Integrating modern teaching technologies into English language education for future electrical power engineers.

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Abstract

The rapid development of digital technologies and the increasing internationalization of the energy sector have created new requirements for the professional training of electrical power engineering students. English language proficiency has become an important skill for future engineers who need to understand technical documentation, communicate with international specialists, and participate in technological innovation. This article explores the integration of modern teaching technologies into English language education for students specializing in electrical power engineering. Particular attention is given to digital learning platforms, artificial intelligence, virtual simulations, interactive communication tools, and professionally oriented educational resources.

The study adopts a theoretical and methodological approach to examine how technology-supported instruction can contribute to the development of technical vocabulary, professional communication, independent learning, and problem-solving skills. The article also proposes a practical model for integrating digital technologies into English language lessons and discusses potential challenges associated with their implementation. It is argued that the effective combination of technological resources, professional content, and appropriate teaching strategies can create a more engaging and career-oriented language learning environment.

Keywords: English language education, electrical power engineering, digital learning technologies, artificial intelligence, professional communication, technical English, engineering education, interactive learning, digital competence, innovative teaching strategies.

The transformation of modern engineering education is closely connected with technological progress, digitalization, and the growing demand for internationally competent specialists. In the electrical power industry, engineers increasingly work with advanced equipment, automated control systems, renewable energy technologies, and international technical standards. These developments require professionals to possess a combination of engineering knowledge, digital literacy, and foreign language communication skills. English occupies a significant position in international scientific and technical communication. It is frequently used in equipment manuals, research publications, engineering software, technical specifications, and international professional collaboration. Consequently, the ability to understand and use English has become an important element of professional competence for future electrical power engineers. Despite the practical importance of English, language education in technical universities may face several challenges. Students often concentrate primarily on engineering disciplines and may consider foreign language courses less relevant to their future careers. In addition, conventional language instruction sometimes emphasizes grammatical structures and general vocabulary without establishing sufficient connections with professional engineering activities.

Modern teaching technologies offer opportunities to address these challenges by creating more interactive, flexible, and professionally relevant learning experiences. Digital platforms, virtual simulations, multimedia resources, and artificial intelligence applications allow educators to present language material through authentic or realistically simulated engineering contexts. The integration of these technologies can also encourage students to participate more actively in learning, practice technical communication, and develop independent language learning strategies. The aim of this article is to examine the pedagogical potential of modern teaching technologies in English language education for future electrical power engineers and to propose practical approaches for their effective integration into the educational process. The objectives of the article are to identify the

specific language needs of electrical power engineering students, analyze relevant digital teaching technologies, examine their potential educational benefits and limitations, and develop recommendations for technology-supported professional English instruction. English language education for engineering students should be closely connected with their future professional responsibilities. Electrical power engineers are expected to interpret technical information, describe engineering processes, understand equipment documentation, and communicate effectively with colleagues from different linguistic backgrounds.

These professional requirements make it necessary to move beyond the exclusive use of general English materials. A professionally oriented language curriculum should include vocabulary and communication activities related to electricity generation, power transmission, electrical machines, renewable energy systems, industrial automation, and electrical safety. For example, students may study terms such as voltage regulation, power distribution network, circuit protection, electrical load, transformer efficiency, and energy conversion. However, effective technical English instruction involves more than learning specialized terminology. Students must also develop the ability to explain technical processes, compare engineering solutions, interpret diagrams, and present professional information clearly. A useful instructional activity may involve presenting students with a simplified diagram of an electrical power system and asking them to explain the movement of electrical energy from a generating station to industrial or residential consumers. Through this activity, students practice technical vocabulary, grammatical structures, logical explanation, and professional communication simultaneously.

Conclusion

The integration of modern teaching technologies into English language education represents a promising direction for improving the professional preparation of future electrical power engineers. As the energy industry becomes increasingly technologically advanced and internationally connected, engineering graduates

need the ability to understand technical information, communicate with specialists, and participate in professional activities using English. Digital learning platforms, artificial intelligence, multimedia resources, virtual simulations, and project-based activities can create additional opportunities for developing these competencies. This approach can help establish a closer relationship between English language education and the professional responsibilities of future electrical power engineers. Further classroom-based research is needed to evaluate its effectiveness and identify the most appropriate combinations of technological tools and teaching strategies for different educational environments. Ultimately, the integration of modern educational technologies should be understood not simply as the digitalization of traditional teaching practices, but as an opportunity to develop more interactive, professionally relevant, and competence-oriented English language education.

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