

# CLUSTER AS INNOVATIVE APPROACH TO PEDAGOGICAL EDUCATION

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**Abstract.** The process of globalization observed all over the world, like other industries, requires clustering of the education sector. The process of globalization has also led to a sharp increase in competition in the market of educational services. In such competitive conditions, the cluster is a means of using the power of the globalization process against itself. Combining the subjects of education, science and production around a common goal increases their potential. And the cluster of pedagogical education provides for such cooperation. The article is devoted to the scientific point of view of ensuring the competitiveness of the subjects of the market of educational services through clusters. The concept of a pedagogical educational cluster is described, its necessity, implementation processes, principles and directions are shown. The author made comments on the goals, functions, principles and directions of development of the cluster of pedagogical education. Organizational aspects, practical significance, and theoretical bases for implementing a pedagogical educational cluster in practice are highlighted. The author tried to base his views on the views of Western scientists. The research of Western scientists on the educational cluster is analyzed and the author's attitude to them is expressed. Scientific conclusions about the social, economic, legal, marketing and pedagogical consequences of education clustering are presented.

**Keywords:** the process of globalization, cluster of pedagogical education, cluster strategy, goals, functions, principles and directions of development of the cluster of pedagogical education.

## INTRODUCTION

At the present stage of the development of civilization, the complex development of society and the emergence of its negative consequences, along with the positive aspects of development, pose new challenges to humanity. Now it

is impossible to find any region or state that is completely protected from interaction. A better understanding of the phenomenon and its features is an important issue in order to minimize the negative impact and enhance the positive impact on the world of the currently increasing process of globalization. A deep study of the nature and concept of globalization allows us to adapt to it, change the direction we need and use its power "against ourselves". It is obvious that the scientific development of mechanisms and mechanisms for the positive and creative use of globalization processes is one of the urgent problems of our time. One of the means of using the force of globalization "against itself" is the cluster model. Clusters in the manufacturing sectors of the economy have been penetrating Western education for more than a decade. Educational clusters are not analogous to production clusters, but they have a lot in common. There are some scientific studies on Kazakhstan's clusters in Central Asia. However, no research or practical work has been done in other countries. Chirchik State Pedagogical Institute has been creating a scientific and theoretical basis for clustering teacher education for a year.

The cluster theory of M. Porter [1] has entered many spheres, as well as education, during the last decade. It is worth noting the contribution of Russian scientists to these studies. In their scientific works, the concepts, branches of use and characteristics of the educational cluster were investigated.

The study and analysis of research related to the cluster approach to education makes it possible to collect several points of view in it. Thus, the cluster approach is:

- To be a separate sphere (education, economy, etc.), a mechanism for strengthening organizational forms of industry integration that are interested in achieving competitive efficiency [2, p. 26];
- A set of interrelated economic entities integrated into the structure of the organization on the basis of a modern and regular approach [3, p. 299];
- Combining the needs of production and training programs [4, p. 11];

- A tool for forming support for innovations in the "Education-science-Production" system [5, p. 75];
- Innovative and effective way of forming the personnel potential for the future economy of the organization [6, p. 5];
- Reorganization of the education system on the basis of a consistent principle based on the results of integration of various educational institutions (kindergarten-school-college-university) [7, p.211].

## **MATERIALS AND METHODS**

In order to study the theoretical foundations of the formation and development of educational clusters, Russian scientists conducted the following studies: the cluster approach to professional education (B. V. Pugacheva, A.V. Leontiev), the theory of activity and pedagogical design (V. V. Davydov, V. P. Bospalko, G. I. Ibragimov, B. T. Lednev, M. I. Makhmutov, A. A. Slastenin), the concept of continuing education (B. S. Gershunsky, G. V. Mukhametzyanova, A.M. Novikov), social education in professional educational institutions research on partnership problems and management (V. V. P. F. Anisimov, G. v. Mukhametzyanova, G. I. Ibragimov, E. A. Korchagin, V. P. Panasyuk, A. S. Subetto) [8, p. 75].

The same researchers identify seven key cluster strategies:

- Geographic strategy - types of clusters that spread from small local to global scales;
- Horizontal strategy-an extended cluster form consisting of multiple clusters;
- Vertical strategy - combining one, which means combining several clusters of subjects at the same level;
- Lateral strategy-clusters that combine entities into different structures that can provide economies of scale and lead to new combinations;
- Technology strategy-clusters that are visible in a set of structures that use the same technology;

- Focused strategy-clusters located around a single center;
- Quality strategy - a form of cluster that is the focus of how organizations implement cooperation [8, p. 75].

