

SECTION 1

INTERNATIONAL TRENDS IN THE DEVELOPMENT OF HIGHER EDUCATION SYSTEM

1.1. Innovative approaches to facilitating the interaction between research, science-intensive business and higher education as a factor improving the quality of education

Modernization of society, implementation of innovations and technologies cannot be considered out the context of staff training for the economy, and hence, education development overall. Despite the fact that quality of education in Ukraine has been proclaimed a national priority, many Ukrainian philosophers, educators, sociologists, psychologists, as well as economists studying educational processes, point out that there has not been any serious progress achieved in this area so far¹. In spite of all efforts, our education still remains detached from real life, sciences and business. The educational process is mostly reproductive. However, in recent years Ukraine has undergone fundamental changes in its search for a new, effective format of relations between science, the system of higher education and science-intensive businesses. Advanced educational practices are now introducing innovative models to provide interaction according to the so-called "knowledge triangle": research – education – business^{2, 3, 4, 5, 6, 7}.

An important place in the innovative activity of higher education institutions is taken by their interaction with employers. It should be noted that currently the relationship between higher education and the labor market is one of the most urgent problems in terms of further development of higher education.

The works of many scientists such as M. Voinarenko, S. Sokolenko, O. Papkovska, M. Porter, O. Romanovsky, L. Fedulova, J. Humphrey and others are devoted to the problems of formation, functioning and development of integrated research and production associations, innovation systems in various fields of

¹ Саух П. Ю. Сучасна освіта : портрет без прикрас : монографія. – Житомир : Вид-во ЖДУ ім. І. Франка, 2012. – 382.

² Єрмошенко М. М. Механізм розвитку інноваційного потенціалу кластерооб'єднаних підприємств : [моногр.] / М. М. Єрмошенко, Л. М. Ганнушак-Єфіменко. — К. : Національна академія управління, 2010. — 236 с.

³ Кузнецов С. В. Кластерный подход в модернизации региональных систем профессионального образования : [Текст] / С. В. Кузнецов, Л. Д. Толичева // Экономика и управление. — 2013. — № 3. — С. 59–63.

⁴ Національна стратегія розвитку освіти в Україні : [Текст] // Матеріали III Всеукраїнського з'їзду працівників освіти. — К. ; Чернівці : Букрек, 2011. — 400 с.

⁵ Романовський О. О. Феномен підприємництва в університетах світу : монографія / О. О. Романовський – Вінниця : Нова книга, 2012. – 504 с.

⁶ Соколенко С. І. Кластери в глобальній економіці. – К. : Логос, 2004. – 848 с.

⁷ Федулова Л. І. Економіка знань : підруч. / Л. І. Федулова ; НАН України ; Ін-т екон. та прогнозув. НАН України. – К, 2009. - 600 с.

economy. At the same time, a number of issues on the theory and methodology of cluster forming and functioning as a specific form of educational scientific-production and innovation-integrated structures organization are not studied enough. So far, the theoretical-conceptual and methodological apparatus of the problem under the study has not been sufficiently developed; the specific features and factors of the cluster formation in Ukraine have not been identified.

According to the results of the analysis, it has been established that in the conditions of contemporary society development, the main factor that determines the competitiveness of the state is growth of the degree of economy innovation. Moreover, this degree increase requires much more time, financial and organizational resources, institutional and structural changes than other factors of competitiveness. In addition, such growth occurs at all levels of the hierarchy of economic management, including the levels of business, education and science, which are the key links of the national innovative system. In the Analytical Report to the Annual Address of the President of Ukraine to the Supreme Council of Ukraine "On the Internal and External Situation of Ukraine in 2015", it is emphasized "any further development of science is possible only on the way of its convergence with education and entrepreneurship. The state policy in the scientific sphere should create conditions for encouraging active participation of business in financing innovative scientific developments and their implementation"⁸.

Innovations and information revolution require training of a person during his whole life, which in turn requires close cooperation and interaction of all parties. A determining factor in the country's economic growth is the creation and multiplication of human capital, the efficient use of labor force and human resources in all spheres of the economy.

In recent years, a complete link between the educational process and the practical activity has been lost, due to which the level and content of education ceased to meet the modern requirements of the economy and the tasks of ensuring the graduates' competitiveness in the labor market.

The aim of the research is the formation of innovative approaches ensuring the interaction of science with science-intensive business and higher education as factors improving the quality of education.

The following features can be traced among the main aspects of current changes, or "new combinations" according to Y. Shumpeter, which are now called innovations, in the modern development of the relationships between science, education and business⁹.

⁸ Про внутрішнє та зовнішнє становище України в 2015 році : Аналітична доповідь до Щорічного Послання Президента України до Верховної Ради України : [Текст]. — К. : НІСД, 2015. — 684 с.

