PEDAGOGICAL CONTENT AND THEORETICAL-METHODOLOGICAL BASIS OF THE CONCEPT OF EDUCATIONAL CLUSTER

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Abstract: This scientific article is devoted to a comprehensive analysis of the pedagogical content and theoretical and methodological foundations of the concept of "educational cluster". In the conditions of the rapid transformation of the modern education system, the cluster approach is gaining increasing importance as a promising organizational and management model that ensures the integration of education, science and production. The article scientifically and theoretically substantiates the genesis of the term "cluster", its conceptual transfer from economics to pedagogy, as well as the specific features, structural elements and principles of operation of the pedagogical educational cluster. The study reveals the main principles of the educational cluster, such as synergy, integration, corporatism, self-development and social adaptation, as well as its role in the development of the regional educational space. The authors systematically cover the structural structure of the educational cluster, interactions between participants and management mechanisms. The results of the article serve to determine the place and practical significance of the theory of educational clusters in the system of pedagogical categories.

Keywords: educational cluster, pedagogical educational cluster, cluster approach, integration, educational system, synergistic approach, educational management.

Introduction

The global problems facing the education system in the modern world, including the issues of training personnel in accordance with the requirements of the rapidly changing labor market, improving the quality of education and ensuring innovative development, require the search for new organizational mechanisms and management models. It is from this perspective that in recent years the concept of "educational cluster" has become one of the topics that is widely discussed in pedagogical theory and practice and is becoming an object of current scientific research. The fact that the creation of educational clusters is defined as a factor ensuring efficiency in the field in the Decree of the President of the Republic of Uzbekistan No. PF-5987 dated April 29, 2020 indicates that research in this area has state significance [5]. This document is significant in that it defines the strategic directions of reforms in the field of education and creates a legal basis for the implementation of the cluster approach in practice.

Although the term "cluster" was initially used in the fields of economics and production, in the later period this concept began to be actively used in the field of pedagogy and educational management. The introduction of the term "cluster", which is mainly used in relation to economic sectors, into the field of education requires the study of this concept in different regions and the study of its content and essence. In this regard, it should be noted that it is a natural process for a certain concept to be interpreted differently in different places and times, and its interpretation in a pedagogical context has its own characteristics [3].

Analyzing the genesis of the concept of an educational cluster, its transfer from economic sciences to pedagogy is directly related to the strengthening of the role of the education system in socio-economic development and the formation of the educational services market. "Cluster" as a scientific term was first used by Michael Evgeny, and the English word "cluster" means "a bunch, collection, a system of cooperation of objects or people that are very close to each other" [2; 12]. The term cluster began to be actively used in economic literature in the 90s of the last century, and international research shows that it was widely used mainly in the fields of economics and medicine [10]. However, the intensification of integration processes in the education system and the development of interdisciplinary approaches led to the introduction of this concept into the pedagogical sphere.

The problem of the pedagogical education cluster has been studied to a certain extent by local scientists B. Mominov, U. Mirsanov, Sh. Shodmonova, R. Zhurayev, as well as related issues by researchers such as U. Begimkulov, F. Zokirova, M. Lutfullayev [3]. Among Russian researchers, the works of A. B. Smirnov, who studied cluster and innovative education in higher education, and the cluster approach in professional education by G. V. Mukhametzyanova, Y. A. Korchagin, N. B. Pugacheva, A. V. Leontyev deserve special attention. The concept of lifelong learning was developed by B. S. Gershunsky, G. V. Mukhametzyanova, A. M. Novikov, and the aspects of regional development of the higher education system by researchers such as A. G. Abrosimov, N. Vasilchenko, V. S. Ivanov [3]. This fact indicates that the theoretical foundations of the "educational cluster" have been thoroughly explored by Russian researchers.

The synthesis of various approaches is of great importance in developing the theoretical and methodological foundations of the concept of an educational cluster. In particular, the axiological paradigm is interpreted as an approach aimed at comprehensively ensuring the personal, social and spiritual development of the student by integrating the content of education with the system of values [1]. Within this paradigm, the educational process is considered not only as a system of imparting knowledge, but also as a system that forms the student's ability to understand values, consciously choose them and manifest them in practical activities. From this point of view, the content of education is not a static set of information, but a system of substantive-axiological units, in which each element of knowledge is characterized by its social significance, personal value and practical function.

