



Dong Zhiwei [1; ORCID ID: 0000-0001-6280-7342],

Scientific Researcher,

Zianko V. V. [1; ORCID ID: 0000-0003-1918-309X],

Doctor of Economics, Associate Professor

¹Vinnitsia National Technical University, Vinnitsia

FORMATION AND DEVELOPMENT OF EDUCATIONAL CLUSTERS AS AN IMPORTANT COMPETITIVE ADVANTAGE OF NATIONAL ECONOMY

The article deals with problems in the sphere of education in Ukraine on the basis of the works of scientists. It is determined that in order to ensure the sustainable development of the economy and its competitiveness it is necessary to make changes in the requirements regarding the level and quality of education by means of formation of educational clusters in the country. The author has developed the basic conceptual provisions of the educational cluster, which will help increase the competitiveness of education in Ukraine. The conceptual provisions of the educational cluster include the following elements: creation of a single integration educational space; educational model, system multilevel integration; vertical and horizontal structure of interaction with the employer. The task of each of the structural elements is to create the advanced educational system of multilevel training of specialists in a cluster environment in accordance with the features of regional economic and social policy. The characteristics of the functions of the educational cluster governing bodies have been described. The stages of formation of organizational and economic mechanism of the educational cluster are distinguished. The assessment of the effectiveness of the educational cluster by the following aspects is carried out: competitive, business, regional, resource, cooperative. It is determined that increasing the competitiveness of educational services will be able to ensure the development of educational clusters in Ukraine as a result of certain conditions. The author systematized these conditions in the following sequence: systematic development of the whole branch of education and its individual elements: higher, vocational, general secondary, preschool; elimination of the internal competition in the educational environment; implementation of the principles of partnership and mutually beneficial cooperation; increasing the level of centralization of managerial decision-making in accordance with demand for certain specialties.

On the basis of the scientific research it is proved that formation and development of educational clusters is a significant competitive advantage

of the national economy of Ukraine, which is able to influence the formation of state policy in the educational field.

Keywords: national economy; education; public policy; educational clusters; governing bodies; organizational and economic mechanism; efficiency assessment; competitive advantage.

Existing structure and quality of Education in Ukraine does not meet the requirements and tasks of the present stage of social and economic development. Nowadays specialists in the sphere of education services distinguished rather large list of problems in the sphere of education, namely: disbalance at the labour market and market of education services, shortage of the qualified workers, especially in the sphere of high technologies and in innovation branches, absence of stable system of the partnership relations between the system of education, production and business, long terms of specialist training, social vulnerability of the graduates, non-conformity of material-technical base of the educational establishments to modern production technologies, imperfection of the regulatory framework of the relations between educational establishments and consumers of the educational services, inadequate state funding of the educational programs, etc.. Provision of the sustainable development of the economy, society, increase of the competitiveness and national security stipulates the change of the requirements regarding the level and quality of education. To solve the above mentioned problems, it is necessary to find differential and individual approaches in the sphere of education.

In our opinion, such approaches are the process of the formation and development of the educational clusters in the country.

The problem of educational clusters formation studied in their works the researchers L. I. Galimova, L. O. Drozdovska, O. P. Zhuk, Yu. A. Zaika, N. P. Zakhariva, O. A. Semenova, K. S. Sokolova, N. A. Korchagina, V. I. Kutsenko, O. V. Mudra, O. I. Reshetniak and others.

Aim of the research is to develop main conceptual provisions of the educational cluster, which will promote the increase of the competitiveness of the sphere of education in Ukraine.

Educational cluster is the concentrated group of companies and organizations of certain branches, localized territorially interconnected for achieving the common goal. These companies and organizations operate in the sphere of education and obtain the possibility of rapid information exchange, shared usage of the unique resources, introduction of innovations [1-2]. Final product of the educational cluster is education service as a result of combining the common integrated educational space, education model, multilevel integration and



interaction. Basic conceptual provisions of the educational cluster are shown in Fig. 1.