In our opinion, the cluster strategies mentioned above should be classified as cluster forms, since they have a clear idea of the form and types of the cluster, and not of its priorities (strategies).

The effective development of an educational cluster also directly depends on the following conditions and factors:

- Availability of technological and scientific infrastructure (D. A. Yalov);
- Psychological readiness of participants to cooperate (D. A. Yalov, V. P. Tretyak);
- Having a strong regional strategy focused on cluster development;
- Ability to successfully apply project management methods;
- High information technologies that facilitate the exchange of information between the subjects of the cluster [9].

Therefore, it is necessary to successfully implement scientific and practical activities related to the clustering of teacher education, adapt the existing technological and scientific infrastructure to achieve efficiency in them, achieve a full understanding of this innovative process through the implementation of advocacy activities in the subjects, create an opportunity to realize that cooperation brings a lot of benefits, develop well-thought-out cluster development strategies, ways and means of successful project management, and ensure a rapid exchange of information between participants. This is an extensive organizational process that requires time and focused activity. However, the content of these organizational processes is not inseparable from our activities. Indeed, according to the observations of Russian scientists involved in the clusterization of teacher education, such as N. N. Davydova, B. M. Igoshev, A. A. Simonova, S. L. Fomenko, the real effects of cluster development will appear in 5-7 years [7, p. 212].

Based on the cluster concepts presented in the scientific literature, the concept of a teacher education cluster can be defined as follows: a teacher education cluster is a strengthening mechanism for integrating equal subjects, technologies and human resources in close contact with each other to meet the needs of a competitive teacher of a certain geographical area.

The pedagogical educational cluster forms the next innovation chain "education-science-educational tools-technologies-management-business", and its scientific research is one of the most important tasks of modern pedagogy. It is becoming increasingly necessary to maintain a natural link between the links that make up the educational complex, in terms of interest and effectiveness, based on the socio-economic conditions and needs of a particular region.

The main productivity of education is a competitive workforce and educational services. The ultimate goal of the educational cluster is to improve educational and scientific processes. This requires significant organizational and structural changes in the education system, as well as significant changes in the management, structure and quality of the training system. At the same time, it is necessary to look for new forms and methods at all stages of work, to strengthen the links between all types of education on the basis of common goals and shared interests, and to promote integration.

When appropriate educational approaches are established in the management structure of educational institutions, it will be possible to assess the current situation, accurately predict the results, take timely measures and make adjustments to organizational management. The cluster education system provides the right approach to solving such issues. After all, cluster integration processes are considered the most powerful, since they involve all resources-material, financial, technological, information, methodological and personnel. The cluster flexibly allows you to create a management system for your structures and predict true development to ensure mutual trust [9]. Existing qualitative changes in the

components of the education system, content activities, general and special management functions, programs, technologies and methods, as well as processes related to the development of human resources of participants, allow creating a cluster environment.

## **RESULT AND DISCUSSION**

The cluster model of teacher education is developing in general areas related to teaching, the creation of educational literature, the improvement of the scientific potential of teachers, the continuity of education and professional training. This shows the general methodological nature of the problem. At the same time, these general areas are being privatized in such areas as the management and organization of education, types and directions of education, continuity and integration, methods and means of teaching.

The main goals of the teacher education cluster are:

ensuring effective continuity in the field of pedagogy and promoting the best students in the teaching profession;

create conditions for training future specialists based on innovative practices;

reduce the time required for young professionals to acquire professional skills;

creation of a new generation of educational, methodological, scientific literature, tools and didactic materials in teacher education;

increasing the scientific, scientific and pedagogical potential of teacher education;

accumulation and integration of resources around topical issues of teacher education development;

search and application of various forms and types of educational, scientific and pedagogical practice in education;

improving the continuity of education and training;

create an opportunity to interact with preschool, secondary educational institutions and other students in the training of teaching staff;

communication between the departments of teacher education, scientific justification of the need for communication and cooperation.

