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TO THE QUESTION OF INTEGRATION PROCESSES IMPROVING IN THE SPHERE OF EDUCATION OF KAZAKHSTAN





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В настоящее время интеграционные процессы в системе высшего образования являются первоочередными. Кроме того, они считаются одной из наиболее эффективных форм трансформации образования с целью повышения качества и более полного удовлетворения потребностей развития экономики и общества в целом. В данной статье изложены основные аспекты интеграционных процессов в системе высшего образования Казахстана.

At present, integration processes in the system of higher education are of top priority. Besides, they are considered to be one of the most effective transformation forms. This article outlines the main aspects of integration processes in the system of higher education in Kazakhstan.

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The education systems of the CIS countries, which have a single historical root, have acquired national features over the years of reforming the education system in different countries. Only close cooperation of modern universities in the direction of developing joint educational programs, the exchange of experience and the application of an innovative laboratory base in the educational process will ensure a significant improvement in the quality of education and the release of specialists in demand in a competitive labor market.

Distinctive features of the education systems of different countries consist in varying degrees of flexibility and variation in training; integration with industrial and financial corporations; introduction of market mechanisms; centralization and autonomy of educational institutions, their diversity in size, functions, curricula, sources of funding, management forms, academic standards; concentration and distribution of educational institutions in the country, the proportion of independent work of trainees in the total amount of academic hours. However, these signs and tendencies in the development of national systems of professional education do not interfere with international integration in education, as a result of the development and deepening of the process of internationalization and bringing it to the level of integration of national educational systems [1].

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In the Republic of Kazakhstan, within the framework of the State Program for Industrial and Innovative Development (SPIID) for 2015-2019, 14 priority sectors for 6 branches of the manufacturing industry (metallurgy, chemistry, petrochemistry, machine building, construction, materials science, food industry), as well as innovative sectors (mobile and multimedia technologies, nano- and space technologies, robotics, genetic engineering, search and discovery of future energy) [2]. It is on this basis that it is planned to reduce the gap between education and science, to ensure the inflow of talented youth into these spheres, to increase the effectiveness of scientific research and the quality of educational programs.

In 2015-2016 academic year, ENU began training specialists in two educational programs of the profile magistracy: "Innovative technologies for the production of building materials, products, structures and construction" and "Space technique and technologies" of the relevant specialties.

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Long-term agreements have been concluded with large enterprises and industrial associations, such as «Казахстан ГарышСанаары», LLP «Маусвар», «Байконур», LLP «Галам»; branches of the departments are established, joint laboratories and educational centers are functioning.

Currently, the system of higher education is characterized by profound transformations in the organizational and managerial field.

As an organizational model, the option was chosen for creating educational and production innovation complexes that provide a continuous cycle of training specialists. The model makes it possible to achieve the most developed links between a higher educational institution and an enterprise. Participation of university teachers in such activities enriches them with new methodological ideas, stimulates the creation of new pedagogical technologies, more attention is paid to linking the content of courses with real production. The student becomes an active participant in the learning process, acquires experience in solving real production problems, working in a team, responsibility for the decisions made.

The "Space technique and technology" department is actively working on the development of creative cooperation with leading foreign universities on the project "Development of two cycle innovative curricula in microelectronic engineering (DOCMEN)".

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Financing and support of the whole project activity is carried out within the framework of the European Union program "ERASMUS + Program - Capacity Building in Higher Education" to support cooperation in the field of education and vocational training in order to modernize the educational process in the field of microelectronics in the universities of Kazakhstan, Armenia and Israel by sharing experiences with the technical universities of Germany, Italy, Poland and Bulgaria in accordance with the provisions of the Bologna Process.

The project is designed for 36 months and provides for the partnership of 16 universities and intermediary partners from relevant fields (Table 1).

Within the framework of the project, a research team was formed on the basis of the department, based on the questionnaire of employers and students, analysis of methodological materials of foreign teachers, developed new teaching and methodological complexes in 30 special disciplines of bachelor's and master's degree programs in the specialty "Space technique and technology".

