

Structure and Mechanisms of Action of The Educational Cluster

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Abstract. *This article describes how to integrate types of education, the content and content of types of education based on innovation, as well as the implementation of innovative approaches to education. The main purpose of the study is also outlined. The educational cluster as an innovative approach is scientifically-pedagogically substantiated and effective mechanisms for its functioning are developed. The analysis of the results of foreign and domestic studies on the scientific foundations and mechanisms of the educational cluster. The object and subject of the study are described, the methods of activity are studied. The stages of creating a cluster, the characteristics of the educational cluster and the mechanisms of quality functioning are scientifically substantiated. The analysis of factors influencing the development of the innovative cluster of teacher education, as well as the ways and results of their solution at the experimental sites of the "School-Laboratory" is presented. On the theoretical and practical basis of the study, recommendations and conclusions are made.*

Keywords: *innovation, cluster, analysis, synergetic ethics, the basics of the cluster of teacher education, systematics, sustainability, regional cluster structures, experimental platforms School-Lab.*

I. INTRODUCTION

Globalization, which is currently becoming an influential force in the essence and content, strategies and principles, approaches and methods of development of the industry, has a negative impact on the development of society as a whole. An in-depth study of the essence and characteristics of globalization allows it to adapt, change the direction it needs, use its strength against itself, that is, one of the urgent problems of modern scientific development of methods and means of positive and creative use of globalization. World experience offers the cluster model as a tried and tested method of using the opportunities of globalization, and today the cluster model quickly penetrates the manufacturing sectors of the economy, reducing the cost and quality of products in enterprises. The most important aspect of the clustering model is that it increases the competitiveness of enterprises that create profitable connections, improves the efficiency of quality, and this, in turn, helps to ensure the sustainability of production capacities.

In recent years, in many countries, the integration of types of education, their structure, principles and mechanisms has been one of the most important tasks in the field of education, with the introduction of innovations in education and the use of proven methods and tools. Currently, the quality of modern education is not one of the results of innovative development, but one of the conditions necessary for its implementation [1].

To achieve these goals in recent years, in many countries of the world the application of the cluster approach in education has become an important prerequisite for increasing the pace and effectiveness of the integration of education, science and industry. In clustering education, it is important that comprehensive relationships between elements are integrated first.

Chirchik State Pedagogical Institute proposes to transfer continuous pedagogical education into a cluster development model in order to eliminate the shortcomings of modern social problems, the problems of the system and the lack of cohesion between education, science and industry. This model is currently a scientific and pedagogical

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problem caused by vital necessity. The main strategic direction of the Institute's research is the creation of its scientific and theoretical foundations, the development of mechanisms for their implementation and attracting scientific attention to this problem.

Today, in the context of the modernization of education, it is necessary to improve its quality, new approaches to it, the scientific and pedagogical substantiation of the education cluster with the main emphasis, the introduction of the mechanisms of its functioning, determination of priorities and determination of pedagogical opportunities. It is important to highlight the best practices and develop general conclusions and recommendations on this topic.

II. MATERIALS AND METHODS

The main focus of our research is the educational cluster, which is presented as a new innovative project aimed at improving the quality of education. The main goal of this study is to increase the effectiveness of education and training in secondary schools and preschool institutions by establishing targeted partnerships with institutions directly or indirectly involved in teacher education, through a cluster approach to education; organization of systematic work on the quality satisfaction of the needs of pedagogical personnel in the region; reducing the time for young specialists to acquire professional skills; conducting research on integration, innovation, succession, effective succession in the field of teacher education, the organization of experimental research processes of scientifically based innovative projects; improving mechanisms to ensure the continuity of education and training; providing instant feedback between preschool, secondary and higher education institutions and other applicants for teacher training; integration of intellectual resources around the urgent problems of the development of teacher education; find and implement various forms and forms of education, science and teaching practice; preparation of secondary schools for the PISA program, etc.

