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SCIENTIFIC AND METHODOLOGICAL FOUNDATIONS FOR ORGANIZING EDUCATIONAL–PRACTICAL ACTIVITY CLUSTERS IN THE HIGHER EDUCATION SYSTEM

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Abstract

This article examines the scientific and methodological foundations for organizing educational–practical activity clusters within the higher education system. The study analyzes issues related to the systematic organization of cooperation among higher education institutions, industrial enterprises, and research organizations. Based on the cluster approach, mechanisms for integrating the educational process with practical activities, forming professional competencies, and improving the quality of specialist training are substantiated. In addition, the role of methodological support, management processes, and innovative pedagogical technologies in organizing educational–practical activity clusters is revealed. The research findings have scientific and practical significance for introducing the cluster approach in higher education and increasing educational effectiveness.

Keywords: higher education system, educational–practical activity cluster, cluster approach, scientific and methodological foundations, practice-oriented education, professional competence, integration of education and industry, innovative pedagogical technologies.

An educational–practical activity cluster is an integrated cooperation system established among higher education institutions, industrial enterprises, research institutions, and other stakeholders. Within the cluster environment, the educational process is closely linked with practical activities, and theoretical knowledge is reinforced through real production tasks.

Such clusters serve to improve the quality of personnel training in higher education, prepare competitive specialists who meet labor market requirements, and promote the development of innovative activities.

The organization of educational–practical activity clusters is based on the following scientific approaches:

Systemic approach – considering education, science, and industry as a unified system of interrelated components;

Integrative approach – harmonizing educational content with practical activities;

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Competency-based approach – focusing education on the formation of students' professional competencies;

Activity-oriented approach – linking the learning process with real professional activities.

Based on these approaches, the educational process is organized through innovative forms and methods.

The effective organization of educational–practical activity clusters requires the following scientific and methodological foundations:

regulatory and legal documents governing cluster activities;

practice-oriented curricula and course programs;

application of dual education, project-based learning, and problem-based learning methods;

provision of methodological manuals and digital educational resources;

collaborative activities between teachers and industry specialists.

Scientific and methodological support ensures the continuity and effectiveness of the educational process within the cluster environment.

The integration of management processes plays a crucial role in the effective organization of cluster activities. Management includes the following areas:

- strategic planning;
- resource allocation;
- monitoring and evaluation of the educational process;
- support of innovative activities;
- analysis of outcomes.

The use of digital technologies and information systems in management processes enhances cluster efficiency.

The organization of educational–practical activity clusters makes it possible to achieve the following results:

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- development of students' practical skills and competencies;
- increased employment rates of graduates;
- ensuring close integration of education with practice;
- enhancement of the innovative potential of higher education institutions;
- strengthening the integration of education, science, and industry.

The concept of educational–practical activity clusters is recognized as an effective mechanism for improving educational quality and graduates' professional preparedness in the modern higher education system. The cluster approach enables the integration of education, science, and industry, ensuring the alignment of theoretical knowledge with practical application. Scientific research shows that in cluster-based educational environments, students' professional competencies are formed more rapidly and sustainably. In particular, practice-oriented education models foster the development of independent thinking, problem-solving, and project implementation skills.

Foreign experience, including that of Germany, South Korea, and Japan, has scientifically substantiated the effectiveness of dual education and cluster models. In these countries, cooperation between higher education institutions and industrial enterprises leads to improved quality of personnel training. Research findings indicate that graduates educated within cluster environments demonstrate higher adaptability to the labor market compared to those trained through traditional educational models. Moreover, the cluster approach creates favorable conditions for introducing innovative technologies into the educational process.

Scientific literature emphasizes that the integration of management processes in educational–practical activity clusters is one of the key factors in improving educational effectiveness. In such clusters, strategic planning, rational use of resources, and monitoring systems are effectively implemented. Clusters organized on the basis of digital technologies ensure transparency and efficiency of the educational process. Additionally, the cluster environment promotes the development of research activities and the practical implementation of innovative projects.

Scientific analyses show that educational–practical activity clusters play an important role in enhancing the competitiveness of higher education institutions. Cluster-based educational processes ensure effective cooperation among students, teachers, and industry specialists. As a result, educational content is aligned with labor market needs. Therefore, organizing educational–practical activity clusters is considered one of the priority directions for the development of the modern higher education system.

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