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EDUCATIONAL CLUSTERS - A PRACTICAL MECHANISM FOR THE INTEGRATION OF EDUCATION AND PRODUCTION

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Abstract
The article is devoted to the results of the analysis of the process of development of educational clusters in Uzbekistan. The emphasis is placed on the fact that educational clusters are important dominants of innovative activities. In the process of cluster development in education, conditions are created for increasing the efficiency of using educational resources, increasing the quality of education, and increasing the balance of the activities of educational structures. The article analyzes the essential nature of educational clusters and their structure, considers the trends in the formation of higher education clusters in Uzbekistan

Keywords: Innovations, higher education clusters in Uzbekistan, digitalization, information and communication technologies, development strategies.

Introduction

The term cluster is a word that has recently become widely used, and when translated from English, "cluster" means "bunch", "garden", or "shingle". As a scientific term, it can be understood as a grouping of several similar things. This is the cooperation or union of preschool education, school and higher education institutions for mutual management and educational purposes. It was noted above that the term educational cluster was introduced into scientific use by Michael Porter, who in his scientific work defines a cluster as follows: "A cluster is a group of interconnected companies, specialised suppliers, service providers, firms in related industries, as well as organizations that are related in their activities in certain areas, compete, but at the same time carry out joint work. A cluster can also be considered a system, a special type of system in which the addition of an element improves its performance, the removal of an element from the system does not lead to negative consequences, and the removed element does not violate the integrity of the system. The elements of an educational cluster can be a combination of structures involved in solving the tasks of an organization (university, business structure, educational institution, etc.) or its structures. The composition of the participants of an educational cluster (its elements) can be supplemented depending on the situation. From the point of view of a systemic approach, a cluster is a set of interconnected and interdependent elements of entities

operating in different industries, united into a single organizational structure that works together for a specific purpose.

A comprehensive literary review of the article involves presenting a list of authors whose works reveal conceptual problems of innovative development and modernization of education, including in the context of cluster development. In this context, the most significant are monographs and articles on clustering problems by such authors as M. Porter[1]. The issues of formation and prospective development of innovative educational clusters are discussed in a number of works by Gao Yingshuang[2].

The most famous biotechnology-related innovative education cluster in China is the Zhongguncun Technology Park in Beijing. It includes 17 technology parks specializing in information technology, life sciences, aerospace technology, energy conservation and other fields, 39 universities, more than 400,000 students, 140 research centers, about 20,000 high-tech companies and more than half a million employees [3].

Innovative and educational clusters are designed to accumulate scientific and production potential to create a single chain of production of fundamentally innovative products and enter into a global network of integration of production and education based on the application of new scientific, educational and technical and technological achievements[4].

If we look at the activities of the education system in our country during the years of independence, we can see that during this period, a lot of positive work was carried out in the field of education and personnel training. It should be noted that some shortcomings were observed in the content and form of ensuring communication and continuity between types of education[5].

This ultimately led to fragmentation in goal setting, weakening of integration between types of education and a decrease in the quality of education. An optimal model for properly establishing the relationship and mechanisms of cooperation between types of education has not yet been proposed. As a result of the specifics of the socioeconomic development of regions, the lack of full consideration of needs in the state policy on personnel training, and the lack of in-depth study of supply and demand in the labor market, an imbalance in the distribution of personnel across regions is also observed. As a result, the need for personnel in some regions remains unsatisfied. In his views on education, the Head of our state has repeatedly emphasized the need to ensure coherence and continuity in the field, improve the integration of education, science and production, and develop innovative solutions to the problems of educational cooperation. In this regard, he has defined the innovation

cluster as a practical mechanism for ensuring the integration of education, science and production at Millat Umidi University as his strategic scientific research direction.

In the conditions of Uzbekistan, the creation of such a new mechanism in the system of continuing education has become a vital necessity, which requires the establishment of mutual control between types of education, ensuring healthy competition, and achieving high-quality satisfaction of interests. Based on the high social importance of the integration of production and education in the sustainable development of society, modern requirements, problems in the system, and the fragmentation between the education, science and production sectors in solving them, necessitate the transition of continuing education to a cluster development model. At Millat Umidi University, improving educational mechanisms based on the cluster model has been identified as a strategic research direction of the university. Experience shows that the cluster model is effective in the production sectors of the economy. The application of this model to the education system is scientifically proven to be theoretically correct and justified.

