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PEDAGOGICAL EDUCATION CLUSTER: CONTENT AND FORM

Abstract: The globalization process that is taking place all over the world requires the clustering of education as well as other areas. Globalization has led to a sharp increase in competition in the education services market. In this competitive environment, the cluster is a means of counteracting the power of globalization. The integration of education, science and industry around a common goal increases their potential. The pedagogical education cluster provides this cooperation. The article is based on the scientific view that the provision of competitiveness of subjects in the market of educational services by means of a cluster. The concept of the pedagogical education cluster is described and its needs, mechanisms, principles and directions of implementation are identified. The authors have extensively commented on the goals, objectives, principles and directions of the pedagogical education cluster. The organizational, practical significance and theoretical basis of the implementation of the pedagogical education cluster are described. The authors have sought to base their views on the opinions of Western scholars. Scientific researches of Western scientists on the educational cluster have been analyzed. There are scientific conclusions concerning social, economic, legal, marketing and pedagogical implications of clustering education.

Key words: globalization process, pedagogical education cluster, mimetic method, cluster strategies, goals, objectives, principles and directions of pedagogical education cluster.

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Introduction

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

mankind. It is now impossible to find any region or state fully protected from interaction. The deeper understanding of the phenomenon and its peculiarities are important issues in order to minimize the negative impact and increase the positive impact of the

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currently intensifying globalization process on the world. An in-depth study of the nature and notion of globalization enables us to adapt to it, to change the direction we need, and to use its power 'against itself'. It is obvious that scientific development of mechanisms and mechanisms of positive and creative use of globalization process is one of the actual problems of today. One of the means of using the 'against itself' of the power of globalization is the cluster model. Clusters in the manufacturing sectors of the economy have penetrated Western education for more than a decade. Educational clusters are not analogues of production clusters, but have many similarities. There are some scientific studies on clusters in Kazakhstan in Central Asia. In other countries, however, neither research nor practical work has been done. Chirchik State Pedagogical Institute is creating scientific-theoretical basis for clustering of pedagogical education for a year.

METHODOLOGY OF RESEARCH

In the present study, the method of analysis and synthesis of scientific clusters of pedagogical education, a comprehensive approach to the introduction of innovations in the field of pedagogy, and a comparative analysis method for studying clusters abroad were used.

LITERATURE REVIEW

M. Porter's cluster theory has entered to many spheres, as well as, education during the last decade. It is worth noting the contribution of Russian scientists in this research. Notions, branches of usage and characteristics of education cluster were investigated in their research works.

Studying and analysing researches concerning cluster approach to education gives a chance to gather several viewpoints in it. Thus, cluster approach is:

- Being a separate sphere (education, economics etc.), a mechanism for strengthening organizational forms of sectoral integration that are interested in achieving competitive efficiency [1, pp. 24-25];
- A structure, as an optional component, consisting of several equal parts and keeping its complete functional ability to work [2, p. 253];
- A set of interconnected business entities that are integrated into the structure of an organization based on modernity and regular approach [3, pp. 298-301];
- Combining the needs of production and training programs [4, pp. 7-13];
- A tool for forming support of innovation in the education-science-production system [5, 73-76];
- An innovatively effective way to establish forming human resources potential for the organization's future economy [6, pp. 1-7];
- Reorganizing the education system on the basis of successive principle according to the results of integration of different educational institutions

(kindergarten – school – college – university) [7, pp. 210-212].

The following researches were carried out by Russian scientists to study theoretical bases of formation and development of educational clusters: cluster approach to vocational education (B. Pugacheva, A.V. Leontiev), theory of activity and pedagogical design (V.V. Davydov, V.P. Bepalko, G.I. Ibragimov, B.T. Lednev, M.I. Makhmutov, A.A. Slastenin), The concept of continuous education (B.S. Gershunsky, G.V. Mukhametzyanova, A.M. Novikov), social education in vocational schools research on the problems of partnership and management (P.F. Anisimov, G.V. Mukhametzyanova, G.I. Ibragimov, E.A. Korchagin, V.P. Panasyuk, A.S. Subetto) [9, pp. 75-76].

Seven key cluster strategies are outlined by the same researchers:

- Geographic strategy, types of clusters spreading from small local to global scale;
- A horizontal strategy, an extended form of a cluster consisting of multiple clusters;
- Vertical strategy, uniting one which means uniting several clusters of subjects at the same level;
- Lateral strategy, clusters uniting subjects in different structures which can provide economies of scale, and lead to new combinations;
- Technological strategy, clusters that are visible in a set of structures using the same technology;
- Focused strategy, clusters located around one center;
- The quality strategy, the form of the cluster, which is the focus of how organizations implement cooperation [9, pp. 75-76].