⁹ Шумпетер Й. Теория экономического развития (Исследование предпринимательской прибыли, капитала, кредита, процента и цикла конъюнктуры): пер.с англ. — М.: Прогресс, 1982. — 455 с.

Firstly, it is the lack of sufficient practical knowledge, skills, experience, critical thinking and creative approach among the university graduates, as well as their disappointment with 'unclaimed' diplomas. This forces companies to spend money and time on retraining young professionals, 'bringing' graduates to the required level of competence. The best solution to the problem is partnership between education institutions and employers. The essence of the partnership is that university curricula should be developed jointly with business representatives, experts, academics in the sphere of education and labor. It will enable graduates to start their work immediately. Nowadays, it is not 'companization', but a systematic approach to a new format of the educational process in order to ensure training of a highly qualified expert who will possess a set of modern competencies. The competences required by an employer from an expert with higher education should be the basis for the modern education process.

Secondly, it is the realization that training and staff development is the main factor for business development. Managers of companies are beginning to show their interest in cooperation with higher education institutions, which deal not only with education but science as well. Such partnership provides universities with the opportunity to look at particular processes from another side, analyze strong and weak sides of the educational process. This is a very important and useful cooperation for the both sides under the slogan "While studying, we work, while working, we study". Young professionals should be ready today that they have to master new skills and abilities, develop themselves and study for the rest of their life.

Thirdly, the economy and technology are developing at an incredible speed now. One of the most important features of modern development that determines the need for modernization of education is connected with the fact that the period of technology updating is becoming shorter than the period of the corresponding staff training. There is a need for advance training, since programs for the development of new technology usually do not include the staff training.

Dynamic development of the market relations in the economy causes changes in the development of universities themselves and the need for continuous improvement of tasks and goals of the educational process, taking into account the needs of the state, industry, business and labor market. There must be a constant improvement of methods and techniques of highly professional specialists training based on modernization of the educational process and solving practical problems, which correspond to the modern model of the socio-economic environment development.

Employers, interested in skilled personnel, are ready to integrate into the system of education in a variety of ways, in particular by their presence in

supervisory boards of universities, curriculum development, participation in the development of professional standards, organization of practical training and support for vocational training. Their important task is the need to explain what kind of knowledge is necessary at practice, at the working place. The main forms of cooperation between education institutions and the business environment (employers) are the following:

- providing retraining of the teaching staff and internship of students at the enterprises;
- sponsorship in educational equipment upgrading;
- direct participation of experts in the training process – providing guest courses (training courses) for a chosen university;
- joint staff training programs within corporate training programs;
- participation of enterprises in the development of professional standards of education;
- formation of branch councils for the development of professional standards of education, which are based on competencies and determination of a real sectoral need in specialists of different specialties;
- formation of a mutual responsibility system in the “university – student – employer” chain, etc.

Implementation of these principles in the system of higher education in Ukraine will contribute to the achievement of the main goal – training of highly skilled professionals who will be competitive in the national, European and world labor markets³.

Fourthly, the training of creative, professionally competent and mobile specialists easily adapting to the specific market conditions is being actualized by the need to achieve common goals of business and education. As experience shows, the overwhelming majority of employers dream of an intelligent, competent, developed and creative expert. Analyzing the strategic objectives of the higher education system, one can be sure that the tasks of modern higher education are aimed directly at the development of these qualitative characteristics of the individual. Therefore, both the employer and the system of education are completely united in their goals. Thus, they can build a stable future only together, speaking ‘the same language’ and moving to a common goal. This provides the basis for a constructive dialogue between educators, academics and business. The cooperation programs, replacing the old practice of ‘chief relations’ should be the result of this dialogue. In higher education institutions, a desire to develop students' ability to creativity and generation of new knowledge must be formed.

However, in the conditions of financial instability and availability of various forms of ownership, the state is trying to put the solution to problems on employers-

owners, mistakenly believing that workers are mostly needed by private entrepreneurs. And the latter, according to government officials, should help education institutions update the material base, provide students with practical training and work, jointly develop training programs for specialists, etc. Such a wrong approach contradicts the practice, since the need for personnel comes from employers only when their industry is developing and not overlooked by the state.

Fifthly, a cluster is an innovative formation that unites science, higher education and business. In recent years, the concept of educational clusters is being actively introduced into the professional discourse in Ukraine^{6, 10}. This term has been long used in theory and practice, where clusters are understood as associations of business entities, which, as a rule, operate within a certain territory. By analogy with the economic cluster, the educational cluster is most often interpreted as a set of geographically localized interrelated vocational education institutions that carry out vocational training in the related occupations/professions and are connected with one another as well as with the industry employers.