There are experiences in the world related to the transition of education to a clustering model. At the universities of Massachusetts and Harvard in the USA, the sequence of production processes existing in economic sectors was modeled as the equivalent of human capital in market mechanisms in educational clusters. In fact, the following universal algorithm (chain) applies in the production sectors of the economy: raw materials - processing of raw materials - product - market - buyer. The cluster model in the economy involves reducing the cost of products and improving their quality by combining these links in the production chain under a single entity, and ultimately increasing the competitiveness of the production entity. The universal algorithm of production is also present in the field of personnel training and educational services - the system of continuing education. After all, both the raw material and the product of the system of continuing education and personnel training are people. The universal production algorithm in the education system looks like this: trainee (MTT) - student (UM) - student (HEI) - teacher - educational institution – consumer

The educational innovation cluster envisages unifying these educational stages around a single common goal, improving the mechanisms of cooperation between them in accordance with the principle of private interest, and directing the capabilities of subjects indirectly related to education: neighborhood, local governments, parents and the general public to increase the quality of education.

The possibility of applying the universal algorithm in the production sectors of the economy to the education system confirms the theoretical correctness of the idea of translating education into a cluster development model.

An educational cluster is a mechanism that ensures the integration of separate entities, technologies and workforces with equal rights in mutually beneficial relations with each other to qualitatively meet the needs of a certain socio-geographical region for competitive pedagogical personnel. Simply put, the educational cluster model involves improving the interaction between types of education by the principle of specificity of interests, developing educational promotion work by the principle of succession, and establishing a form of cooperation based on mutual control in educational institutions. There is a concept of "system" in science, and the cluster is close to the concept of a system based on cooperation. However, there are aspects of a cluster that are different from an ordinary system. This is a special, unique system, the work of which is improved by adding elements, but there are no disastrous consequences when removing them. As a result of our research, we have identified the aspects that distinguish a cluster from a system today. They are as follows:

First, each of the elements of the system performs a separate task, but they differ from each other in terms of importance. The elements in the cluster consist of equal components.

Secondly, the failure of one of the elements in the system leads to the malfunctioning or non-functioning of the entire system. The failure of one of the elements in the cluster may reduce efficiency but does not stop the activities of the remaining elements.

Thirdly, the system can also be organized based on mechanical interdependence, but the elements in the cluster are based on conscious, natural and purposeful interdependence.

Fourthly, the elements that make up the system do not always require self-interest, but subjects without self-interest do not work in the cluster.

Fifthly, the system has a single goal, and each element is subordinated to that goal. In a cluster, in addition to the single goal (general goal), each element also has a private goal. The private goals of the subjects are no less important than the general goal.

Sixth, a system can be said to be a whole consisting of separate parts, and a cluster can be said to be a whole consisting of separate wholes.

The educational cluster encompasses not only the integration processes between types of education but also between science, education and production, as well as areas related to educational management, means and forms of education. The cluster approach operates in general areas related to teaching, creating educational literature, improving the scientific potential of pedagogical personnel, and the continuity of education and upbringing. This indicates that the problem has a general methodological nature.

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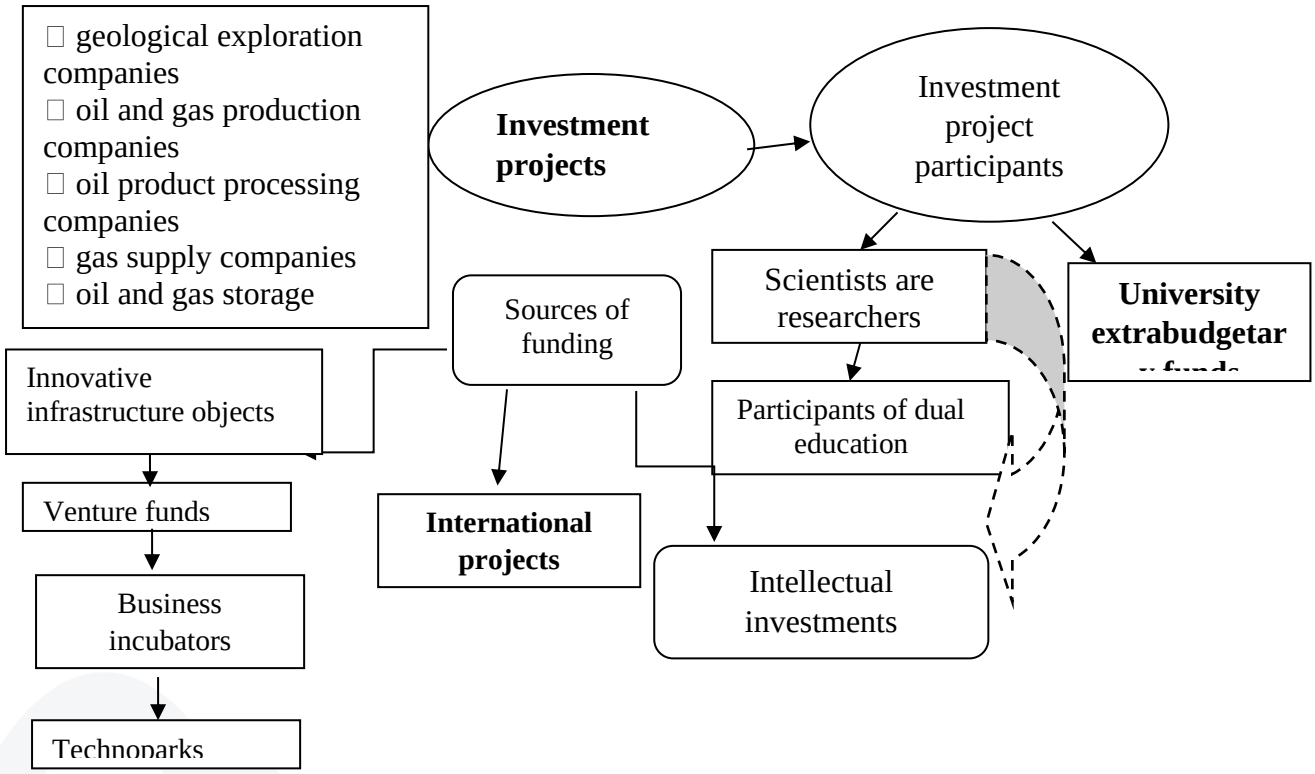