In our view, it is desirable to classify the above cluster strategies mentioned by Russian researchers as cluster forms, because they have a clear view of the form and types of the cluster, rather than its priorities (strategies).

Effective development of the educational cluster is also directly dependent on the following conditions and factors:

- Availability of technologic and scientific infrastructure (D.A. Yalov);
- Mental readiness of the participants to cooperate (D.A. Yalov, V.P. Tretyak);
- Existing of a strong regional strategy focused on cluster development;
- The ability to successfully apply management techniques of a project;
- High information technology that facilitates the exchange of information between cluster entities [8].

Therefore, it is necessary to successful implement scientific and practical activities related to clustering of pedagogical education, to adapt existing technological and scientific infrastructure to achieve efficiency in them, to achieve full understanding of this innovative process through the implementation of propaganda activities in the subjects, to create

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opportunity to realize that cooperation brings many benefits, to develop well-thought-out cluster development strategies, ways and means of successful project management, and to enable rapid exchange of information between the participants. This is an extensive organizational process that requires time and well-targeted activity. However, the content of these organizational processes is not inseparable from our activities. Indeed, according to notes of the Russian scientists involved in the clustering of pedagogical education such as N.N. Davydova, B.M. Igoshev, A.A. Simonova, S.L. Fomenko the real effects of the cluster development will be apparent in 5-7 years [8].

RESULTS AND DISCUSSION

A. Description and Details of Pedagogical Education Cluster

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

The cluster of pedagogical education is a mimetic (a Greek word *mimiomai* which means imitation) method, which involves the creative implementation of a model that has led to economic development in the education system. The pedagogical education cluster forms the following innovation chain "education - science - educational tools - technology - management - business", and its scientific research is one of the most important tasks for today's pedagogy. It is becoming increasingly necessary to maintain the natural connection between the links that make up the educational complex, from the point of view of interest and efficiency, based on the socio-economic conditions and needs of a particular region.

The main product of the training complex is the competitive staff and educational services. The ultimate goal of the Education Cluster is to improve educational and scientific processes. This requires significant organizational and structural changes in the education system, along with considerable changes in management, structure and quality in the training system. At the same time, there is a need to search for new forms and methods at all stages of the work, to strengthen the relations between all types of education on the commonality of purpose and the ownership of interests, and to promote integration.

When appropriate educational approaches are established in the management structure of educational institutions, it will be possible to evaluate the current situation, to accurately predict outcomes, to take timely actions and to make adjustments to organizational management. The cluster of education

system provides the correct approach to address such issues. After all, the processes of cluster integration are considered to be the most powerful because they involve all the resources in the material, financial, technological, information, methodological and human resources. The cluster flexibly enables to create management system for their structures and to predict true development to ensure mutual trust [8]. Existing qualitative changes in the components of the education system, meaningful activities, general and special management functions, programs, technologies and methods, and the processes related to the development of the human resources of the participants enable the creation of a cluster environment.

The cluster model of pedagogical education develops in the general areas related to teaching, creating educational literature, improving the scientific potential of pedagogical staff, continuity of education and training. This shows the general methodological nature of the problem. At the same time, these general areas are privatized in such areas as management and organization of education, types and areas of education, continuity and integration, teaching methods and tools.

B. Aims and Objectives of Pedagogical Education Cluster

The main objectives of the Pedagogical Education Cluster are:

To ensure effective succession in the field of pedagogy and promoting the best students in the teaching profession;

To create an environment for future training of professionals based on innovative practices;

To reduce the period of acquiring professional skills for young professionals;

To create of a new generation of educational, educational and methodical, scientific literature, tools and didactic materials in pedagogical education;

To improve scientific, scientific and pedagogical potential of pedagogical education;

To accumulate and integrate intellectual resources around actual issues of pedagogical education development;

To find and apply different forms of education, science and pedagogical practice;

To improve mechanisms ensuring continuity of education and upbringing;

To provide the opportunity for quick contact with preschool, secondary education and higher education institutions and other applicants in the preparation of pedagogical staff;

To scientifically justify the need for association, interdependence and collaboration between the educational units.

