

CONTENT AND METHODS FOR SELECTING MATERIALS BASED ON PEDAGOGICAL MECHANISMS IN DEVELOPING THE PROFESSIONAL COMPETENCE AND CREATIVITY OF FUTURE ENGINEERS

Badalov Utkirbek Nomoz ogli

Jizzakh polytechnic institute, assistant, independent researcher

Phone Number: +998915907097; badalovotkirbek@gmail.com

Orcid: 0000-0003-4983-6805

Abstract: the development of professional competence and creativity among future engineers requires effective pedagogical mechanisms. This article explores the theoretical foundation and practical application of these mechanisms, emphasizing the selection of appropriate materials and content to foster engineering skills.

Keywords: competence, pedagogical mechanisms, professional mentoring, cooperative education, mastered education, projects.

Introduction Engineering education plays a crucial role in preparing professionals who can meet modern technological challenges. In this context, developing professional competence and creativity among students is essential. Pedagogical mechanisms provide structured ways to enhance these skills through proper content selection and methodological approaches.

Pedagogical mechanisms in engineering education: pedagogical mechanisms refer to strategies and techniques that facilitate learning and skill acquisition. These mechanisms include problem-based learning, project-based learning, case studies, and interactive methods that engage students in hands-on experiences. By integrating these mechanisms into engineering education, students develop critical thinking, problem-solving abilities, and creativity [1].

Criteria for selecting educational materials: selecting appropriate materials is fundamental to effective pedagogy. The criteria for choosing educational content include:

- **Relevance:** Materials should be aligned with industry trends and technological advancements.
- **Complexity Balance:** Content should be neither too simple nor overly difficult, ensuring gradual skill development.
- **Practical Application:** Materials should provide real-world examples that enhance theoretical knowledge.
- **Interdisciplinary Approach:** Engineering problems often require knowledge from multiple disciplines; selected materials should reflect this integration.

- **Innovative Content:** Materials should include emerging technologies and encourage creativity.

Methods for selecting materials: several methods can be used to select educational materials effectively:

- **Expert Consultation:** Collaborating with industry professionals and educators to identify the most relevant content.

- **Student Feedback:** Considering student perspectives on the usefulness and engagement level of materials.

- **Comparative Analysis:** Evaluating multiple sources and choosing the best fit for educational objectives.

- **Adaptation of Open Educational Resources:** Utilizing freely available, high-quality educational materials with modifications suited to course requirements.

- **Technology Integration:** Using simulations, virtual labs, and digital tools to complement traditional learning materials.

Impact on professional competence and creativity: implementing well-selected pedagogical materials and mechanisms enhances both professional competence and creativity [2]. Future engineers become more adaptable, capable of solving complex problems, and innovative in their approach to engineering challenges. By incorporating hands-on projects, interdisciplinary collaboration, and cutting-edge technologies, students gain a deeper understanding and practical experience, making them well-equipped for the demands of the engineering field [3].

Conclusion The development of professional competence and creativity among future engineers is a multifaceted process that requires well-structured pedagogical mechanisms and carefully selected educational materials. By applying effective selection methods and integrating innovative teaching strategies, educators can significantly enhance students' engineering capabilities, preparing them for a dynamic and evolving professional environment.

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