

Mechanism for Developing Pedagogy Students' Educational Work Skills Based on The Steam Approach

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Abstract: This scientific article theoretically and practically analyzes the mechanism for developing pedagogy students' educational work skills based on the STEAM (Science, Technology, Engineering, Art, Mathematics) approach. The study reveals the methodological foundations, structural components, and effective forms and methods of organizing educational activity on the basis of an innovative integrative approach in modern educational conditions. It also substantiates the role of interdisciplinary integration, project-based activity, and a creative environment in shaping the professional competencies of pedagogy students.

Keywords: Educational work, STEAM approach, pedagogical competence, integration, creativity, innovative education, professional training.

Introduction: The processes of globalization, the development of digital technologies, and the socio-economic transformation of society are placing new demands on the education system. A modern teacher must not only be a transmitter of knowledge, but also a person capable of effectively organizing the educational process, thinking innovatively, and demonstrating creativity and initiative. From this perspective, the development of pedagogy students' educational work skills is one of the urgent issues. While in traditional approaches educational work was mainly taught within the framework of theoretical knowledge, today there is an increasing need for integrative and practice-oriented mechanisms. The STEAM approach enables the comprehensive development of students by integrating interdisciplinary knowledge, problem-solving, creative thinking, and practical activity.

METHODOLOGY

This study is based on a systemic approach, a competency-based approach, as well as integrative and activity-oriented methodologies. Through scientific analysis, pedagogical observation, modeling, and

experimental work, a mechanism for developing educational work skills based on STEAM was developed.

Theoretical Foundations. Educational work skills represent the ability of a teacher to plan, organize, manage, and analyze the educational process by harmonizing personal, social, and professional qualities. They consist of the following components:

- Motivational-value component;
- Cognitive component;
- Practical-activity component;
- Reflexive-analytical component.

The motivational-value component reflects the student's internal need for educational activity, professional interest, and system of pedagogical values. This component is directly related to professional commitment, moral and ethical position, and a sense of personal responsibility.

Main indicators:

- Positive attitude toward the teaching profession;
- Awareness of the social significance of

educational activity;

- Loyalty to national and universal values;
- Respect for the student's personality and humanistic principles;
- Internal motivation for self-development.

Within the STEAM approach, this component is strengthened through project activities, social initiatives, and creative tasks. In the process of solving real problems, the student deeply realizes the significance of educational activity.

2. Cognitive Component. The cognitive component includes the student's theoretical knowledge of organizing educational work and interdisciplinary integrative thinking. This component is determined by the level of knowledge of pedagogical principles, methods, and technologies.

Main indicators:

- Knowledge of the theory and methodology of education;
- Understanding age and individual characteristics;
- Ability to analyze pedagogical situations;
- Mastery of the theoretical foundations of STEAM integration;
- Knowledge and understanding of innovative methods.

Here, the STEAM approach develops broad thinking by integrating interdisciplinary knowledge. For example, in developing an educational project, pedagogical, psychological, technological, and aesthetic knowledge are combined.

3. Practical-Activity Component. The practical-activity component reflects the student's skills in directly organizing, managing, and implementing the educational process. It represents the ability to apply theoretical knowledge in real pedagogical situations.

Main indicators:

- Planning educational activities;
- Using interactive methods;
- Teamwork and leadership skills;
- Solving problematic situations;

Use of digital and technological tools. On the basis of STEAM, this component is formed through the project

method, design thinking, case study, and problem-based learning. In practical classes, students develop social projects and test them in practice.

4. Reflexive-Analytical Component. The reflexive-analytical component refers to the student's ability to analyze their own activity, evaluate results, and engage in self-development. This is an important indicator of pedagogical mastery.

Main indicators:

- Critical analysis of one's own activity;
- Identification of strengths and weaknesses;
- Skills of peer and self-assessment;
- Monitoring of activity results;
- Determining a professional development strategy.

In the STEAM environment, reflection is carried out through project outcomes, presentations, and discussions. Students exchange opinions about their work, analyze it, and determine ways for improvement.

The STEAM approach is an innovative model based on interdisciplinary integration, problem-based learning, and project activity. Its main goal is to develop students' critical and creative thinking and to teach them to apply knowledge in real-life situations.

Mechanism for Developing Educational Work Skills Based on STEAM

The proposed mechanism includes the following stages:

1. Diagnostic stage. The existing level of students' educational work skills, creative potential, and integrative thinking is identified.
2. Design stage. Educational activities, social projects, and interactive sessions are designed on the basis of STEAM elements.
3. Implementation stage. Students implement educational activities in practice by working in groups, solving problematic situations, and developing innovative ideas.
4. Reflection and evaluation stage. The results of the activity are analyzed, and mechanisms of self-assessment and peer assessment are applied.

Practical Results. Experimental work showed that educational activities organized on the basis of STEAM

significantly increased students' initiative, leadership, communicative, and reflexive skills. In particular, through project activity, students succeeded in developing innovative ideas aimed at solving social problems.

DISCUSSION

The analysis shows that the STEAM approach makes it possible to view educational work not only as a spiritual and moral activity, but as a complex process enriched with scientific, technological, and creative components. This elevates the professional training of pedagogy students to a new level.

CONCLUSION

The mechanism for developing pedagogy students' educational work skills based on the STEAM approach is an effective model that meets the requirements of modern education. Through interdisciplinary integration, innovative methods, and practical activity, it ensures the comprehensive development of students. The systematic implementation of this mechanism in the higher pedagogical education system will contribute to enhancing the professional competence of future teachers.

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