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	Project participants	Universities
1	European countries	Cracow University of Technology (Poland), Technische Universität Berlin (Germany) Technical University of Sofia (Bulgaria), Politecnico di Torino (Italy)
2	Republic of Kazakhstan	L.N.Gumilyov ENU, Shakarim State University, Caspian University, M.Kozybaev North Kazakhstan State University
3	Armenia	Yerevan State University, National Polytechnic University, Gavar State University, European University
4	Israel	Azrieli College of Engineering Jerusalem, Bar-Ilan University, Sami Shamoon College of Engineering, Holon Institute of Technology
5	intermediary partners from the relevant sphere	joint-stock company «Национальный центр космических исследований и технологий» of the Republic of Kazakhstan, Armenia, Israel, ECMSpace company (Germany)

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Leading teachers of the department in accordance with the program of academic mobility of this project passed training on the basis of related departments of leading European universities on the topics "Nanocoatings and nanostructures - theory and practice" of the leading scientists of the Technical University of Sofia, conducted practical classes in microelectronics training laboratories, got acquainted with the technological process of sensors production in the scientific and technological park "AMG Technology" (Botevgrad). Also, lecturers attended lectures on the topics "Design of BIO / CMOS interfaces", "Nanoelectronics and photonics", "Applications of the Internet of things and data management" at the Polytechnic University of Turin, got acquainted with the achievements of scientific laboratories.

During the training period in Italy, the teachers visited enterprises specializing in microelectronic engineering. At the Technical University of Krakow, practical and laboratory classes were attended in educational laboratories for microelectronics, technologies for the use of alternative energy sources, as well as in a number of other laboratories for students of engineering specialties.

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Specialists from European Union universities conducted lectures, laboratory classes at universities of Kazakhstan, Armenia and Israel and in turn universities from these countries began organizational work on the academic mobility of their teachers in the EU countries. So, the head of the department of space technology and technology, professor D.S. Yergaliyev, in 2017, conducted a master class at the Berlin Technical University.

In June 2017, ENU hosted the first Republican scientific and methodological seminar on the exchange of experience in the development and implementation of innovative educational programs for SPIID-2, where representatives of 11 universities came to Astana, exchanged opinions, shared colleagues and difficulties encountered. In order to ensure the quality of master's projects, innovation and practical orientation in the performance of master's graduation works, as well as for the further development of the processes of integrating science with the manufacturing sector, on November 23-24, 2017 in Astana, the II Republican Scientific and Practical Work Shop "Energy of young people for industrial and innovative development of Kazakhstan" was at a high level. 75 candidates from 5 Kazakhstan universities were represented.

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As part of the project, a new MicLab microelectronics laboratory was opened at the Department of Space Technique and Technology, which was equipped with the financial resources of the project with computer equipment and new educational laboratory facilities: Industrial Sensors for Process Information, Microcontrollers and Microprocessor Technology, "Study of a personal computer," "Digital and microprocessor technology". The laboratories are equipped with unique equipment that makes it possible to use it in interdisciplinary fields of science.

The space industry is a rich field of activity, and the university would like to present a broader line of training. In addition to "Remote sensing of the Earth", there are launching complexes, launch vehicles, infrastructure of the cosmodrome - that's why I would like to train specialists, but I do not have enough forces and means. And, first of all, there is a shortage of qualified personnel, because it is necessary to create certain conditions for attracting a specialist from the same Berlin Technical University or a domestic teacher.

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CONCLUSIONS.

To modernize the educational process, depending on the model of the program, effectively involve university and employers' partners in the development of topics of training projects and final qualification works, and also enhance the individualization of training in the master's program.

1. Development and implementation of the strategy of internationalization of educational and scientific activities of the University to ensure the development of international academic ties, links to the international labor market, improve the quality of education and research, create an environment for the commercialization of results.

2. Expansion of the network of scientific and educational associations in the form of legal entities or on a contractual basis for the implementation of educational programs and/or scientific research. These include, for example, a variety of centers of excellence (centers of excellence) created by combining the most productive university, academic and industry research teams with the provision of the necessary resources and financed on a competitive basis.

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3. Expanding the practice of joint participation of research institutes and universities in competitions for grants and research and development orders, in publishing, awarding joint fellowships, international programs and projects; the organization of joint scientific councils in the scientific fields, specialized councils for awarding academic degrees on the basis of research institutes and universities.

4. Creation, development and priority support of the network of leading research universities as the largest scientific and educational organizations. According to world experience, universities that provide the interconnection of the values of fundamental education and the opportunities for flexible meeting of the needs in personnel for promising scientific directions and science-intensive technologies.

5. Integration as an organizational and economic process means, first of all, uniting the resources of the scientific and educational complexes, including their innovative potentials, to obtain socio-economic and commercial effects. This suggests that the state will stimulate the development of both simple and more advanced forms of it.

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The movement in these and other areas will contribute to the creation of a balanced scientific and educational complex in Kazakhstan that will ensure the solution of the most important social and economic tasks facing our country. The course on supporting integration is a real chance for the RK to overcome the long-term stagnation of domestic science and education and to achieve what is so necessary for their development - mutual understanding and cooperation.

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Thank you for attention!

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