

# POSSIBILITIES OF THE CLUSTER APPROACH IN THE PREPARATION OF A PHYSICS TEACHER

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## Abstract:

In the article, the author, as a result of the analysis of scientific literature, considers the use of cluster technologies in the training of physics teachers and the possibilities of the cluster approach, the training of mature and comprehensively trained specialists based on the formed technologies, with scientifically based content based on the cluster approach of introducing cluster technologies into the education system, expressed the opinion about expediency.

## Keywords

Physics, teacher training, cluster technologies, cluster approach, professional training, methodological support, production, cooperation, professional competence, scientific creativity, knowledge, skills and competencies.

## Introduction

One of the priority tasks arising in the rapidly changing modern socio-economic and political conditions is the training of competitive personnel who own innovative technologies, which are one of the components of the state educational policy. The material and moral rating of the state is determined by the professional training and potential of teaching staff. Skilled workers in all areas have a significant impact on the scientific and technological development of the country's economy. Customers pay great attention to specialists with high qualifications and professional competence. Therefore, the training of qualified teachers in higher education is a real response to the development of society. For this reason, one of the important tasks in the system of higher education is the training of personnel who have modern knowledge and teaching methods and methods, who are able to combine theory and practice, who have mastered the cluster approach at a high level. The rapid development and progress of the economy of the new Uzbekistan directly depends on the specifics of social development through the modernization of the education system [1].

In the leading higher educational institutions of the world, the process of teaching physics based on cluster technologies has been established by specialists working in the field of physical education, and this process is rapidly improving. Recommendations are being developed on the use of scientific approaches in the educational process in terms of the theoretical and methodological foundations of the cluster approach [2]. Improving the quality and efficiency of education in the rapidly developing new Uzbekistan, the use of innovative and digital technologies in the educational process, the effective use of the

capabilities of cluster technologies by integrating the education system with production, the scientific creativity of students of pedagogical universities, research work is being carried out aimed at creating a methodological method that meets the requirements of the time provision aimed at increasing cognitive activity in connection with the development of abilities. This includes research work on the implementation of the cluster approach in teaching physics.

Ensuring effective communication and cooperation between general education, professional, higher educational, research institutions and industrial enterprises in terms of training personnel and the use of scientific results Fundamental reform of the quality of education, including the establishment of cooperation with industrial enterprises in the use of physics results, international education of knowledge, The skills, qualifications and competencies that future physics teachers must acquire must meet the standards. It is necessary to use educational technologies based on the cluster approach in order to achieve the practical application of the theoretical knowledge gained by graduates in ensuring the interaction of universities with production.

Decree of the President of the Republic of Uzbekistan No. PF-60 dated January 28, 2022 "On the new Development Strategy of the Republic of Uzbekistan for 2022-2026", PQ-2909 dated April 20, 2017 "Higher education PQ-3151 dated July 27, 2017," On measures to further improve the education system "" Economics in improving the quality of training of highly qualified specialists" on measures to further expand the participation of branches and branches of the Republic of Uzbekistan dated March 19, 2021 No. PQ-5032, Resolution No. VMQ-3775 dated June 5, 2018 "On additional measures to improve the quality of education in higher educational institutions of the institutes and ensure their active participation in the comprehensive reforms carried out in the country".

This scientific research, to a certain extent, serves to implement the tasks outlined in the decisions, as well as in other regulatory legal documents related to this area.

Issues of improving the teaching methods and the use of innovative technologies in our country A. Abdukadyrov, B.S. Abdullayeva, J. Yuldoshev, N. Karimova, Yu.G. Makhmudov, G.I. Mukhammedov, Kh.B. Norbotaev, Kh.T. Omonov, A. Rakhimov, Zh.O. Tolipova, A.T. Gofurov, M. Umaralieva, U.M. Khodzhamkulov, U.E. Rakhmatov, G.S. Ergashev, it was studied by others.

System analysis of the pedagogical and social principles of vocational education in the CIS countries, pedagogical research on a modular system, a concept based on a competency-based approach, the theory of modeling cluster education systems and the introduction of education based on a cluster approach in the implementation of S.G. Vershlovsky, N.V. Bordovskaya, A.L. Gavrilov, S.P. Ivanova, I.P. Kuzmin, A.M. Novikov, A. Slastenin, R.M. Sheraizin, A.N. Dahin, N.E. Chebotareva, V.A. Bolotov, A.A. Verbitsky; Ya. Zimnyaya, V.P. Toporovsky, A.V. Khutorskoy, V.T. Volov, Ya.N. Dranev, V. Ekimova, R.M. Kachalov, M. Porter, T.I. Shamova was investigated.