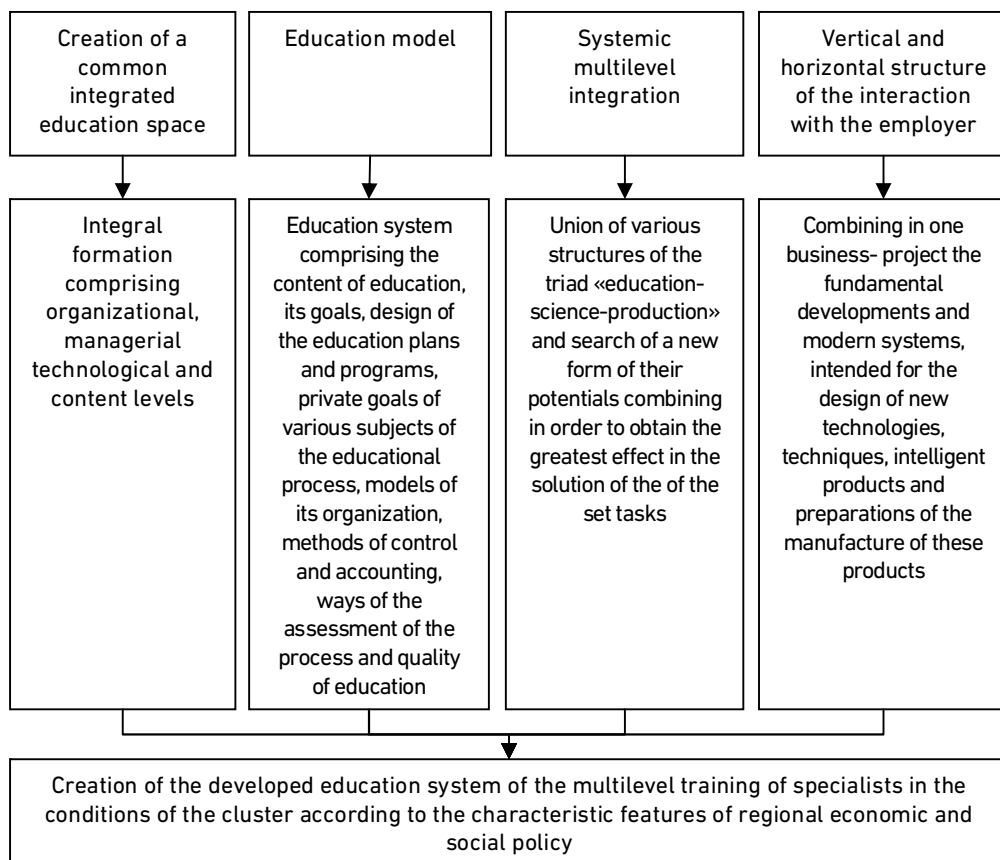


Fig. 1. Conceptual provisions of the educational cluster
(developed by the author)

Nowadays there exists numerous studies, showing positive correlation between the availability of clusters and higher level of the economic development of the territories. According to the information of the European cluster observatory, approximately 69 education clusters function on the territory of the European Union (Oxford, Amsterdam, London, Warsaw, Paris, etc.), which have different level of the innovation development, salaries, volume of educational services export [3].

Increase of the competitiveness of the education sphere by means of formation of the education clusters, namely – possibility of reaching long term competitive advantages can be provided as a result of the

involvement of the investments in the development of the education sphere from business structures. Growth of the investments in the education cluster, increase of the share of the education activity funding at the expense of non-budget sources, passing the functions of financial support on business structures as these structures are interested in the increase of the competitiveness of the graduates of the educational establishments are main criteria of the educational clusters assessment [4].

Educational clusters enable to create the competitive model of education sphere development as a result of optimization of all educational and organizational processes, orientation on the reaching of the single goal, for all the participants of the process, increase of the participants` interaction [2].

Composition and functions of governing bodies of the educational cluster is shown in the Table 1.