The relevance of the concept of an educational cluster is also determined by the need to overcome the systemic crisis of the modern education system. Traditional educational models often fail to solve such problems as the disconnection between science, education and production, the separation of theoretical knowledge from practice, and the incompatibility of graduates with the labor market requirements. The educational cluster appears as an innovative model that provides an opportunity to comprehensively solve these problems, since it involves mutually beneficial cooperation between educational institutions, research organizations and production enterprises.

In addition, when revealing the pedagogical content of the concept of an educational cluster, its role in the regional educational space, the characteristics of interactions between participants and management mechanisms deserve special attention. The above points serve to determine the scientific novelty, theoretical and practical significance of this article.

Literature review

Analysis of the pedagogical content and theoretical and methodological foundations of the concept of an educational cluster requires a comprehensive study of the views of representatives of various scientific areas and schools. Research on this issue has been conducted in several main directions, each of which has served to reveal certain aspects of the concept of a cluster. In the classic definition of M. Porter, "a cluster is a geographically concentrated group of interconnected companies, specialized suppliers, service providers, firms in related industries, as well as organizations related to

their activities in certain areas, competing, but at the same time working together" [5]. This definition reflects the initial interpretation of the cluster in economics and highlights its main features such as geographical proximity, interdependence and competition-cooperation. Ye.M. Tereshina and V.M. Volodina define "a cluster is a network group of mainly independent, geographically adjacent, mainly informally interconnected and mutually complementary organizations, operating flexibly and quickly on the principles of cooperation, competition and network relations in related industries, which increase their competitiveness and the level of economic activity" [5]. This approach emphasizes the network structure of the cluster and its adaptive nature.

All definitions of the concept of "cluster" are usually similar and include the following common features: geographical concentration and proximity of cluster enterprises and organizations; a wide range of participants with a single strong leader; the presence of stable and long-term ties between participants; strong interconnections between cluster members and the region in which they are located [5]. These features are also characteristic of the educational cluster and are interpreted in an adapted way to the pedagogical system.

According to the definition of the Russian scientist S.P. Postnikov, "a cluster is a complex unifying structure: a single whole of science, education and production" [2; 10]. This definition clearly and concisely expresses the main essence of the educational cluster - the integration of science, education and production. An educational cluster is an integral system of multi-stage training of specialists for an enterprise based on cooperation between an educational institution and employers, which has a number of advantages [10]. This definition emphasizes that the practical goal of an educational cluster is the training of qualified personnel and the active participation of employers in it.

Researcher U.N. Khodjamkulov, in explaining the concept of "educational cluster", is based on the ideas of Russian-speaking scientists and interprets the content of the educational cluster as a cooperation of higher education institutions, primary and secondary specialized educational institutions, specialized schools, consumers (employers) and specialists with a common goal and private interest [3]. He notes that the main goal of the cluster is "to unite the educational-scientific-innovative potential of its members to train modern educational specialists with not only a high level of civic and professional competence, but also competitiveness, the ability to accept innovations, the ability to design and implement new educational programs and technologies" [3]. This definition determines the strategic goal of the educational cluster - the training of competitive specialists and the development of their innovative abilities.

In studies devoted to the problem of the educational cluster, its structural elements and their interrelationships are also widely covered. The main elements of the educational cluster include organizations, namely educational institutions (schools, colleges-lyceums, technical schools, universities, enterprises) and individual parts (structures and divisions) [10]. The participants of the educational cluster can change depending on the situation, and the integration between the two parties is organized by establishing mutually beneficial relationships between the elements within the framework of a specific project and over a certain period of time.

The development of the pedagogical (educational) cluster is based on the principles of interaction, integration, corporatism, self-development, self-organization and social adaptation [4]. The organization of interaction between members of the pedagogical (educational) cluster on the basis of these principles ensures the continuity and multi-stageness of pedagogical professional education, helps to improve the material and technical base of educational organizations, serves to select and structure the content of pedagogical education, taking into account the interests of all subjects of the pedagogical education cluster, stimulates the professional growth of the teaching staff of educational organizations, and provides educational organizations with a guaranteed paid order for the training of pedagogical personnel of various qualifications [4].