To this end, the Innovation Cluster of Pedagogical Education has the following objectives:

Effective use of innovative pedagogical technologies to improve the quality of education;

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Consistent organization of scientific activity in the field of pedagogy;

Providing continuity of the content of the basic and auxiliary education tools at the stages of education;

Organization of training courses for teachers of educational institutions in the region to fill the gaps in their knowledge;

Organization of scientific-practical seminars with the aim of eliminating the problems related to teaching subjects in secondary schools;

Strengthening scientific cooperation with research institutes, research centers and higher education institutions in order to enhance the scientific potential of the institute;

Attracting teachers, who are able to do research, to investigative activities in secondary schools;

Internship in the leading foreign universities in order to obtain the best international practices in the field of pedagogy.

The cluster of pedagogical education provides an opportunity to identify problems in the system, which in turn can identify its strengths and weaknesses. It is important that information about the state of affairs in the cluster is very objective. With the help of a cluster, the government and education authorities will be able to effectively apply the experience and research results of the development of education in the cluster region. The cluster approach to education enables governments to provide specific tools for effective interaction within the system, to better understand problems, and to plan the scientific basis for development in the region.

All of above-mentioned statements conclude:

Firstly, they confirm the idea that the educational cluster is of great scientific and practical significance, which allows the system to achieve 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 set of activities in this process is aimed at enhancing the competitiveness of education, which is the cornerstone of training scientific and professional personnel. However, it is important to remember that not all entities combined within a cluster can produce real results immediately.

The importance of the pedagogical education cluster can be categorized and be available as follows: in the economic field: in the formation of an effective market for educational services; in social sphere: employment of graduates of pedagogical educational institutions; in the field of marketing: promotion of innovative educational technologies, new opportunities in educational and upbringing affairs of educational institutions; in the legal field: Creation of the legal framework for cooperation within the cluster, as well as the transition to new forms of management

of educational institutions; in the field of pedagogy: co-design of teaching staff in the system of continuous education.

C. Principles of Pedagogical Education Cluster

It is necessary to clearly define the goals and objectives of the innovation cluster of pedagogical education and to determine what principles it should follow in order to foresee the horizons of its activities. These are:

► Natural relevance, cooperation between cluster subjects, naturalness of the issue relevance, i.e. territorial, sectoral or functional objectives of the issue of dependency. Researchers argue that clusters cannot be artificially formed. Consequently, the cluster is a product of natural relevance resulted from personal interest, and its primary purpose is to maintain competitiveness, quality and result. Clusters are the best and most effective ways to strengthen existing natural links, direct dispersal potential towards specific goals, create and strengthen the legal framework, and accelerate the exchange of information and innovation. As a condition for providing naturalness in relevance, the following can be considered:

- Geographical proximity;
- Dynamics of education quality (progress);
- Strengthening capacity of teachers;
- Rational use of scientific potential of universities and research institutions;
- Improving the quality of teaching tools;
- Common goal setting, etc.;

► Inseparability and continuity are creating a chain of interconnection by the cluster subjects, having specific function of each section that forms the chain, and not allowing to gaps in the continuity chain. It should be noted here that inseparability is a phenomenon of meaning, while continuity is that of form. That means providing the natural sequence of the content of education and considering the age and physiological features of the trainees supply inseparability. Inseparability 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 learning. Consequently, inseparability and continuity are interdependent, common, and at the same time separate processes that should be directly linked to the quality of education and between the types of education. The discussion of the pedagogical education cluster around this phenomenon justifies the importance of inseparability and continuity.

As a condition for providing inseparability and continuity, the following can be stated:

- Development of the curricula of the subjects based on the principle of interconnection;

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- Working on repeated syllabuses in all types of education based on the principle of top-down, with no gaps in it;

► Succession is the positioning of the cluster subjects in a vertical single line, followed by a gradual movement from bottom to top, from simple to complex. Succession is a phenomenon of both form and content, which means the distribution of 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 alumni. Succession is a key prerequisite for learning content. It can occur both within a particular type of education and between different types of education. This inter-disciplinary sequence is a phenomenon related to the pedagogical cluster, and the processes associated with its provision correspond to the problems that need to be addressed within the cluster. This theoretically justifies succession as an important principle of the pedagogical cluster.

As a prerequisite for providing succession, the following can be specified:

- 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 age and physiological features of pupils and students;

► Inheritance is achievement of systematic needs of qualified teachers as a result of cluster role in generational exchange, tutorship activity, clustering of pedagogical education. Inheritance is a process that is associated with the increasing prestige of the teaching profession in the community. One of the pedagogical education clusters' mission is to explore the issues of social protection of teachers, and to address issues related to teacher respect in the community.