Clusters promote the activation of innovation activities, the development of science and education. Clusters, as a form of cooperation of universities with enterprises and organizations of the region, give an opportunity to increase the efficiency of using the industrial, commercial, labor and investment potential of the participants and the region as a whole.

Usually, the main participants of clusters are enterprises and organizations of the corresponding profile, objects of the information and telecommunication structure, research and education institutions and organizations, enterprises associations, etc.

As part of a production cluster, education institutions are required to perform their economic function first and foremost – to prepare staff that meet the needs of employers, create "islands" of the labor force in the region with the necessary qualifications, focusing on the regional priorities of the innovative economy.

In addition to the personnel, the social function, connected with the cultural development of population, education of young people, its socialization, etc., is equally important.

As experience shows, an educational cluster functions not only as a voluntary association of organizations but also as an administrative structure with certain resources that can fulfill some of the important organizational functions such as:

- monitoring of the employers' needs, the state of the labor market;
- participation in the correction of educational programs;

¹⁰ Великий тлумачний словник сучасної української мови : [Текст] / уклад. і голов. ред. В. Т. Бусел. — К. ; Ірпінь : ВТФ «Перун», 2002. — 1440 с.

- organization of educational activities in accordance with the requirements of the quality management system;
- increasing the efficiency of educational activities on the basis of the integration of theoretical knowledge and innovative technologies;
- providing scientific-methodical seminars with participation of cluster subjects;
- development of the system of additional vocational education (retraining, advanced training, training of teachers at the basic enterprises, in foreign universities, etc.);
- providing joint events, conferences, business meetings and excursions, which will create the atmosphere of mutual cooperation;
- joint scientific research, developments, etc.

The following tasks are performed in the course of such interaction:

- joint mutually beneficial activity is carried out for the purpose of development and improvement of professional education;
- the infrastructure of universities, the relevant enterprise or organization is improved;
- mechanisms and tools for the interaction between the educational services market and the labor market are developed;
- access to the information in the labor market is simplified;
- accounting of employers' requirements for the training of specialists is provided;
- contacts for providing internship are expanded;
- opportunities for the teachers' internship for the purpose of becoming familiar with the latest equipment and technology in production are increasing;
- possibilities of graduates' employment are expanding;
- new joint commercial projects are launched in order to replenish the funds of higher education institutions.

The educational investment and technological cluster of the light industry in Kyiv with the participation of Kyiv City State Administration (KCSA) is an example of such interaction. The subject of the cluster agreement is formation of the educational investment and technological cluster of the light industry as an effective tool for the innovation development of its participants through a more effective use of scientific and investment potential.

KCSA, within the limits of the given powers, encourages investment attraction, provides information support to the events and projects under this agreement and involves the implementation of municipal target programs. In its turn, Kyiv National University of Technologies and Design is a source of knowledge and technology, provides appropriate scientific support for the cluster's activities, develops scientific,

innovative and educational projects on the basis of participating companies. The companies participating in the Cluster are implementing joint projects to obtain competitive advantages through the introduction of modern technology into production.

The company Chinbar PJSC, represented by the CEO Viktor Lischuk, made significant contribution into the formation of the cluster. The most science-intensive developments of the university scholars have been recently introduced at this enterprise¹¹.

The 'business-power-science' communication makes it possible to overcome the obstacles of the present day. Together with KCSA, Kyiv National University of Technologies and Design, Chinbar PJSC, the participants of the Cluster are: Scientific and Production Company "Hydrostyle" Ltd. (the CEO is O.G. Pivovar), Dana-moda Ltd. (the CEO is L.I. Ivanova), RA.DA Ltd. (the CEO is A.S. Prohorovsky), Cherkasy State Business College (Director is O.V. Kuklin), Ukrainian Footwear Alliance Ltd. (the CEO is H.V. Tyutyunnyk).

The cluster projects deal with the production of clothes and footwear for special purposes, personal armor protective equipment, special clothing for rescue and other kinds of work in water, increase of energy efficiency of the technological processes of leather, footwear, knitwear and sewing items production. Collaboration of enterprises participating in the cluster with the international business development programs is being developed (COSME, European Enterprise Network (EEN), HORIZON-2020, etc).

Today, the cluster approach is changing the emphasis in outlining the traditional tasks of higher education. For example, the correction of educational professional programs (EPP), existing contradictions between the content of education and the qualification requirements of employers.

Sixthly, in the field of higher education there is another direction of development of financial mechanisms for the functioning of universities, associated with the development of various types of partner structures and the implementation of joint commercial activity on their basis. This direction includes:

- creation of strategic associations (unions) with business partners;
- involvement of partners for the educational activities;
- creation of the internship base;
- involvement of partners for image projects of universities;
- creation of joint ventures or joint production activities on the partner's base;
- joint innovation activities, participation of specialists of higher education institutions in the partner's innovative projects;
- expert activity.