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The founder of cluster technology M.Yu. Porter explains the essence of the cluster concept as follows. Cluster is the activity of complementary and interrelated companies operating in a certain area [2; S. 35-42].

Preparing students of pedagogical universities to become mature and comprehensively developed specialists based on technologies formed with science-based content based on the cluster approach is one of the urgent problems of our time. Given the professional competence of future physics teachers, the introduction of cluster technologies in the education system seems appropriate. The analysis of scientific literature showed that some aspects of cluster technologies were applied to the education system in a number of scientific and research works.

In particular, I.A. Kiseleva "Implementation of the cluster approach in the formation of cognitive interests of students" [5; P.14-23], N.V. Malysheva "Organization of project activities of students in cluster conditions" [2; P.17-23.], D.Yu. Trutnikov in his research work "The use of educational, scientific and industrial cluster in the implementation of design in the education system" [3; P. 52-63.], M.V. Goremyko "Managing the quality of education in the regions based on the cluster approach" [3; 14c.] introduced such aspects into the education system.

The above research works are related to the peculiarities of organizing the activities of a teacher by applying the appropriate conditions of cluster technology in education, and the technology of increasing professional competence is not affected:

- based on the results of research in the field of application of cluster technologies in the education system, the following keys were identified: in the process of using the cluster approach, education and professional competence associated with cluster technology, as a factor in the successful professional training of students based on this technology, was not sufficiently formed;
- low level of professional competencies of teachers and students in solving problems of cluster conditions between the requirements of educational coordination and integration and the employer, as well as the manufacturer, i.e., personnel suppliers;
- improve the quality of professional activities of teachers and students, find a solution to the problems of integrating educational literature with cluster technologies, shaping the integration of education with production;
- the lack of teachers and students conducting analytical and research work on the production economy and the interdependence of production, so there is a high need for integrative training.

The issues of using cluster technologies in higher education have been analyzed by scientists in different periods. The concepts of "Educational and industrial cluster" and "cluster approach", "professional cooperation" and professional training of requirements in higher educational institutions and analysis of education focused on professional activity are also described.

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The political, social and economic activities carried out in the new Uzbekistan are aimed at implementation in connection with the sphere of the education system. These include the financial independence of higher education, actions aimed at raising the status of educational institutions, the creation of reserve centers and the cluster approach in educational institutions. The paradigm of the higher education system is changing [4;C.23-27].

In the modern updated education system, educational programs are being developed based on the new modular competence and the integration-cluster approach, national curricula, concepts and state educational standards. Currently, the creation of a conceptual environment for organizing the educational process in connection with the graduation of graduates in the field of higher and professional education is one of the urgent tasks. It is regarded as a reserve for the socio-economic development of the state and an investment in human capital. This makes it possible to regulate and strengthen the activities and the field of education in higher education institutions on the basis of the law.

Important practical steps are the changes taking place in the system of higher education, the modernization of education in the coming years, the implementation of the acceptance of programs. On October 29, 2021, the State Inspectorate for Quality Control of Education of the Republic of Uzbekistan issued Order No. 4884 on additional measures to further improve the education system in the Republic of Uzbekistan. "The concept of ensuring the integrity of educational programs in secondary schools was adopted by the system of secondary specialized, vocational and higher education. The program implements measures to purposefully ensure the educational policy of the Republic of Uzbekistan, the level of activity and development of educational institutions at all levels is interdependent, including the availability of quality education, makes it possible to develop the system and evaluate the quality of education. The concept provides: ensuring the consistency of scientific programs of preschool, general secondary, vocational and higher education; the introduction of new educational programs and plans into the educational process was taken into account [4; S. 9-23].

Based on the needs of economic development and innovation, the state has created appropriate conditions for the introduction of the results of research work of scientists from higher educational institutions into the production process, as well as the phased introduction of more advanced forms of educational activities. In the process of higher education institutions, opportunities are created for passing the stage. Article 36 of Law No. 637 of September 23, 2020 is aimed at "Development of experimental and innovative activities in the field of education", experimental and innovative activities in the field of education are carried out in order to modernize education and new education, aimed at developing technologies and resources, their testing and implementation in educational process.