As a prerequisite for inheritance it is possible to:

- Strengthen the outreach activities to improve the status and status of teaching profession in the society;

- Establish targeted training of gifted students for teaching and pedagogical profession;

- Rational selection;

► Modernization is the establishment of modern scientific achievements in the field, the use of the best international practices, and the rational use of information and communication technologies. The principle of modernity can be understood in two ways: first, modernization of production processes (problems related to education, science and establishment of modern science achievements in production), and secondly, whether the productions (graduates) stand for the modern requirements. It is well-known that it is impossible to produce

competitive, high-quality products without modernizing the production processes. This requires an innovative approach to the content of education, its processes and tools, technologies. The absence of a cluster without innovation is theoretically justified by promoting modernity as a cluster of pedagogical education.

As a condition of modernity it is possible to point out:

- Continuously updating of establishment of modern information and communication technologies in the process of pedagogical education;

- Creation of a functioning mechanism for integrating the modern scientific achievements into the educational process;

- Modernizing the content and form of education;

- Adjustment of state requirements for graduates with requirements for those of educational systems of developed countries.

► Routing is the targeting of each activity within the cluster, the ability to predict and evaluate the outcome. The pedagogical education cluster calls for project directions and the implementation of several well-targeted and scientifically-based projects in each area. It is desirable that all aspects of education, such as scientific research, information-analytical, scientific-methodological and experimental-innovative, should be taken as project areas, and that a specific project will contribute to quality and efficiency in a particular area. Working in this way further clarifies, simplifies and focuses on the concept of pedagogical education clusters and activities in this area. The orientation of these aspects indicates the validity of the scientific proposal as a separate principle of the pedagogical education cluster.

As a prerequisite for providing routing, the following may be indicated:

- Clear purpose;

- Targeting of each activity;

- Focusing on staff training as the main criterion;

- To approach the concept of competitiveness from a global perspective, not from a local or national perspective;

- Development of a methodology for predicting and evaluating the effectiveness of activities;

- Providing projects that are exactly directed and guaranteed.

► Generality of purpose is the unification of cluster subjects around a single global goal, in addition to their specific objectives. An important factor in the process is finding the overall purpose involved in the activities of all subjects in the cluster. The overall objective is linked to the strategy, which implies a far-reaching plan. This may not be directly relevant to the subject, but the success of the cluster provides an effective activity of the subject which is indirectly relevant at the same time. The interests of

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all subjects that make up the cluster in general should be reflected. Otherwise, the cluster cannot be fully carried out. This is a disruption in the cluster chain that causes the system to malfunction or not to work at all. In these aspects, the commonality of the purpose is justified by the idea that the proposed one of the cluster of pedagogical education is an important principle.

As a prerequisite for providing the principle of generality of purpose is the following:

- Understanding that private interest is directly linked to a general purpose;
- Ability to step out of their shell when defining strategic directions and plans;
- Long-term vision (existence of long-term plans);
- The "voice" of each subject constituting a 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 pedagogical education. The private interests of their subjects ultimately serve the common interest. Without the benefits, there will not be cluster of pedagogical education. Economic clusters were also created to increase profits and increase competitiveness. If they see benefit as material thing, the cluster of pedagogical education focuses on the social, i.e., increasing capacity of the staff and quality of education. Social interest also ultimately contributes to the material interest of the industry. In general, issues related to increasing capacity of the staff and material incentives are interrelated concepts and are considered as parallel processes within each cluster. The principle of natural interconnection occurs only when the most rational private interest is provided. Consequently, private interests provide a natural connection, and these two principles are inextricably linked. The escalation of either of these two principles will in itself increase (or vice versa) the other.

As a prerequisite for supplying the principle of privatization of interests, it can be pointed out:

- To have an interest in integration;
- Private interest should not cause withdrawal from the common interest;
- Equality between human resource development and material incentives;
- Equality of interests of subjects within the cluster.

► Mutual control is the creation of a unified system of educational subjects integrated within the cluster model, and the interest of each subject in the functioning of the system in a flawless manner, knowing the failure or omission of a particular subject affects the performance of other entities, and the establishment of a system for evaluating subjects. It is clear that the pedagogical education cluster is a phenomenon of a particular system, which demands

the principle of mutual control. The more the system is perfect, the stronger mutual control can be reached. In this regard, it is important to develop objective criteria for assessing the activity of subjects, which are based on the common purpose and the private interest.

