The OSCAR PUBLISHING Services
International Journal of Pedagogics

VOLUME Vol.05 Issue03 2025
PAGE NO. 165-168
DOI 10.37547/ijp/Volume05Issue03-46

Modern requirements and laws of integration of education, science and production

Samadova Malika Xasan qizi
Doctoral student of Karshi State University, Uzbekistan

Received: 28 January 2025; **Accepted:** 27 February 2025; **Published:** 25 March 2025

Abstract: The article considers the modern requirements and opportunities for the development of the integration of education, science and production as an important component of socio-economic development. Particular attention is paid to the coordination of educational processes, scientific research and production activities, the creation of effective cooperation between these areas. The main areas of integration that contribute to the training of highly qualified specialists and the introduction of innovative technologies are discussed.

Keywords: Educational processes, integration, methodological foundations, innovative pedagogical technologies, integration processes, systemic approach, methodological approach.

Introduction: The integration of education, science and production is one of the important directions of modern social and economic development. This integration is aimed at coordinating educational processes, scientific research and production activities, ensuring their interaction and cooperation. The main goal of integration is to effectively manage the interaction of education, science and production, thereby developing innovative technologies aimed at training highly qualified personnel and updating production. The concept of integration and its principles play an important role in conducting research in various fields. Its theoretical foundations are based on the following concepts:

- the spiritual foundations of integration are aimed at forming the responsibility of young people for society, economy, environmental sustainability and culture in scientific activities and production processes.

- - refers to the role and importance of education and science in socio-economic development. The integration of scientific and educational spheres with the production sphere serves to develop intellectual capital.

- - integration between production and science contributes to the development of innovative thinking, which creates an opportunity to introduce new technologies and methodologies.

There are the following methodological foundations for implementing the integration process:

- synthesis of practical and theoretical knowledge: Integration of education and production is based on the integration of theoretical knowledge and practice, monitoring their interaction and conducting practical research.

- adaptation of education to economic and social problems. Today, in the development of the education system, the provision of knowledge and skills aimed at improving production and employment is of great importance.

- identifying needs and requirements in production: In order to train personnel who meet modern production requirements, the education system must be aligned with the needs and requirements of production.

By studying the theoretical and methodological foundations of the integration of education, science and production, the essence and regularities of the integration processes in education were revealed, creating a single educational space in conjunction with production and science. The regularities of the integration of education, science and production include:

- the productivity of integration is achieved under the condition of interest in the development of various relations between education, scientific institutions and production;

- the effectiveness of integration increases under the condition of increasing the number of its structurally isomorphic components;

- a high level of quality of training of specialists is achieved under the condition of achieving a harmonious correspondence between the needs and requirements of all subjects of the integrative interaction of education, science and production;

- the competitiveness of future engineers and their orientation to work in the industry are ensured by including the integration of education, science and production in the content of training.

Integration processes in education contribute to the formation of a single educational space in cooperation with production and science. In practice, the formation of an educational space in cooperation with production and science, the unification of the information spaces of science and production; the transfer of concepts, ideas, principles, knowledge, methods and technologies from one sphere to another and their effective use; can be carried out on the basis of the formation of new forms of collective activity. The organization of elements of the "Education - Science - Production" system determines the development of various forms of information interaction. Management of the development of integration processes in a technical higher educational institution is achieved through the effective interaction of all interested structures and involves: organizing the educational process in accordance with the requirements of employers for the qualifications of graduates; assessment of the quality of training of specialists by independent expert commissions on the basis of tests developed jointly with employers; certification of qualification profiles of graduates with the participation of social partners; introduction of innovative pedagogical technologies, primarily modular-competency technologies, into the educational process; organization of student practice in modern equipment under production conditions; variant forms of social partnership.

The next task of the research is to reveal the structure and content of the integration of education, science and production as a separate model of social partnership and to determine its effectiveness.

Today, none of the researchers has doubts about the fact that science cannot exist without a philosophical understanding of natural and social reality. In this, the principle as a separate epistemological phenomenon plays an important role in the philosophical understanding of natural and social reality. One of the tasks of the research is to develop the concept of integration of education, science and production on the basis of general and pedagogical principles. To fulfill this task, it will be necessary to describe modern scientific approaches to the integration of education, science and production.

Methodological approach is a set of paradigmatic, syntagmatic and pragmatic structures and mechanisms in knowledge and/or practice that characterize competing (or historically replacing) strategies and programs in science [2]. The theoretical and methodological foundations of the integration of education, science and production can be identified by the following modern scientific approaches: systemic, content-structural, gnostic, functional, stratified, acmeological, competency, axiological, and person-oriented. We will consider some of these approaches in more detail.