To this end, the innovative cluster of teacher education pursues the following tasks:

effective use of innovative pedagogical technologies in improving the quality of education;

consistent scientific activity in the field of pedagogy;

ensuring continuity and continuity of the content of the main and auxiliary means of education in the context of the learning stages;

organization of advanced training courses to fill the gaps in the level of knowledge of teachers of educational institutions in the region;

organization of scientific and practical seminars to eliminate problems related to the teaching of subjects in general education schools;

to establish scientific cooperation with research institutes, research centers and basic higher educational institutions in order to increase the scientific potential of the faculty of the Institute;

involvement of teachers with the possibility of conducting scientific research in general education schools;

to conduct advanced foreign equestrian training in order to master advanced foreign experience in the field of pedagogy.

The cluster of teacher education makes it possible to identify problems in the system, which in turn allows you to identify its strengths and weaknesses. It is important that the information about the state of affairs in the cluster is very objective. With the help of the cluster, the state and education authorities will be able to effectively apply the experience and results of research on the development of education in the cluster region. The cluster approach to education allows governments to provide specific tools for effective interaction within the system,

better understand the problems and plan the scientific basis for the development of the region.

All of the above statements are completed:

First, they confirm the idea that the educational cluster is of great scientific and practical importance, which allows the system to achieve a new synergistic quality through integration;

Secondly, they create the environment and conditions that make the system competitive.;

Finally, they have political, economic and social significance.

The whole range of measures in this process is aimed at improving the competitiveness of education, which is the cornerstone of the training of scientific and professional personnel. However, it is important to remember that not all objects combined in a cluster can immediately produce real results.[10]

The significance of the pedagogical educational cluster can be classified and presented as follows: in the economic sphere: in the formation of an effective market for educational services; in the social sphere: employment of graduates of pedagogical educational institutions; in the field of marketing: promotion of innovative educational technologies, new opportunities in the educational and educational business of educational institutions; in the legal sphere: creation of a regulatory framework for interaction within the cluster, as well as the transition to new forms of management of educational institutions; in the field of pedagogy: joint design of pedagogical personnel in the system of continuing education.

It is necessary to clearly define the goals and objectives of the innovative cluster of teacher education and determine what principles it should follow in order to foresee the horizons of its activities. In this regard, we recommend that you adhere to the following principle related to the content of education:

► natural contact, cooperation of cluster subjects, the naturalness of the relevance of the issue, that is, the territorial, sectoral or functional goals of the issue of dependence. The researchers claim that clusters cannot be artificially



formed. Therefore, the cluster is a product of natural relevance, driven by personal interests, and its main goal is to maintain competitiveness, quality, and results. Clusters are the best and most effective ways to strengthen existing natural connections, direct the potential of dispersal to achieve specific goals, create and strengthen the legal framework, accelerate the exchange of information and innovation. As a condition for ensuring naturalness in relevance, we can consider the following:

- geographical proximity;
- dynamics of the quality of education (progress);
- professional development of teachers;
- rational use of the scientific potential of universities and research institutions;
- improving the quality of textbooks;
- general goal setting, etc.

► continuity and continuity, create a chain of relationships of the cluster subjects, which has a specific function of each section forming the chain, and does not allow breaks in the chain of continuity. It should be noted here that continuity is a phenomenon of meaning, and continuity is a phenomenon of form. This means ensuring the natural consistency of the content of education and taking into account the age and physiological characteristics of students, ensuring their continuity. Continuity can be observed both within a particular type of education, and between different types of education. And continuity occurs when there are no gaps in the sequence (or in the explanation of a particular subject) of training. Therefore, continuity and continuity are interdependent, common and at the same time separate processes that must be directly related to the quality of education and between the types of education. The discussion about the cluster of teacher education around this phenomenon justifies the importance of continuity and continuity.

As a condition for ensuring continuity and continuity, you can specify the following:

- development of curricula for subjects based on the principle of interrelationship;
- work on repeated curricula in all types of education, based on the principle of "top-down", without gaps in it;

The sequence is the positioning of the cluster subjects in a vertical single line, followed by a gradual movement from the bottom up, from simple to complex. Continuity is a phenomenon of both form and content, which means the distribution of the form and content of education between types of education. This distribution should take into account the specifics and objectives of the types of education, state educational standards, and requirements for graduates. Continuity is a key condition for learning content. This can happen both within a certain type of education, and between different types of education.[11] This interdisciplinary sequence is a phenomenon associated with the pedagogical cluster, and the processes associated with its provision correspond to the problems that need to be solved within the cluster. This theoretically justifies continuity as an important principle of the pedagogical cluster.

