

STRUCTURAL COMPONENTS OF TECHNOLOGICAL COMPETENCE DEVELOPMENT BASED ON A SYSTEMATIC APPROACH (USING THE EXAMPLE OF THE SCIENCE OF THE INTERACTION OF RADIATION WITH MATTER)

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ABSTRACT

The objective of this article is to examine the structural elements that underpin the generation of technological knowledge through a systematic methodology. The study examines contemporary pedagogical approaches designed to cultivate technical proficiency among students enrolled in technical universities. The essential elements that students must master in order to effectively grasp the fundamental principles and tools of technical competence are identified. A systematic approach is proposed, which includes planning, implementation, and evaluation of educational programs. The developed model takes into account the requirements of the modern labor market and the quality of training of specialists in the field of engineering and technology. The study includes a set of measures designed to ensure the successful formation of technological competence among students. The findings of this study may be utilized in the development of educational programs and teaching methodologies at technical universities with the objective of enhancing the professional competencies of future engineers. The example of gaining experience in the interaction of radiation and matter is used to illustrate the fundamental aspects of a systematic basis for learning and acquiring technological skills. This encompasses theoretical and practical education, scientific research, and the application of knowledge in real projects. The competence-based approach provides a framework for understanding the processes and conditions that facilitate the development of technological competence in students, as well as the effectiveness and accountability of graduates in addressing professional tasks through the use of various technologies. The article also reveals the fundamental features of competencies and the potential of structural analysis of competencies in the implementation of the competence approach in higher education. The article's analysis of contemporary approaches to teaching and enhancing technical proficiency in the field of radiation-matter interaction research paves the way for further research and development in this area.

Keywords: System, analysis, systematic analysis, systematic problem, system approach, system thinking, system model, system task, higher education, radiation, radiation dose.