¹¹ Від Кожум'яки до кластера / Газ. Урядовий кур'єр, 2018. 14 липня 2016. С.7.

Most of the mentioned above is not related to the movement of financial flows and the direct financing of the university at the expense of the partner. However, all these projects can affect both the growth of additional funding for universities and the motivation of partners to participate in funding projects of higher education institutions. The most attractive direction of partner structures creating is connected with the development of strategic alliances. This structure may include one or several interrelated higher education institutions in the region, large enterprises operating in a strategically important field of professional activity, and other territorial organizations that can influence the quality of university graduates training and the formation of the necessary strategic business partners of graduates' competencies.

The creation of university endowment funds¹² and the use of fundraising technologies are closely linked to the partner structures established by higher education institutions. The endowment fund is actually a special university fund, formed at the expense of its partner organizations. The university has no right to manage this fund at its own discretion³. Endowment means are transferred to the management company in order to receive the return on investment, from which certain university projects are funded.

Fundraising is the art of attracting funds from like-minded people of the institution of the public sector of the economy. At this time, the fundraising procedure is carried out in the form of technology that has key stages, its regularities and methods of implementation. As a result of applying fundraising technology, the university is able not only to accumulate additional financial resources to ensure its current activities and specific activities, but also to demonstrate its value for a society or a specific economic sphere to its potential sponsors and, more importantly, to potential partners. Thus, as a result of the proper application of fundraising technology, universities can create a stable partner structure, which will continue to bring it additional financial resources¹³.

In the context of modernization and formation of an innovative economy in Ukraine, scientific research in universities must be intensified. Integration in practice means the association of two or more entities in order to realize the scientific, educational and industrial potential of each of the community members.

The idea of education, science and production integration is not new. In the twentieth century, the Soviet Union had gained considerable experience in integrating education and production ("plant-vtuz" system), as well as education and science ("fizteh" system). A retrospective analysis of the peculiarities of education, science and production integration suggests that today in Ukraine various organizational forms of this integration have been developed: technoparks, departments at

¹² Про вищу освіту: Закон України: [офіц. текст]. — К. : ПАЛИВОДА А. В., 2014. — 100 с.

¹³ Куц С. Фандрейзинг АВС: Посібник для початківців. - Київ: Центр філантропії, 2008.

enterprises, integrated educational and scientific-educational complexes, university complexes (business incubators, transfer centers and commercialization of technologies, etc.). The integration of education, science and business is voluntary. Of the three integration partners, education is seen as a key element to influence the integration.

A good example of cooperation in the strategic partnership of education and business and cluster-based interaction is cooperation of KNUTD and Volodarka PJSC (headed by L.T. Havrysh). The improvement of internal economic integration and increase of the participants' competitiveness in specific market processes are based on a strategic partnership, the real result of which is the creation of a modern students' educational and scientific center Express Atelier at the university ¹⁴ [9]. A comfortable environment for the development of innovations has been created at the centre, students' ideas and intentions are being implemented, it is a source of additional funds, promotes the social status of employees, supports the image of both partners in the partnership.

In the recent years, the relationships between higher education institutions, the market and the state are changing in favor of the market. The development of the modern educational services market to a large extent depends on building up a variety of "political relations". One of the most relevant approaches to solving such relationships is to ensure the interaction of education institutions with knowledge-intensive business as a factor improving the quality of education.

The multifaceted cooperation of universities with industrial enterprises promotes modernization and increase of participants' competitiveness due to ensuring the rational use of production, resource, scientific and educational potential.

1.2. Some education issues of Ukraine

To become an integral part of transition process to a more sustainable world people need to be equipped with particular values, knowledge and skills. The Economic Commission for Europe (Evaluation report UNECE 2016 – further the Evaluation report) recognized education¹⁵ as crucial in supporting and influencing this process. Since appreciation of education initiatives increases, education systems are responsible to shape human capital so that we are able to react to challenges in economic, environmental and social spheres. The Evaluation report reads the following: "Full integration of sustainable development knowledge, abilities and

¹⁴ Офіційний сайт Київського національного університету технологій та дизайну. [Електронний ресурс] : Режим доступу : <http://knutd.com.ua/>.

¹⁵ Ten years of the UNECE Strategy for Education for Sustainable Development. Evaluation report on the implementation of the UNECE Strategy for Education for Sustainable Development from 2005 to 2015 United Nations Economic Commission for Europe. New York and Geneva, 2016 URL: https://www.unece.org/fileadmin/DAM/env/esd/ESD_Publications/10_years_UNECE_Strategy_for_ESD.pdf