Educational and methodological cooperation within the framework of an educational cluster is understood as a set of joint targeted actions to achieve the necessary quality of programmatic and educational and methodological support of the educational process in educational institutions included in the pedagogical cluster, as well as joint improvement of the methodology of training students in these conditions by organizing creative groups from scientists and professors of departments of higher educational institutions of the cluster, teachers of basic educational institutions, and representatives of educational management bodies [4]. Within the framework of this cooperation, practical activities such as coordination of working curricula and programs of cluster interaction participants, mutual assistance in developing educational and methodological complexes of subjects in the areas of pedagogical personnel training, joint development of teaching aids and recommendations corresponding to the areas of modernization of the education system, examination of developed materials and their completion, creation of electronic versions and placement of materials on the websites of pedagogical cluster participants, exchange of work experience during scientific and methodological seminars, conferences, organization of master classes and open classes are carried out [4].

The scientific and theoretical foundations of the pedagogical educational cluster, its principles of continuity, coherence and consistency, its innovative model and mechanisms for its implementation in practice are covered to a certain extent [14]. The main significance of the research conducted was the improvement of the pedagogical system by defining a social order in the structure of the educational cluster, organized on the basis of the integration of types and content of education. As noted in the studies, the social order is the main vector for the organization and development of the educational cluster [14].

The study of international experience shows that educational clusters have their own characteristics in different countries. For example, in the 1960s, the idea of connecting schools with each other to integrate educational resources, exchange skills and experiences arose in Latin America, which was implemented in practice and yielded positive results [10]. Its main tasks include improving the quality of competence of the personnel being trained, consolidating the knowledge gained at school during extracurricular activities, and providing direct employment after graduation from an educational institution, ensuring a positive attitude of graduates towards the partner enterprise.

The development of educational clusters in the CIS countries also deserves special attention. In the Moscow region, there are 33 university-oriented educational complexes, which include 220 schools and kindergartens [15]. In Tatarstan, the cluster approach is considered the most promising tool for improving the republic's economy, and the concept of an educational cluster has been developed and approved. A regional professional and pedagogical cluster is being formed on the basis of the Omsk State Pedagogical Higher Educational Institution, the activities of which are aimed at organizing an education system taking into account the needs of the labor market in the Omsk region and the requirements of customers in the training of pedagogical personnel [15].

Educational clusters are classified in different ways: by the direction of activity (competence-oriented, innovative-educational, socio-cultural), by the level of organization (regional, republican, municipal, institutional, international), by educational areas, etc. [15]. Educational clusters are conventionally divided into the following types: educational "school-lyceum-college-university" and mixed, for example, "scientific-educational" and "production-educational" types. The purpose of the production-educational cluster is to eliminate obstacles to mutually beneficial cooperation between business and higher education institutions and accelerate the transfer of innovations [15].

Methodology

This study is aimed at a comprehensive analysis of the pedagogical content and theoretical and methodological foundations of the concept of "educational cluster", in which general and specific methods of scientific knowledge were used in a coordinated manner. The research methodology

includes a set of theoretical and empirical methods, which are used on the basis of interdependence and complementarity. When choosing a methodological approach, the complexity of the research object, its versatility and interdisciplinary nature were taken into account.

The group of theoretical methods of the study included, first of all, the method of analysis and generalization of scientific literature. This method allowed for a systematic study of scientific publications, monographs, dissertation studies, scientific articles and methodological manuals dedicated to the problem of educational cluster. During the analysis, the definitions of the concept of cluster by local and foreign researchers, its structural structure, principles and implementation mechanisms were studied in detail. In this process, the views of representatives of various scientific schools and directions were comparatively analyzed, and their similarities and differences were identified. The chronological principle was followed in the analysis of scientific literature, that is, the emergence of the concept, stages of development and the current state were studied sequentially.

The historical-genetic method served to reveal the genesis of the concepts of "cluster" and "educational cluster", the process of their transition from economics to pedagogy, and the scientific foundations of this process. This method made it possible to determine the evolution of the concept, its interpretation in different periods, and its place in the modern pedagogical system. The historical-genetic method helped to gradually illuminate the stages of the origin of the concept, its entry into scientific circulation and its settlement in the pedagogical lexicon.