Table 1

Governing bodies of the education cluster*

Name	Composition	Functions
Coordination council	Highest governing body, consisting of the representatives of business, teachers of the education establishments, scientists, representatives of the local bodies of power and public organizations	Strategic planning and realization of the corrections depending on the results of the work and degree of the education cluster adaptation to economic conditions. Planning, connected with the realization of the measures, aimed at involvement of the financial resources and their distribution. Detecting of the needs of the labor market and business-structures. Determination of the requirements to the education programs and their correction depending on the defined needs.
Resource centers	Governing structures	Collection of the necessary information, coordination. Promote the communication between the participants.

*Source: constructed by the author on the base of [1-4]

Stages of the formation of the organization – economic mechanism of the educational cluster may be grouped in the following way [2-4]:

Stage 1. Formation of the development strategy: emergence of the cluster initiative on the side of the state (initiation of educational clusters formation); determination of the priority directions of the activity and development; strategy of the educational cluster



development can be formed depending on the current and priority state in the future, determination of the direction of the competitiveness increase, development and search of the competitive advantages.

Stage 2. Development of the mechanism for the cluster formation: determining of all the participants, interested in strengthening of the interrelations in the process of learning and formation of certain competences; determination of the principles of cluster functioning; determining of the basic (general) and private aims of the participants; formation of the development strategy; determination of the interconnections and interdependences, formed inside the cluster; development of the legislative acts, provisions and rules, aimed at provision of the education cluster functioning.

Stage 3. Formation of the organization structure and management structure of the educational cluster; determination of the members of the coordination council; formation of the composition of the committees; formulation of the functional obligations of the clusters participants; determination of the scale of the common activity of the participants.

Stage 4. Realization of the mechanism of educational cluster functioning; formation of the staff of the enterprises and organization of the cluster for the realization of the specific activity; draw up the agreements between all the participants of the educational cluster.

Organs of power should provide state regulation and support of the educational, scientific, innovation and other types of the activity in the educational cluster [5].

Educational cluster is a group of educational establishments, localized on a certain territory and within the frame of one project, as the end product these establishments form education services, compete and interact with each other and have the suppliers of the necessary production factors, equipment, specialized services, infrastructure, scientific – research institutes, organs of power and public organizations [4].

All the participants of the educational cluster take part in the regulation of the multi-level system of training specialists of the necessary qualification.

Determination of the strategic goals of the education cluster development is necessary to conduct, taking into account the impact of the factors of the internal and external environment, using the corresponding tools. On the base of the obtained development strategy of the educational cluster the list of the priority aims is formed. In the process of creating of the educational clusters it is necessary to take

into consideration problems, connected with the determination of the risk level, social-economic efficiency and reaching of the synergetic effect in the system [6-8]. Assessment of the efficiency of educational cluster is presented in the Table 2.

Table 2

Evaluation of the effectiveness of the educational cluster*

Aspects of the assessment	Characteristic
Competitive	Availability in the region/territory of the competitive advantages for the development of the educational cluster in the specific branch of economy
Business	Availability of the competitive enterprises in the region, included in the educational cluster and finance education programs on the conditions of the state-business partnership
Regional	Geographical concentration and proximity to education establishments which train the corresponding specialists. Mobility level of the human resources
Resource	Great number of the participants of the educational cluster and availability of the «critical mass» accumulated in the corresponding educational establishments, possessing the necessary resources
Cooperative	Availability of the connections and coordination of actions between the participants of the education cluster

Source: constructed by the author on the base of [2]

Formation and development of the education clusters in Ukraine can improve the competitiveness of the education services due to certain conditions. Systematization of these conditions is presented in Fig. 2.

