production processes, strict safety requirements, and increasing demands on engineering competencies in the oil and gas sector necessitate qualitatively new approaches to the training of personnel in this field.

From this perspective, improving students' practical training through digital technologies emerges as a pressing scientific and pedagogical issue. Organizing this process effectively requires not only the modernization of educational programs but also the updating of teaching methodologies, technological infrastructure, and assessment systems. Specifically, training students in a digital environment that simulates real industrial processes significantly enhances their professional competencies, such as analytical thinking, digital literacy, and problem-solving skills. Through the comprehensive integration of digital technologies in the learning process, students gain the ability to analyze synchronized technological chains, identify failures, simulate safety protocols, and develop alternative solutions. This, in turn, contributes to the formation of technically proficient specialists who are capable of making independent decisions and meet the demands of modern industry.

The Role of Digital Technologies in Education. Digital technologies are currently used in oil and gas education in the following forms: Virtual laboratories: Simulation of processes, learning of safety procedures; Computer modeling software (Petrel, Eclipse, AutoCAD, ANSYS): Reservoir modeling and analysis; AR/VR technologies: Interactive learning and visual analysis of

technological processes; Internet of Things (IoT): Remote monitoring and diagnostics. These tools equip students not only with theoretical knowledge but also with essential practical competencies.

Ways to Improve the Practical Training of Students in the Oil and Gas Sector. Practical training can be strengthened through digital technologies in the following areas: Use of industrial simulators – simulating processes such as drilling, gas separation, and oil refining; Digital project tasks – enabling students to develop virtual group projects that solve real-world problems; Learning Management Systems (LMS) such as Moodle, Edmodo, and Teams – facilitating remote laboratory work and reflective assignments; Digitally integrated internships – project-based work using real data from industrial enterprises.

Scientific and Methodological Foundations. The enhancement of practical training based on digital technologies relies on the following methodological approaches: Constructivist pedagogy – creating a learner-centered educational environment; Problem-based learning – reinforcing knowledge through the search for solutions to real industrial challenges; Project-based learning – fostering teamwork and technological thinking; Reflective assessment systems – including digital portfolios, evaluation rubrics, and self-assessment practices.

Conclusion and Recommendations. In conclusion, organizing practical training based on digital technologies is of high importance for preparing qualified professionals in the oil and gas industry. The following recommendations are proposed:

1. Higher education institutions should be equipped with modern industrial simulators;
2. Practical assignments should be designed and assessed in the form of digital projects;
3. Collaborative digital internship programs should be developed in partnership with industrial enterprises;

Teacher training programs should be established to enhance their skills in using digital pedagogical tools.

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