III. LITERATURE REVIEW.

Sources of research suggest that the problem of the educational cluster has been the subject of research in the education system of the West, including Russia, over the past decade. An analysis of English sources showed that educational clusters are widely used in practice, but not enough theoretical research on this issue.

Harvard University professor Michael Porter [2] presents the concept of competitive strategy in his work "Convention", believing that clusters are an organizational form of strengthening the efforts of stakeholders to achieve certain advantages in an industrial economy.

An analysis of Russian literature shows that a group of theoretical researchers has been formed in Russia who are engaged in scientific research, but their publication is slightly lower. Existing models of training clusters are available in European practice. Cluster policy is based on the principle of formation and development in Russian practice [3].

Based on the analysis of scientific literature, the cluster approach to the development of education in the Russian Federation is based on self-development of clusters and social interactions that enhance the specific benefits of individual subjects and participants of the cluster (T. I. Shamova [4], E. I. Pavlova [4], [5]).

Studying the theoretical foundations of the formation and development of educational clusters in various areas, including B. Pugacheva and A. V. Leontiev in cluster education as applied to professional education, V. V. Davydov, V. P. Bepalko, G. I. Ibragimov B.T. Lednev, M.I. Makhmutov, V.A. Slestenin, B.S. Gershunsky, G.V. Mukhametzyanova and A.M. Novikov on the concept of lifelong education, social partnership in education in vocational schools and PF Anisim on studies that reveal management problems Okhota, G.V. Mukhametzyanova, G.I. Ibragimov, E.A. Korchagin, WFP Russian scientists such as Panasyuk and A.S. Subetto, conducted research [6].

Researcher N. A. According to Sharay, the educational cluster is considered as an integrated system of educational resources organization [7].

Cluster formation methods were also presented by researcher G.G. Zakhidov [8] in the legal, economic, organizational and communication spheres [8].

The theory of clustering by M. Porter [10] is still changing its content. Competition and industrial relations are exacerbated every day in the global market. While Porter considered only geographical factors as a key condition for the formation of clusters, experts now point to a large number of factors. The restriction of clusters to regional or other factors has prevented global activity and stagnation in a competitive environment.

In Uzbekistan, clustering of such sectors as the economy, agriculture, and pharmaceuticals has developed. The introduction of a clustering model in education has been especially noticeable in recent years, especially in studies by Uzbek researchers such as G.I. Mukhamedov [13], [17], [18], Sh. K. Mardonov [17], [18], B.E. Khusanov, U.N. There are some great ideas for creating and implementing the scientific and theoretical foundations of the innovative cluster of teacher education.

IV. RESEARCH METHODS.

Comparative analysis, analysis, grouping, expert, experimental and other methods were widely used in the scientific, theoretical and practical substantiation of this article.

Theory and discussion. Since the end of the twentieth century, significant changes have occurred in the reform of education, not only in the education system, but also in its content, technology and organizational forms. The development of educational practice begins with the creation of integrated economic, financial and legal management, and to increase the country's economic potential, further development of cluster processes in agriculture, light industry, science and education is necessary. The main purpose of the formation of educational clusters is to eliminate factors that impede the mutually beneficial cooperation of educational institutions and accelerate innovation in this process.

This process is reflected in theoretical and applied research within the framework of the Innovation cluster of teacher education, defined as the main strategic direction of the Chirchik State Pedagogical Institute in the Tashkent region. The scientific novelty of the article lies in the fact that scientific data on the mechanisms and their impact on cluster activities, their practical application and analysis are the basis for the implementation of cluster activities.

A. Cluster working methods

In the process of applying the cluster model to the education system, much attention is paid to the development of effective methods and tools for adapting these results to our national education system, primarily with a thorough analysis of the results of foreign studies.

The author of cluster theory M.E. Porter argues that the existence of a sustainable development strategy is one of the key factors for successful cluster development.