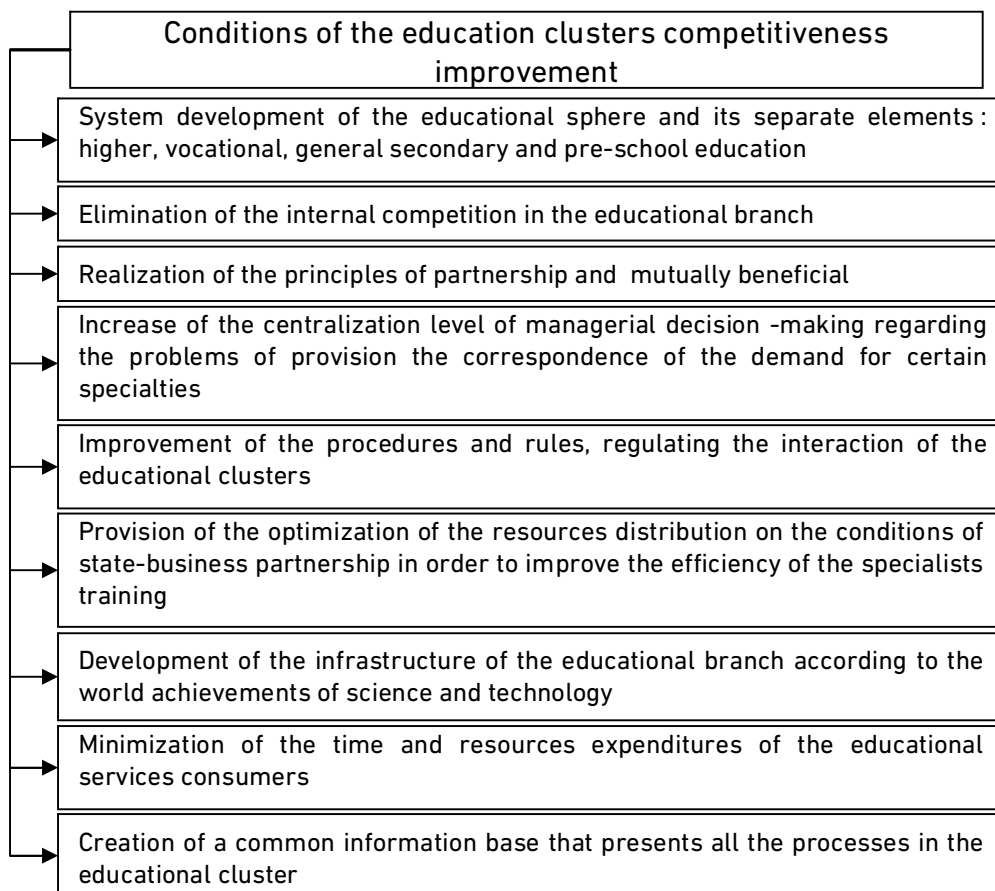


Fig. 2. Conditions for the compatibility improvement of the educational services, provided by the educational clusters
(systematized by the author on the base of the sources [1-6])

On the base of the sources [1-6] analysis we agree with the conclusions, made in the considered studies and can make the following generalizations: the formation and development of the educational clusters is essential competitive advantage of national economy of Ukraine that can influence the formation of the state policy in the education sphere, the base of which is the state strategy of education development in Ukraine, according to this strategy measures, aimed at the development of the education system of the country are elaborated, the efficiency of these measures will be supported by the corresponding funding and investment at all the levels, applying the methods of state regulation and business partners participation. The problem of the state policy in the education sphere will be the subject of our further studies.