As a prerequisite for ensuring continuity, you can specify the following:

- development of normative documents, tools, forms and technologies related to education and upbringing on the principle of "bottom-up", from simple to complex;
- development of normative documents, tools, forms and technologies related to education and upbringing, taking into account the age and physiological characteristics of students and students;

inheritance is the achievement of the systemic needs of qualified teachers as a result of the cluster role in generational exchange, tutoring, and clusterization of teacher education. Inheritance is a process associated with increasing the prestige of the teaching profession in society. One of the tasks of teacher education clusters

is to study the issues of social protection of teachers, as well as to address issues related to the respect of teachers in society.

As a prerequisite for inheritance, you can use:

- strengthen awareness-raising activities to improve the status and status of the teaching profession in society;
- to establish purposeful training of gifted students for the teaching and teaching profession;
- rational selection.

modernity is the establishment of modern scientific achievements in this field, the use of advanced international experience, the rational use of information and communication technologies. The principle of modernity can be understood in two ways: first, the modernization of production processes (problems related to education, science and the introduction of modern science in production), and secondly, whether the products (graduates) meet modern requirements. It is well known that it is impossible to produce competitive, high-quality products without modernizing production processes.[12] This requires an innovative approach to the content of education, its processes and tools, and technologies. The absence of a cluster without innovation is theoretically justified by the promotion of modernity as a cluster of teacher education.

As a condition of modernity, you can specify:

- constant updating of the formation of modern information and communication technologies in the process of teacher education;
- creation of a functioning mechanism for integrating modern scientific achievements into the educational process;
- modernization of the content and form of education;
- bringing the state requirements for graduates in line with the requirements of the educational systems of developed countries.

Common goals is the association of cluster entities around a single global goal, in addition to their specific goals. An important factor in this process is

finding a common goal that is involved in the activities of all the cluster entities. The overall goal is related to the strategy, which implies a far-reaching plan. This may not be directly related to the subject, but the success of the cluster ensures the effective activity of the subject, which at the same time is indirectly related. At the same time, the interests of all the subjects included in the cluster as a whole should be reflected. Otherwise, the cluster cannot be fully executed. This is a violation in the cluster chain that leads to system failures or does not work at all. In these aspects, the common goal is justified by the idea that the proposed one of the clusters of teacher education is an important principle.

The following is a prerequisite for ensuring the principle of common goals:

- Understanding that a private interest is directly related to a common goal;
- The ability to come out of their shell when determining strategic directions and plans;
- Long-term vision (availability of long-term plans);
- The "voice" of each entity that makes up the cluster is taken into account when setting a common goal;

The privatization of interests is the legal, social and economic interest of each subject in the cluster model of teacher education. The private interests of their subjects ultimately serve the common interests. Without benefits, there will be no teacher education cluster. Economic clusters were also created to increase profits and increase competitiveness. If they see the benefit as a material thing, then the cluster of teacher education focuses on the social, that is, on improving the human resource potential and the quality of education. Social interest also ultimately contributes to the material interest of the industry. In general, the issues of improving human resources and material incentives are interrelated concepts and are considered as parallel processes within each cluster.[13] The principle of natural interconnection arises only when the most rational private interest is provided. Therefore, private interests provide a natural connection, and these two

principles are inextricably linked. The escalation of one of these two principles will in itself lead to the strengthening (or vice versa) of the other.

As a prerequisite for ensuring the principle of privatization of interests, you can specify:

- the state of interaction in integration processes;
- private interest does not cause a departure from the general goal;
- equality between an increase in human resources and an increase in material resources;
- consider the interests of the cluster entities on an equal basis with the interests of other entities.

► mutual control, within the framework of the cluster model, combined academic subjects can form a mutually unified system and this is because each subject is interested in the perfect functioning of the system, an error or failure made in a particular subject affects the effectiveness of the functioning of other subjects, the creation of a system of continuing education. In this regard, it is obvious that the cluster of teacher education is a phenomenon of the quality of a particular system, and this dictates the principle of mutual control. The more advanced the system, the more control it will have. At the same time, it is important to develop the norms of the object that follow from the general purpose and private nature of the assessment of the activities of the subjects.

As a condition for ensuring the principle of mutual control, you can specify the following:

- integration into a single system;
- work on the principle system;
- understand that private property also depends on the quality of the activities of other entities;
- development of interaction mechanisms.