Adding additional structures to the cluster further improves its performance, and removing existing cluster structures does not contribute to its lack. The main advantages of cluster systems around the world are that they have access to openness, flexibility, and relatively simple management.

According to Porter, the cluster operation method consists of three stages [10].

At the first stage, the composition of the cluster is determined:

- The basis for this is the identification of large firms or groups of similar firms and the creation of vertical interconnected technological chains of low and high level enterprises;
- Identify products that pass through public channels and create additional products and services;
- Additional horizontal chains are formed based on the use of common production factors. Experience shows that determining the boundaries of clusters is one of the most difficult tasks and always reflects the purpose and conceptual approach of the study.

In the second stage, clusters are divided into groups, especially those that provide specialized technologies, information, capital and infrastructure for the cluster.

At the third stage, the government and other legislative structures are determined that influence the behavior of the cluster members (formulation of rules, norms, incentives).

The cluster is designed for many tasks in which the integration of various, sometimes non-target structures into the cluster is incompatible with their simple combination. All cluster components are qualitatively different. There are also new principles for integrating cluster components that determine the overall rate of development of cluster components. "Honesty at the evolutionary level is necessary to develop the right approach to building complex social and geopolitical integrity in accordance with the general principles of organization" [11].

B. Characteristics and mechanisms of the educational cluster.

In cluster relations, along with specific structural features (Table 1), there is also a synergistic sign that clusters are largely controlled by internal resources, in contrast to existing systems.

As mentioned above, a cluster (from a cluster - a cluster) is a connection within which the concept refers to several elements, associations, which have certain characteristics that can be considered independent.

The term "cluster", which is widely used in the field of information technology, has recently been widely used in the economy and is now widely used in modern pedagogy.

Clustering, expanding and deepening the education system of a university, district, city, region with an emphasis on the development of students as professionals with a common, professional and legal level, who can actively influence the policy of managing the region, its production and socio-cultural sectors. create favorable conditions for the formation of authority [12].

The educational cluster as a complex multi-level system operates on the following bases:

- systematic - when an educational cluster is considered as a holistic, complex, multi-level system, the main advantages of cluster systems are flexibility and relatively simple control mechanisms;
- sustainability - when the educational cluster works at the expense of internal resources, which can withstand external influences and can be further expanded and modernized using universal tools;
- synergetic effect - the interaction of internal and external factors of the educational cluster. This creates the conditions for the development of each cluster education system through synergistic effects that provide self-awareness, self-organization and self-regulation;
- flexibility and flexibility. As mentioned above, adding new systems to the educational cluster will improve its performance and, conversely, removing existing systems will not have catastrophic consequences.

Educational clusters usually develop faster than other social systems, but do not achieve a high level of integrity throughout their activities. The main reason for this is that the generation of subjects (students, teachers, employers, etc.) is changing rapidly in any educational cluster, while each initiative in the educational cluster can influence the project and add new factors to its activities. leading to a change in purpose or time. Therefore, the development of educational clusters is determined not only by objective, but also subjective factors.

In any educational cluster, there are many unstable systems, and this instability does not lead to its negative characterization. The center of instability then determines the area that can become a source of further cluster development. Therefore, it is important to identify the sources of such instability in the management of the educational cluster and place them in the created system model [14].

The educational cluster for the formation of pedagogical competencies of students studying at the Tashkent regional Chirchik State Pedagogical Institute is based on the innovative cluster of teacher education, which is the main strategic object of the institute's research.

C. The role of regional educational clusters in the training of mature professionals

At the center of the cluster are local governments, social institutions and entities created at different levels (district, city, province). Regional cluster structures include local authorities, the executive administrative body (local administration), city administration, city administration, social institutions, education, culture, youth policy, physical education and sports institutions, organizations and the public. The structure of the educational cluster includes regional educational institutions, higher educational institutions, secondary special, general education and pre-school

institutions, higher educational institutions, research institutions, researchers, organizations and cultural institutions, professors, students, students. children, the social environment and local government, as well as the parent community, work together to achieve specific goals. The educational cluster provides a platform for future specialists in various fields who want to improve their education, self-development and self-development through external influence on the potential of all students in the region.