The comparative-historical method made it possible to compare various international experiences, including models of educational clusters in Latin America, the CIS countries, and other regions. This method served to identify the specific characteristics of educational clusters in different socio-cultural and economic conditions, to highlight their common and different aspects, and to assess the possibilities of adapting advanced practices to the education system of Uzbekistan. Based on the comparative-analytical method, the organizational structures, management mechanisms, and performance indicators of educational clusters of different countries were compared.

The method of systemic-structural analysis made it possible to study the educational cluster as a holistic, interconnected system consisting of interconnected elements. This method is aimed at analyzing the components of the cluster, the connections and relationships between them, and the interactions of the cluster system with the external environment. A systemic approach made it possible to consider all subjects of the educational cluster (educational institutions, scientific organizations, industrial enterprises, state administration bodies, etc.) as a single system, to determine their interdependence and influence on each other.

The modeling method served to develop a theoretical model of the educational cluster and visually represent its structural elements and their functional relationships. In the modeling process, the main parameters of the cluster system, management mechanisms and efficiency criteria were determined. This method made it possible to transfer the mechanism of operation of the educational cluster from an abstract level to a concrete systematic image.

The content analysis method was used to study the content of scientific texts, regulatory and legal documents and program documents on the topic of the educational cluster. This method made it possible to systematize the interpretations of the concept of the educational cluster in various texts, its features and definitions, as well as to identify the main terminological units. As a result of the content analysis, the semantic field of the concept of the educational cluster, its main semantic components and the relationships between them were identified.

The group of empirical methods of the study included the method of document study, which was aimed at analyzing the resolutions and decrees of the President and the Cabinet of Ministers of the Republic of Uzbekistan in the field of education, as well as regulatory and methodological documents, concepts and programs of the Ministry of Public Education and the Ministry of Higher and Secondary

Specialized Education. The study of documents allowed us to identify the directions and mechanisms of state policy aimed at supporting educational clusters.

The observation method (indirect) was aimed at studying the activities of participants in educational clusters, their forms of interaction and mechanisms based on existing scientific publications and reporting materials. Through this method, information was collected about the real state and effectiveness of the integration processes being implemented in the cluster system.

Methods of systematization and generalization of data were used at all analytical stages, serving to bring the collected theoretical and empirical materials into a single system, identify the connections between them, and develop scientific conclusions. These methods played an important role in ensuring the reliability and validity of the research results. The results of the analysis were systematized in tables and graphically presented.

The principles of scientific objectivity, reliability, and validity were strictly observed at all stages of the research. Research methods were used as complementary and cross-checking tools, ensuring the impartiality of the results.

Analyses and results

Based on the theoretical, analytical, and comparative studies conducted, a number of important results were achieved regarding the pedagogical content, structural structure, and mechanisms of operation of the concept of "educational cluster". The analyses made it possible to identify the main features of the concept of an educational cluster and its differences from traditional educational models, as well as to identify the factors of its successful implementation.

During the study, more than 15 definitions of the concept of an educational cluster from various scientific sources were analyzed and their specific features were identified. The analysis showed that the definitions of the concept of "cluster" are divided into three main groups: the first group of definitions emphasizes the geographical proximity and territorial concentration of the cluster (M. Porter, Ye. M. Tereshina, V. M. Volodina); the second group of definitions focuses on the network structure of the cluster and the interactions between its participants (S. P. Postnikov); the third group of definitions focuses on the strategic goal of the cluster - training competitive personnel and ensuring innovative development (U. N. Khodjamkulov). The common feature of these definitions is that in all of them the cluster is considered as a system consisting of interconnected elements.

An analysis of the structural elements of the concept of "educational cluster" showed that it consists of the following important parts: educational institutions of various levels (preschool education, general secondary education, secondary specialized, higher and post-higher education institutions), research organizations and laboratories, production enterprises and representatives of the service sector, state administration bodies (local khokimiyats, education departments), non-governmental non-profit organizations and public associations, as well as organizations indirectly related to education (self-governing bodies, trade unions, employers' associations) [14]. All these elements work together to achieve a single goal - to increase the efficiency of the education system and fulfill the social order.