1. Мудра О. В. Реалізація соціального партнерства у просторі освітнього кластеру. URL: <http://ea.donntu.org:202012.pdf> (дата звернення: 22.05.2020).
2. Решетняк О. І., Заїка Ю. А. Організаційно-економічний механізм формування освітніх кластерів в Україні : монографія. Харків : Вид-во НУА, 2018. 204 с. URL: <http://dspace.nua.kharkov.ua.pdf> (дата звернення: 22.05.2020).
3. Соколова К. С. Использование кластерного подхода в целях повышения конкурентоспособности системы образования: сравнительный анализ международного опыта. *Современные исследования социальных проблем*. 2010. № 4.1 (04). С. 531–541.
4. Жук О. П., Дроздовська Л. О. Кластерний підхід у процесі оптимізації системи вищої освіти України. *Вісник ОНУ ім. Мечнікова*. Одеса, 2013. Т. 18. Вип. 1/3. С. 151–153.
5. Галимова Л. И. Образовательный кластер как механизм инновационного развития производственной деятельности. *Вестник Казанского технического университета*. Казань, 2009. № 5. С. 125–127.
6. Решетняк Е. И. Формирование образовательных кластеров: оценка синергетического эффекта. *Вчені записки Харківського гуманітарного університету «Народна українська академія»*. Харків, 2015. Т. 21. С. 246–254.
7. Nataliia Savina, Olha Romanko, Konrad Gromaszek, and Saule Smailova «Information technology for evaluation of innovation indicators influence and investment activity on competitiveness of the region», *Proc. SPIE 11176, Photonics Applications in Astronomy, Communications, Industry, and High-Energy Physics Experiments 2019*, 1117625 (6 November 2019); <https://doi.org/10.1117/12.2537073>.
8. Nataliia Savina, Olha Romanko, Sergii Pavlov, Volodymyr Lytvynenko. Modern management of national competitiveness. *Informatyka, Automatyka, Pomiary w Gospodarce i Ochronie Środowiska*. № 2. Vol 9. 2019/6/21. P. 68–71.

REFERENCES:

1. Mudra O. V. Realizatsiia sotsialnoho partnerstva u prostori osvitnoho klasteru. URL: <http://ea.donntu.org:202012.pdf> (data zvernennia: 22.05.2020).
2. Reshetniak O. I., Zaika Yu. A. Orhanizatsiino-ekonomichniy mekhanizm formuvannia osvitnikh klasteriv v Ukraini : monohrafiia. Kharkiv : Vyd-vo NUA, 2018. 204 s. URL: <http://dspace.nua.kharkov.ua.pdf> (data zvernennia: 22.05.2020).
3. Sokolova K. S. Ispolzovanie klasternogo podhoda v tselyah povyisheniya konkurentosposobnosti sistemy obrazovaniya: sravnitelnyiy analiz mejdunarodnogo opyita. *Sovremennyye issledovaniya sotsialnyih problem*. 2010. № 4.1 (04). S. 531–541.
4. Zhuk O. P., Drozdovska L. O. Klasternyi pidkhid u protsesi optymizatsii systemy vyshchoi osvity Ukrainy. *Visnyk ONU im. Mechnikova*. Odesa, 2013. T. 18. Vyp. 1/3. S. 151–153.
5. Galimova L. I. Obrazovatelnyiy klaster kak mehanizm innovatsionnogo razvitiya proizvodstvennoy deyatelnosti. *Vestnik Kazanskogo tehnikeskogo universiteta*. Kazan, 2009. № 5. S. 125–127.
6. Reshetnyak E. I. Formirovanie obrazovatelnyih klasterov: otsenka sinergeticheskogo efekta. *Vcheni zapysky Kharkivskoho humanitarnoho universytetu «Narodna ukrainska akademiia»*. Kharkiv, 2015. T. 21. S. 246–254.
7. Nataliia Savina, Olha Romanko, Konrad Gromaszek, and Saule Smailova «Information technology for evaluation of innovation indicators influence and investment activity on competitiveness of the region», *Proc. SPIE 11176, Photonics Applications in Astronomy, Communications, Industry, and High-Energy Physics Experiments 2019*, 1117625 (6 November 2019); <https://doi.org/10.1117/12.2537073>.
8. Nataliia Savina, Olha Romanko, Sergii Pavlov, Volodymyr Lytvynenko. Modern management of national competitiveness. *Informatyka, Automatyka, Pomiary w Gospodarce i Ochronie Środowiska*. № 2. Vol. 9. 2019/6/21. P. 68–71.