In our opinion, social order is a key vector for the creation and development of the educational cluster. It is important for managers to systematically develop an educational institution for the study and analysis of the social order, as well as to predict its changes, to ensure that the quality of the proposed programs and projects meets the real needs of customers. Forms, tools, technologies and methods for developing students' skills should be a modern universal educational cluster, developed taking into account the social order and work requirements, which will ensure the successful adaptation of graduates to innovative professional activities.

Creating a cluster of powers of local self-government for the formation and organization of the educational cluster is a prerequisite for the development of public order.

We are interdependent, self-governing bodies necessary for working in a cluster of local authorities: communicative competence, teamwork, problem solving, initiative and initiative, self-management, planning and organization, self-education and information skills. understand universal forces. The cluster of representations in the cluster is unlimited and can change in time, place and other factors. The selected powers are decomposed and defined in the local government model.

The following should reflect the educational system of the university, which should take into account and effectively apply the following principles for the training of newly educated specialists:

- individual education, in which each student has the opportunity to actively participate in the selection and training according to their curriculum, simultaneously with the ability to change or specialize in a number of specialties;

- the emergence of an environment of intellectual prospects, wide opportunities, information and professional development among teachers and students;

- information resources, technology, etc. With the external environment. The openness of the educational system that can be exchanged is a constructive mechanism of self-organization, because the new birth is associated with a violation of the normal regulatory system, leaving the real system through reconstruction and destruction due to environmental elements;

- The flexibility of the higher education system, according to which the content of education and the development of knowledge, the way to acquire professional skills, meet the needs or requirements of the individual. Knowledge is automatically required and not dictated by a rigorous curriculum that enhances learning motivation and knowledge acquisition efficiency;

- The dynamics of higher education is determined by the ability of specialists to quickly respond to professional and socio-economic changes in the country; their synergy is aimed at developing students' knowledge, regulatory and ethical, information and communication, design activities, reflective assessment.

At the same time, we can provide the following mechanisms for qualifying students in higher education:

- consciously acquire authority in forms and methods that mimic the technology of real practice, working technologies included in the curriculum that help form local self-government through active pedagogical technologies;

- analysis of a number of technologies that will help build local authorities in achieving their goals, including: social design, modeling using organizational and active games and practitioners, etc.

However, the organization of project activities requires a modern research base and close cooperation in the field of labor. In addition, this type of educational activity is especially disadvantageous for teachers, because students

need a lot of time to prepare and organize individual and group work. Higher education institutions do not allow students to work with students individually or in groups.

International experience in involving students in the process of forming the subject's position shows that the main goal of introducing subjective-subjective relations in the educational process is to change the organization of the educational process. If these changes occur through a systematic approach, its effectiveness will increase. In that. There are several areas to consider:

- meaningful (implemented by changing educational programs);
- active (through a modular complex)
- procedural (which determines the types of communication and ways of organizing educational activities, the main part of which is activity, cooperation).

The implementation of the subject-relationship is a two-way process. The teacher creates the necessary conditions for self-expression of students and at the same time facilitates their activities. In this case, individual teaching methods and the student are the means, conditions and results of the participants in the educational process for subject-subject relations. The results of our study showed that students do not pay enough attention to the development of personal qualities. Each person has leadership qualities, organizational abilities, communication and literacy skills, personal charm and other qualities, and this is very important for an expert. These skills provide student development and are driven by social action.

Forming the cluster reflexive component of local self-government, we understand the student's own thinking, cognitive activity, overcoming the egocentric view of the student, understanding the world, pluralistic worldviews and, as a result, the development of these creative skills.