Based on the studied sources, the main principles of the educational cluster were identified and systematized in the form of a table. The development of a pedagogical (educational) cluster is based on the principles of interaction, integration, corporatism, self-development, self-organization and social adaptation [4]. These principles determine the basic rules of relations between cluster participants and ensure their effective cooperation.

Table 1

Basic principles of the education cluster and their content

Principle name	**The essence of the principle**

Principle of interaction	Provides constant and systematic cooperation, exchange of information and experience between cluster participants
Principle of integration	Provides integration of education, science and production into a single system
Principle of corporatism	Represents the unity of participants based on common goals and interests
Principle of self-development	Imposes the ability of the cluster system to continuously improve at the expense of internal capabilities and resources
Principle of self-organization	Reflects the mechanisms for maintaining and developing internal order without external management
Principle of social adaptation	Ensures the flexibility of cluster activities to the needs of society and the labor market

The results of the study showed that the effectiveness of an educational cluster directly depends on the characteristics of the established system of relations between its participants. Stable and effective relations ensure such processes as the speed of information flows in an educational cluster, the transfer of innovative ideas, the joint development of educational and methodological materials, and the consistency of experience exchange.

The analysis of the main tasks and areas of the educational cluster showed that it includes the following important areas of activity: improving the quality of pedagogical personnel training, modernizing the content of education, developing scientific and research work and implementing their results in practice, strengthening the material and technical base of educational institutions, increasing competitiveness in the educational services market, developing the regional educational space and ensuring socio-economic growth [4]. These tasks reveal the systemic and complex nature of the educational cluster's activities, its not only educational, but also socio-economic significance.

The analysis of educational and methodological cooperation within the educational cluster showed that this cooperation involves a set of joint targeted actions to achieve the required quality of the program and educational and methodological support of the educational process, as well as joint improvement of the methodology of training students by organizing creative groups from scientists and professors of departments of higher educational institutions of the cluster, teachers of basic educational institutions, representatives of educational management bodies [4]. The effective organization of this cooperation, in turn, ensures a high level of quality of education in the cluster. The results of using the SWOT analysis methodology in assessing the effectiveness of educational clusters are noteworthy. According to the results of the SWOT analysis, the strengths of educational clusters are as follows: development paths are clearly defined, goals, tasks, types of activities and deadlines are defined, education-business relations are maintained, relations in the cluster are built on cooperation, unity and mutual commitment, innovations in education are being developed and applied, technology transfer is being carried out, investments are being made in human resources, and the competitiveness of participating institutions is being increased [6].

Table 2
Comparative analysis of types of educational clusters

Cluster type	Main features	Advantages	Scope
Competence-oriented	Focused on the development of professional competencies	High adaptation of graduates to the labor market	Professional education
Innovative-educational	Focused on the development and implementation of innovative technologies	Increased quality of education, competitiveness	Higher education, research
Socio-cultural	Specialized in the implementation of cultural and social projects	Social integration, cultural development	General secondary education, additional education
Educational (school-lyceum-college-university)	Provides continuity between educational stages	Continuous education, early start of professional orientation	All levels of education
Scientific-educational	Combines scientific and educational activities	Increased scientific potential, innovative developments	Higher education and scientific institutions
Production-educational	Establishes cooperation between business and education	Practical experience, guaranteed employment	Vocational education, higher education

The study compared the models of educational clusters of foreign countries and studied the following aspects: cluster composition and scope of participants, management mechanisms and structures, sources and mechanisms of financing, level of state policy and support, criteria for assessing cluster effectiveness, level of integration of education and business. The comparison showed that in developed countries, educational clusters are financed through the mechanism of public-private partnership, higher education institutions play a leading role, and cluster activities are considered one of the main directions of innovative development. In particular, the experience of Germany, Finland, Singapore and South Korea clearly demonstrates the role of educational clusters in economic growth and social progress. Analysis of the experience of the CIS countries showed that in most of them the cluster approach is accepted as a promising tool for developing the education system. In Russia, the network of educational clusters is expanding, in which educational institutions of various levels and industrial enterprises are united. In Belarus, in 2015, an educational-scientific-innovative cluster was launched on the basis of a complex of educational institutions in continuing pedagogical education, which includes educational institutions of various levels, educational, scientific, scientific-methodological, public organizations and voluntary cooperation organizations on a contractual basis [15]. The innovative educational cluster established in Kazakhstan is an example of a cluster approach that allows students to work, study, learn continuously in their professional activities, generalize and accumulate the most effective experiences, quickly master and process scientific achievements, and constantly update the content of professional training [15].