The systems approach is aimed at studying activity as a system [1], that is, as a certain integrity, the interaction of which consists of a set of components that form new, integrative (emergent) qualities, which are not a mechanical sum of the qualities of the parts that make up it. Any system, on the one hand, is part of a higher-order system with various connections and relationships with it, and on the other hand, it consists of parts that can also be considered as subsystems. A system is an integrative integrity with common characteristics, which include the unity and interdependence of various structural elements united by a common integrity and a single coordinated activity. The internal organization of the system is characterized by the connections and interdependence between all components of the system and the environment. Taking into account the fact that engineering activity is inherently a complex multifunctional system and that engineering thinking is multi-screen, we initially direct the study to the use of a systems approach. We consider the systemic approach as strategic, to which we fundamentally connect other scientific approaches that are effective in solving this research problem. The systemic approach is a general scientific approach. It is characterized by universality, modelity, and modularity, which allows us to distinguish the elements that make up this system and identify the interconnected features and qualities in the structure of the system. The systemic approach, which represents the definition of the dialectical method of knowledge, is part of the general methodology and reflects the way of thinking in production, which modern science and knowledge require, its integrative nature.

The integration of education, science and production will have a direct impact on technological, social and economic development in the future. For example,

innovations in the fields of automation, digitalization and artificial intelligence will play an important role in the future of integration. Taking into account the integrative nature of the transformative activity of an engineer, the process of professional training of a modern specialist should be systematically oriented. The integration of education, science and production implies the implementation of interdisciplinary (inter-subject) connections, mutual enrichment of knowledge in different fields, unity of knowledge, continuity of different stages of education, interaction of the processes of mastering theory and its application in practice. The goal of the integration of education, science and production is to develop and enrich the creative potential of the individual (V.P. Toporovsky, E.P. Pecherskaya, G.K. Borozenets, E.O. Galitskikh and others). A systematic approach allows, at the level of goal-oriented and management components, to coordinate the achievement of various goals within a single educational process, and at the level of content and management components, to form a system of transdisciplinary (interdisciplinary) knowledge, skills and qualifications that provide a high level of professional competence in the field of production that requires knowledge. Therefore, a systematic approach to the integration of education, science and production is dialectically interconnected with an integrative approach. The determining factor of the pedagogical process is the goal. It influences the content, methods and forms of professional training of an engineer, subordinating them to itself.

The goal of preparing an engineer for modern multifunctional activity in an integrated educational environment is to connect all the components of the pedagogical system - gnostic, constructive, organizational and communicative; unite them and determine the place of each of them. Using the integration potential of the “education-science-production” system, it is necessary to develop functional principles and models for the development, testing and support of professionally oriented educational activities, and to prevent the disconnection of connections between education, science and production technologies in bringing them to a complete, competent form. The educational activity of students consists of professionally oriented tasks that are consistently solved.

The integration of science and production is the main method of improving the education system. The importance of this integration can be explained as follows:

- integration of production and science allows for the development of new technologies and their application in the practical sphere. This, in turn, increases the efficiency of production and develops the economy.

- through integration, new technical and innovative innovations are introduced into production, which leads to the creation of new jobs.

- the connection between science and production serves to apply research in practice or production. This, of course, helps to create new products and services.This integration makes it possible to train highly qualified personnel that meet the requirements of the modern economy and use innovative technologies in production.

At the same time, the necessary changes in globalization and innovation are important aspects of this integration. Cooperation between education, science and industry, training personnel that meet the needs of each sector, and implementing innovative ideas into practice serve. The integration of education, science and industry is important not only in theory, but also in practice. The integration of science and production is the main method of improving the education system.

REFERENCES

O‘zbekiston Respublikasi Prezidentining 2017 yil 27 iyuldagi PQ-3151-sonli “Oliy ma’lumotli mutaxassislar tayyorlash sifatini oshirishda iqtisodiyot sohalari va tarmoqlarining ishtirokini yanada kengaytirish chora-tadbirlari” to‘g‘risida qarori.

ЗНАЧЕНИЕ И НАПРАВЛЕНИЯ ЭФФЕКТИВНОГО СОЦИАЛЬНОГО ПАРТНЕРСТВА МЕЖДУ ВУЗОМ И ПРОИЗВОДСТВЕННЫМИ ПРЕДПРИЯТИЯМИ МХ Самадова - Экономика и социум, 2023

Sazonova, 3 S Department of Engineering Pedagogy as a center for integration of the educational process at a technical university / 3 S Sazonova // Bulletin of the Federal State Educational Institution of Higher Professional Education MGAU -2004 -No. 3 - P 66-69

Давыдова, Н.Н. Развитие педагогического (образовательного) кластера в региональном образовательном пространстве / Н.Н.Давыдова, Б.М. Игошев, С.Л. Фоменко // Педагогическое образование в России. — 2015 — №11 —с-12

Samadova M.X. Forms and possibilities of social cooperation of higher education institutions and production enterprises, problems of improving the spheres of education and science in the new development period of Uzbekistan. Proceedings of the international online scientific-practical conference. Karshi State University 2022.

Samadova, M. (2024). BITIRUVCHI TALABALARINING KASBIY QIZIQISHLARINI OLIY TA’LIM MUASSASASIDA SHAKLLANTIRISH. Interpretation and Researches.

извлечено от https://interpretationandresearches.uz/index.php/iar/article/view/2403