Figure 1. Participants of the "Innovative Education Cluster"

An innovation cluster is formed without the formation of a legal entity as a set of innovative activity entities participating in the creation of innovations in a given territory, consumers of the results of innovative activity, and the main goal of these entities, consumers is to stimulate innovative activity by effective cooperation, joint use of resources and exchange of knowledge, skills, as well as ensuring a share in the transfer of technologies. The main areas of activity of an innovation cluster are:
combining the potential of innovative activity entities in the field of science, education and production to create specific innovations, as well as to meet market needs;
formation of orders for the training and retraining of personnel related to the activities of innovation clusters, including the creation of innovations;
assistance in the creation of new industries and enterprises specializing in the production of new or improved developments;
Joint promotion of the results of innovative activities on the market.
An innovation cluster is established based on the needs of the economy and the mutual interests of the subjects of innovative activity and is liquidated by their decision by the procedure established by law.
To provide the oil and gas industry with highly qualified personnel, establish mutual integration between education, science and production in this sector, improve the

quality of education and the efficiency of the use of labor resources by improving the methods and forms of personnel training, and directly apply scientific achievements to production:

The following are defined as the main areas of activity of the Education Cluster:

ensuring mutual integration of education, science and production in the oil and gas sector;

Ensuring the coherence and continuity of programs of educational organizations, introducing advanced foreign experience, including modern educational technologies, into the educational process;

training, retraining and advanced training of specialists and scientific personnel under international educational standards based on modern requirements and based on the needs of production enterprises for the oil and gas sector;

to widely involve students in direct production practice and develop practical skills in them;

to implement joint educational programs and scientific projects in cooperation with leading foreign higher education and research organizations;

to diversify the production of oil and gas products and increase the export potential of the industry through the direct application of scientific achievements in production;

to work closely with the Sector Council for Professional Qualifications and Knowledge in the Energy Sector in the development and implementation of sectoral qualification frameworks, professional standards, employee positions and tariff-qualification directories of working professions for the oil and gas industry.

Ensuring interaction between the participants of the educational cluster;

Determining the main directions of development of the educational cluster's activities, approving its long- and medium-term strategic programs and monitoring their implementation;

Studying the activities of the educational cluster participants and hearing their information on the implementation of the tasks set for the educational cluster and the achievement of target indicators;

Strengthening the material, technical, educational and methodological base of the educational cluster, including assisting in providing its members with modern information and communication tools and equipment, educational and laboratory equipment, and educational and methodological literature;

To ensure the rapid development of the educational cluster, it is necessary to attract sponsorship donations from individuals and legal entities, technical assistance funds and grants from international organizations, and other funds not prohibited by law.

An educational-production cluster has been established in the real sectors of the

economy. For example, in the oil and gas sector, ensuring the integration of education, science, and production is one of the main areas of activity of the educational cluster. Within the framework of the educational cluster, to direct university students to priority professions for production enterprises, a specialized curriculum in the exact and natural sciences will be introduced;

In the direction of integrating the educational process of professional and higher educational institutions with the activities of production enterprises: subjects and topics will be oriented towards practice; students will develop independent learning skills; the share of specialized subjects taught in foreign languages will be increased. Starting from the 2022/2023 academic year, scholarships from production enterprises will be introduced for talented students and students studying in the oil and gas sector in professional and higher educational institutions included in the educational cluster. A targeted training procedure will be introduced based on a differentiated fee-based contract for employees of production enterprises with at least 5 years of work experience, without being separated from production, based on a recommendation from Uzbekneftegaz JSC, on the condition that they subsequently work at the enterprise where they work for at least 3 years, without being separated from production. At the same time, these general directions acquire a specific methodological character in areas such as management and organization of education, types and directions of education, ensuring continuity and integration, and teaching methods and tools. This indicates the appropriateness of a deductive (from general to specific) approach to solving the problem.

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