Ukraine's cluster policy in the field of education is aimed at creating modern educational centers, training highly qualified personnel, and introducing modern educational technologies. The scientific

and educational cluster is aimed at introducing the best practical innovations from around the world into the Ukrainian education system, attracting world experts and partners to improve the scientific and educational environment, preparing and implementing projects that are useful for the education system, and improving education [15]. The results of the analysis show that the effectiveness of the educational cluster depends on the scientific basis and practical feasibility of its development and implementation stages. Activities to form a pedagogical (educational) cluster include the following stages: assessing the possibility of forming a cluster and the presence of interested participants, identifying participants interested in the development of integration, determining the basic principles of cluster operation, the strategic goal of integration, the goals of specific participants in cluster interaction, identifying interactions and interdependencies within the pedagogical cluster, developing rules, norms and procedures to ensure cluster operation, determining the functional responsibilities of interaction participants, allocating creative groups in cluster educational organizations to carry out specific activities, forming a cluster management structure and its mechanism of operation: creating a Coordinating Council, forming the composition of commissions, assessing and selecting priority areas for the development of the pedagogical cluster, monitoring effectiveness [4].

Discussion

The results of the study made it possible to expand and deepen the existing scientific views on the pedagogical content and theoretical and methodological foundations of the concept of "educational cluster". The analysis showed that the educational cluster is a promising organizational and management model aimed at solving the complex and multifaceted problems of the modern education system. The main advantage of this model is its ability to ensure the inextricable link between education, science and production, to achieve their mutual enrichment and synergy.

The main principles of the educational cluster identified during the study - interaction, integration, corporatism, self-development and social adaptation - determine the specific features of this model. These principles ensure the quality of relations between cluster participants and their effective cooperation. The principle of interaction ensures the continuity and systematicity of relations between cluster members, the principle of integration ensures the unification of different spheres (education, science, production) for a single goal, the principle of corporatism ensures unity on the basis of common interests, and the principles of self-development and organization ensure the improvement of the system at the expense of its internal capabilities [4].

It should be noted that the results of the study also revealed aspects that fundamentally differ from the economic cluster. While economic clusters are mainly focused on competitiveness and economic efficiency, the main goal of the educational cluster is to fulfill the social order, that is, to train competitive specialists who meet the needs of society [14]. This difference requires specific approaches to the management, financing and evaluation of the effectiveness of the educational cluster.

The analysis of various definitions of the concept of an educational cluster in the study showed that most of them emphasize the following important features of the cluster: geographical proximity and territorial concentration, interdependence and complementarity, stable and long-term ties, common goals and strategies, innovative activity and competitiveness. All these features are also characteristic of the educational cluster, and they must be interpreted taking into account the specifics of the pedagogical system.

An analysis of international experience has shown that educational clusters have their own characteristics in different countries, and their development depends on the socio-economic policy of the state, the traditions and priorities of the education system. There are both common and specific aspects in the development of educational clusters in the CIS countries. Common aspects include issues such as strengthening the integration between education, science and production, developing

lifelong learning, and supporting innovative activities. Specific aspects are determined by the national legislation, structure of the education system, economy and cultural characteristics of each country.

The research results also revealed a number of problems and obstacles in the implementation of the education cluster model. According to the results of the SWOT analysis, the main obstacles to the development of education clusters include the lack of agreement between national innovation policy and education clusters, limited cooperation between the business and academic community, the need for additional specialization of cluster participants, disruption of technological continuity, insufficient competence in the application of innovative technologies, and lack of information about information and needs [6]. Eliminating these problems is one of the important directions for increasing the effectiveness of education clusters.

Also, the following can be identified as promising areas for the development of the education cluster: the possibility of developing three levels of education (formal, non-formal and independent education), the development and/or adaptation of teaching methods, an environment (atmosphere) that supports the professional development of teachers, increasing opportunities and competitiveness in the cluster sector, the transition to new business models, the possibility of increasing the number of educational services, cooperation with international organizations, research and analysis of the needs of various users of educational services, participation in the economic development of regions [6].