Coordination of work in the field of training for local authorities consists of taking into account the peculiarities of political decisions, flexible cooperation, mutual benefits and responsibility of participants in modern problems of education. The ultimate goal of this work is to form a highly qualified working group capable of effectively fulfilling the functions and functions of state authorities and local self-government [15].

The main requirement of the employer for young specialists is their readiness for practical work, the ability to immediately start work and apply the knowledge gained in higher education to a specific position. Such skills are formed during practice, which, on the one hand, is an integral part of the educational process, enriches professional knowledge, and on the other hand, is a "trial period" for assessing the performance of a future specialist [16].

The object of the study is the cluster systems in the region, which are designed to improve the quality of education, and these opportunities are demonstrated to the general public through the development and implementation of projects in various fields.

V. EXPERIMENTAL RESULTS

An innovative education cluster is being introduced in public high schools through community-based pilot test sites. The implementation of the activities of the pilot school laboratories is organized by individual project teams in the field of science. It should be noted that these groups, in coordination with the Department of Public Education of the Tashkent region, develop programs for piloting an innovative project and regulate the theoretical and practical aspects of piloting through these programs. One of the strategic directions of the development of the national education system in the Tashkent region is the transition to a cluster model, the purpose of which is to ensure the integration of educational potential, psychological and pedagogical sciences and educational practices of cluster disciplines. According to the Innovation cluster of teacher education, the cluster is a voluntary association of institutions and organizations interested in the innovative development of the national education system and interacting on a contractual basis. In the period 2019-2020. We will work on regional organizations for the development of teacher education (regional, district, educational institution) and their types (scientific, educational, scientific, methodological, educational, scientific and innovative, etc.) and we will complement each other in our

national education system is displayed.

The main participants in the regional educational cluster is the Regional Pedagogical Institute, which acts as the center for the development of the regional education system on the basis of the cluster model, and its structural unit consists of several preschool, general educational and academic lyceums. It is expected that as a result of further improving the activities of organizations based on the cluster model, graduates will have the opportunity to continue their studies at higher educational institutions of the same region or region and successfully continue their studies in graduate school.

VI. CONCLUSION

1. The advantage of the cluster mechanism for higher education is that it helps to better understand the requirements of employers for the qualifications of graduates, and the quality of work of an institution is assessed directly by the employer. The necessity of the cluster approach is explained by the advantages of the cluster as an organizational form of joining the efforts of stakeholders to increase the effectiveness of the regional vocational education system. We offer a number of proposals for improving the mechanisms for developing cluster activities in the field of education related to the consideration of the quality and specifics of education at the regional level in modern society, with an emphasis on the needs of the community, the interests and needs of education:

- establishing cooperation between educational institutions using the competitive advantages of the region;
- identification of leaders determining long-term innovations and other strategies for the entire system;
- identification of scientific institutions that will improve the professional skills of employees of the educational institution, ensuring internal and external competitiveness;
- The presence of private interests in the same field, based on a common goal.

2. Based on the above scientific and theoretical considerations and proposals, taking into account the importance of mobilizing intellectual and material resources for the consistent and sustainable development of cluster activities, the following conclusions can be drawn:

1. Creation of a cluster environment ensuring the harmonization of activities, conditions and conditions necessary for the overall management of the quality of education in the region, taking into account all the processes of education development, monitoring activities through the integration of regional systems and educational institutions, new approaches to education in the region. introducing a quality management model in general education and improving the mechanisms of its functioning.

2. The implementation of the cluster model to improve the quality of education determines the updating and development of modern education, based on a systematic, continuous and progressive relationship between the state and society through its subjectivity, content, structure, development and coordination of individual needs.

3. By analyzing the theoretical and practical foundations of the clustering of the education system, it will be possible to carry out a comprehensive update and development of key functions for managing the quality of education, content and content in the region.

4. Clustering education as an innovative approach increases its effectiveness as a powerful mechanism for the integration of human resources, organizations and technologies in the region.

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