As a prerequisite for the principle of mutual control, the following can be stated:

- Integration as a single system;
- Systematically working;
- Understanding that private interest also depends on the quality of activities of other subjects;
- Development of mechanisms of interaction;

Based on the above-mentioned principles, it will be possible to identify several key areas in the creation of a pedagogical education cluster. These are:

First, having the common purpose among the cluster subjects;

Second, the legal basis for the joint activities of the subjects;

Third, a system of mutually beneficial relationships between subjects that are united within a cluster;

Fourth, the coordination of the management mechanism;

Fifth, the activities of the subjects do not deviate from the general purpose;

Sixth, adhering to the principle of mutual control between subjects.

D. The Directions of Pedagogical Education Cluster

The cluster of pedagogical education should be organized in the following areas: 1) the direction of education; 2) the direction of educational tools; 3) the direction of education and science; 4) the direction of education and production; 5) direction of education management.

The above-given classification covers all areas of pedagogical education, with each sector being integrated. The content of these areas and networks encompasses all forms, methods and technologies of cooperation between educational, scientific, methodological, educational tools and management.

The content of the pedagogical education cluster includes:

1. The direction of education:
 - Development of mechanisms to identify, classify and eliminate existing problems;
 - Development of the mechanism of vertical and horizontal movement of educational and methodological potential;
 - Control and management of quality of lessons;
 - Development and implementation of the simplest and most appropriate mechanisms for determining educational and methodical effectiveness;
 - Establishment of inter-directions tutoring activities in educational and methodical areas.
2. The direction of educational tools:
 - Improvement of curricula and syllabuses;

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Enrichment and enhance the content of textbooks, manuals;

Improvement of auxiliary literature and didactic provision of lessons;

Achieving effective use of information technologies and pedagogical technologies.

3. The direction of education and science:

Strengthening integration between science and education;

Establishment of inter-directions tutoring activities in the field of science.

Increasing binary research in collaboration with teachers from universities and secondary schools (pre-school institutions) (scientific developments are implemented by professors of higher education and applying them into practice is done by teachers of secondary schools);

Development of a mechanism to provide the demand for scientific and pedagogical potential;

4. The direction of education and production:

Strengthening integration between education and production;

Increase binary research in collaboration with higher education teachers and production staff (scientific developments are implemented by faculty members of universities; their implementation is done by production staff);

Having the combination of theory and practice;

Improving the mechanisms for the rapid implementation of scientific achievements, taking into account the intensity of development;

5. The direction of Education Management:

Carrying out research on innovative management of education;

Creation of a system of territorial administration that would harmonize the interests of all types of education;

Implementation of innovative methods and tools for management, information and communication technologies.

The effectiveness of the cluster serves for the interaction and openness that provides mutual support and control to all participants. Proximity, internal relationships, constant personal contacts and shared openness facilitate communication and information sharing. Clustering issues require news in the field of education, availability of new components and manuals, testing of the educational process, and new trends in the development of the education system.

Implementation of the educational cluster requires the establishment of pedagogical conditions and experimental verification of the effectiveness of the formation of qualified specialists. The role of higher education in the cluster is evident in the creation of innovative products. The 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

research and educational activities in accordance with their needs and prospects of development.

All subjects of the cluster form and organize a multilevel system of training of qualified specialists. Both the employer and the secondary schools, secondary special and vocational education institutions and higher education are all part of the process.

The process of continuous education is a multi-level system, with changes at the social level and professional development of the subjects creating favorable conditions for its development. Therefore, the main idea of continuing education is to adapt the status, desires, and abilities of a person to the world of work and social relations in a rapidly changing world.

CONCLUSION

In conclusion, all work done should be directly related to the level of primary, professional, high professional and vocational training of the cluster participants and should be aimed at the implementation of the scientific and educational cluster. At the same time, educational institutions within the cluster and other organizations that are part of the cluster must work together for a common purpose. 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 institutions, industrial enterprises and other institutions of the republic in the cluster.

As a result of this:

› Firstly, the need for qualified pedagogical staff is met with good quality (social consequence);

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

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

› Fourthly, the legal and regulatory framework (legal consequence) will be established 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 pedagogical staff training system in conjunction with the cluster entities (pedagogical consequence) will be implemented.

Thus, the implementation of a cluster approach to education strengthens continuity and communication in the education system, the integration processes between the types of education. One of the major challenges facing the scientific community is to view this as an innovation in education and to develop mechanisms to measure its effectiveness and development of ways of implementation. The cluster approach will radically change the content of public education policies and provides an opportunity to look at the relationships of subjects with the criteria of development and

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effectiveness. As a result, the cluster creates a powerful mechanism for the integration of human

resources, organizations and technologies in the region as an innovative approach to education.

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