In order to fully reveal the pedagogical content of the concept of an educational cluster, it is important to study it in connection with the axiological paradigm. The axiological approach is aimed at comprehensively ensuring the personal, social and spiritual development of the student by integrating the content of education with the system of values, which serves as a criterion for sorting content, determining priorities and effectively organizing educational activities in the educational process [1]. Within the framework of an educational cluster, the axiological approach can be used in the selection and structure of educational content, the formation and development of students' value orientations, as well as in assessing educational results.

Conclusion

This study is devoted to a comprehensive analysis of the pedagogical content and theoretical and methodological foundations of the concept of an "educational cluster", the results obtained allow us to formulate the following main conclusions.

First, the "educational cluster" as a pedagogical category has its own specific content and structure, which should be distinguished from the concept of an economic cluster. An educational cluster is understood as a systematic and long-term cooperation of educational institutions, research organizations, industrial enterprises, state and public organizations with a common goal - training competitive specialists, improving the quality of education and ensuring innovative development. This definition reflects all the important features of an educational cluster - systematicity, purposefulness, versatility of participants and strategic orientation.

Secondly, the basic principles of an educational cluster (interaction, integration, corporatism, self-development, self-organization and social adaptation) constitute the methodological basis for its effective functioning. These principles determine the quality of relations between cluster participants and ensure their mutually beneficial cooperation. The set of principles is interrelated and complementary, and their comprehensive implementation guarantees the functioning of the educational cluster as a holistic and effective system.

Thirdly, the scientific and theoretical foundations of the concept of an educational cluster were developed in the research of a number of leading scientists, among which the works of such domestic and foreign researchers as M. Porter, S.P. Postnikov, A.B. Smirnov, G.V. Mukhametzyanova, U.N. Khodjamkulov, B. Muminov occupy a special place. These scientists have comprehensively covered the essence of the concept of a cluster, its structural structure, mechanisms of operation and ways of its

implementation in educational practice. However, the pedagogical content of an educational cluster, its role and significance in the educational system have not yet been sufficiently studied, and it is necessary to expand research in this area.

Fourthly, a comparative analysis of the international and CIS experience has shown that educational clusters have their own characteristics in different countries, and their development is determined by state policy, economic opportunities, traditions of the educational system and cultural characteristics. The experience of Latin America, Europe, Southeast Asia and the CIS countries confirms the effectiveness of educational clusters and their role in socio-economic development. Studying this experience and adapting advanced models to the education system of Uzbekistan is one of the important conditions for introducing educational clusters in our country.

Fifthly, the implementation of the educational cluster model in practice should be carried out in stages, the main stages of which are: assessing the possibility of creating a cluster, identifying interested parties, defining strategic goals and principles, identifying interconnections and relationships, developing a regulatory framework, forming a management structure, creating monitoring and evaluation mechanisms. The scientific basis and practical development of these stages is an important factor in the effectiveness of an educational cluster.

Sixth, the use of SWOT analysis and other modern assessment methods in assessing the effectiveness of educational clusters helps to identify their strengths and weaknesses, opportunities and threats. The results of the study show that the strengths of educational clusters include clarity of development paths, defined goals and objectives, relations based on cooperation and association, development and application of innovations, technology transfer and increased competitiveness. The weaknesses are insufficient coordination with the national innovation policy, limited cooperation between business and the academic community, the need for additional specialization, disruption of technological continuity, lack of information and low competence in the application of innovative technologies. Eliminating these weaknesses is one of the important directions for the development of educational clusters.

Seventh, the introduction of the concept of an educational cluster into the system of pedagogical categories and the further development of its theoretical and methodological foundations are of great importance in modernizing the education system, improving the quality of education, and ensuring socio-economic development. In the future, it is necessary to study the pedagogical conditions, organizational and technological mechanisms, efficiency criteria and indicators of educational clusters, as well as the specific features of their introduction at all levels of the education system (preschool education, general secondary education, secondary specialized, higher and post-higher education). It is also promising to conduct research on the possibilities of using digital technologies within educational clusters, integrating distance learning and online resources, expanding international cooperation, and implementing innovative projects.

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