The main objectives of the development of the cluster approach in education are to ensure the openness of education, increase the efficiency and quality of education, organize the

education system based on cluster technologies of an educational institution, the effectiveness and quality of education. , education It is necessary to bring the educational level of an educational institution in line with the requirements of a market economy from a professional point of view. In modern rapidly developing conditions, it is necessary to prepare students for professional activities by instilling the trends of a planned economy [6; P. 105-114.7; S.92-93].

One of the problems facing higher education institutions is the training of specialists on a contract basis and the organization of the education system in an educational institution based on a cluster approach.

The need to introduce and improve the cluster approach is a response to the requests of employers and social partners in the training of higher education specialists. Modernization of the education system is aimed at economic changes occurring on the basis of the request of society and the state [8; S.412-431].

Modern education and production are mature in all respects, capable of responding to changes, adapting their knowledge, skills, qualifications and competence to changes in education, the economy and production, their professional activities require qualified personnel who can easily solve difficulties in their work.

### **Conclusions**

The changes taking place in the education system of new Uzbekistan, in the social, socio-political sphere, require the use of cluster technologies among the technologies applied to the educational process, that is, the implementation of a cluster approach in education. The crisis and events related to the change in production, the formation of commercialization and centralization of education, the quality and efficiency of education require the training of qualified personnel in educational institutions.

In previous years, employers were specialists in the life of an educational institution, if it did not have its place in education, now it has a multifaceted influence and, based on the requirements of employers, requires the training of high-quality personnel capable of carrying out independent activities.

In modern conditions of rapid development, it is important to implement a cluster approach and, on this basis, provide staff with professional competence in the formation of teaching staff capable of linking education with the production sector. Teaching staff must acquire knowledge, skills, abilities and competencies, master cluster technologies, regularly update their creative activities, and constantly cooperate with employers.

The analysis shows that young professionals need to have professional and social flexibility, be able to solve a number of problems related to education and production, with a psychological and strategic approach. Thanks to this, in recent decades, cooperation between education and production has been actively developing to further develop the cluster sector and create new clusters.

Analyzes show that effective results will be achieved if teachers develop organizational, research, analytical and managerial skills based on a cluster approach along with the

formation of project activities among students. The creation of a cluster environment in modern education is becoming a source of innovative culture and training of competitive specialists not only among engineers, designers, architects, but also among all specialists, including teachers.

In the conditions of rapid development, the emergence of new forms of management occurs by itself, the professional training of specialists through a comprehensive update of the educational process requires the use of effective types of structures and cooperation.

### References

1. Uzbekiston Respublikasi Prezidentining Farmoni. 2022-2026-yillarga mo'ljallangan yangi O'zbekistonning Taraqqiyot strategiyasi to'grisida. PF-60-son. 2022-yil 28-yanvar. Qonunchilik ma'lumotlari milliy bazasi, 29.01.2022 y. 06 22 60 0082-son.
2. Портер М.Ю. Конкуренция. Пер. с англ.яз. - М.: «Вильямс», 2000. -495 с.
3. Горемыко М.В. Управление качеством общего образования региона на основе кластерного подхода. Автореферат канд.пед. наук. - М., 2010. 23. с.
4. Иноятлов У.И., Ходжаев Б.Х. Умумтаълимий компетенцияларни лойиҳалашнинг концептуал асослари. "Халқ таълими" Ўзбекистон Республикаси Халқ таълими вазирлигининг илмий - методик журнали. - 2016.-2-сон.-Б. 7-15.
5. Киселёва И.А. Развитие познавательного интереса студентов на основе кластерного подхода в проектной деятельности. Автореферат канд. пед.наук. Тамбов, 2011.-23 с.
6. Соколов А.Г. Концепция и практика системного управления профессиональным учебным заведением. - СПб., 2000. - 269 с.
7. Суходимцева А.П. Кластерный подход как способ развития проектной компетентности педагога//Управление образованием: науч.-метод. журн. -М.: XII школ, технологий: «Народное образование», 2008.- С. 91-96.
8. Трутников, Д.Ю. Проектирование системы воспитания в университетском комплексе на основе кластерного подхода. Автореферат д.п.н. - М., 2011. - 43 с.