Дун Чживей [1; ORCID ID: 0000-0001-6280-7342],

стажер-дослідник,

Зянько В. В. [1; ORCID ID: 0000-0003-1918-309X],

д.е.н., професор

¹Вінницький національний технічний університет, м. Вінниця

ФОРМУВАННЯ ТА РОЗВИТОК ОСВІТНІХ КЛАСТЕРІВ ЯК ВАЖЛИВА КОНКУРЕНТНА ПЕРЕВАГА НАЦІОНАЛЬНОЇ ЕКОНОМІКИ

У статті на основі праць науковців досліджено проблеми у сфері освіти в Україні. Визначено, що з метою забезпечення сталого розвитку економіки та її конкурентоспроможності необхідно здійснювати зміни вимог до рівня та якості освіти шляхом формування процесів освітніх кластерів в країні. Розроблено основні концептуальні положення освітнього кластеру, складовими елементами яких є: створення єдиного інтеграційного освітнього простору; освітня модель, системна багаторівнева інтеграція; вертикальна та горизонтальна структура взаємодії з роботодавцем. Проведено характеристику функцій органів управління освітнього кластеру та виокремлено етапи формування організаційно-економічного механізму освітнього кластеру. Проведено оцінку ефективності освітнього кластеру за такими аспектами: конкурентний, бізнесовий, регіональний, ресурсний, коопераційний. Доведено, що формування і розвиток освітніх кластерів є суттєвою конкурентною перевагою національної економіки України, яка здатна впливати на формування державної політики в освітній галузі.

Ключові слова: національна економіка; освітня галузь; державна політика; освітні кластери; органи управління; організаційно-економічний механізм; оцінка ефективності; конкурентна перевага.

Дун Чживэй [1; ORCID ID: 0000-0001-6280-7342],

стажер-исследователь,

Зянько В. В. [1; ORCID ID: 0000-0003-1918-309X],

д.э.н., профессор

¹Винницкий национальный технический университет, г. Винница

ФОРМИРОВАНИЕ И РАЗВИТИЕ ОБРАЗОВАТЕЛЬНЫХ КЛАСТЕРОВ КАК ВАЖНОЕ КОНКУРЕНТНОЕ ПРЕИМУЩЕСТВО НАЦИОНАЛЬНОЙ ЭКОНОМИКИ

В статье на основе работ ученых исследованы проблем в сфере образования в Украине. Определено, что с целью обеспечения

устойчивого развития экономики и ее конкурентоспособности необходимо осуществлять изменения требований к уровню и качеству образования путем дифференциации и индивидуализации подходов, в частности: формированием процессов образовательных кластеров в стране. Разработаны концептуальные положения образовательного кластера, в состав которых входят элементы: создание единого интеграционного образовательного пространства; образовательная модель, системная многоуровневая интеграция; вертикальная и горизонтальная структура взаимодействия с работодателем. Задачей каждого элемента является создание развитой образовательной системы многоуровневой подготовки специалиста в условиях кластера в соответствии с особенностями региональной экономической и социальной политики. Проведена характеристика функций органов управления образовательного кластера и выделены этапы формирования организационно-экономического механизма образовательного кластера. Проведена оценка эффективности образовательного кластера по таким аспектам: конкурентный, деловой, региональный, ресурсный, кооперационный. Определено, что повышение конкурентоспособности образовательных услуг сможет обеспечить развитие образовательных кластеров в Украине за счет определенных условий: системного развития отрасли образования и отдельных ее элементов: высшего, профессионально-технического, общего среднего, дошкольного образования; устранение внутренней конкуренции в образовательной среде; реализация принципов партнерства; повышение уровня централизации принятия управленческих решений по вопросам обеспечения соответствия спроса на определенные специальности и т. Доказано, что развитие образовательных кластеров является существенным конкурентным преимуществом национальной экономики Украины, которая способна влиять на формирование государственной политики в сфере образования.

Ключевые слова: национальная экономика; сфера образования; государственная политика; образовательные кластеры; органы управления; организационно-экономический механизм; оценка эффективности; конкурентное преимущество.

Стаття надійшла до редакції 13.04.2020 р.