Based on the above principles, it will be possible to identify several important areas in the creation of a cluster of teacher education. They consist of:

first, having a common goal between the cluster entities;  
secondly, the legal basis for the joint activities of the subjects;  
third, the system of mutually beneficial relations between the entities united within the cluster.;

of the four, the management of mechanisms coordinated;

fifth, compliance with the principle of mutual control between the subjects.

The cluster of teacher education should be organized in the following areas::

1) the direction of education; 2) the direction of the means of education; 3) the direction of education and science; 4) the direction of education and production; 5) the direction of education management.

The above classification covers all areas of teacher education, with each sector integrated. The content of these areas and networks covers all forms, methods and technologies of interaction between educational, scientific and methodological, educational tools and management.

The content of the pedagogical educational cluster includes:

1. Direction of education:

- development of mechanisms for identifying, classifying and eliminating existing problems;
- разработка development of a mechanism for vertical and horizontal movement of educational and methodological potential;
- monitoring and managing the quality of lessons;
- development and implementation of the simplest and most adequate mechanisms for determining educational and methodological effectiveness;
- establishing the inter-directionality of tutoring activities in the educational and methodological sphere.

2. Direction of educational resources:

- improvement of curricula and research programs;

- enrich the content of textbooks and teaching aids and improve their level;
- improvement of auxiliary literature and didactic support of the lesson;
- to achieve effective use of information technologies and pedagogical technologies.

3. Direction of education and science:

- strengthening the integration between education and science;
- types of education in the scientific field that establish Lutheran activity;
- increasing the volume of Binar research in cooperation with teachers of the university and general education schools (preschool educational institutions) (scientific developments are carried out by professors and teachers of the university, their application in practice is carried out by teachers of general education schools);
- development of scientific and pedagogical potential in accordance with the needs;

4. Direction of education and production:

- strengthening integration between education and production;
- multiplication of binary scientific research in cooperation between the university and the production staff (scientific developments are carried out by the production staff of the university by professors, their application in practice);
- achieve harmony of theory and practice;
- improving the application of scientific achievements in practice at a rapid pace, taking into account the intensity of progress.

5. Direction of education management:

- conducting research on innovative education management;
- create a territorial management system that coordinates the interests of all types of education;

- introduction of innovative methods and tools, information and communication technologies in management.

## **CONCLUSION**

The effectiveness of the cluster serves for interaction and openness, which provides mutual support and control for all participants. Intimacy, internal relationships, constant personal contacts, and general openness promote communication and information exchange. Clusterization issues require news in the field of education, the availability of new components and methodological manuals, testing of the educational process, and new trends in the development of the education system.

The implementation of the educational cluster requires the creation of pedagogical conditions and experimental testing of the effectiveness of the formation of qualified specialists. The role of higher education in the cluster is manifested in the creation of innovative products. Clusters, research institutes and production facilities will become the base of practice and will have the opportunity to participate in the formation of specialists in their scientific and educational activities in accordance with their needs and development prospects.

In conclusion, we note that all the work done should be directly related to the level of primary, professional, higher professional and professional training of the cluster participants and should be aimed at the implementation of the scientific and educational cluster. At the same time, the educational institutions that are part of the cluster and other organizations that are part of the cluster should work together to achieve a common goal. The training should also include additional and distance learning. It is also important to create the necessary conditions for the active involvement of a number of research institutes, industrial enterprises and other institutions of the republic in the cluster.

As a result of this:

First, the need for qualified teaching staff is met qualitatively (a social consequence);



Secondly, an effective market for educational services will be formed (economic consequences);

Third, there will be opportunities for the rapid promotion of innovative educational technologies, new opportunities in the educational work of educational institutions (a consequence of marketing);

Fourth, a regulatory framework (legal consequence) will be created for the interaction of educational institutions, as well as the transition to a new organizational form of management of the education system;

Fifth, the design of the system of teacher training will be implemented together with cluster formations (pedagogical consequence).

Thus, the implementation of the cluster approach to education enhances continuity and communication in the education system, integration processes between types of education. One of the main tasks facing the scientific community is to consider this phenomenon as an innovation in education and to develop mechanisms for evaluating its effectiveness and developing ways to implement it. The cluster approach will radically change the content of the state educational policy and will give an opportunity to look at the relationship of subjects with the criteria of development and effectiveness. As a result, the cluster creates a powerful mechanism for integrating human resources, organizations and technologies in the region as an innovative approach to education.

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