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<https://doi.org/10.48081/TYPA1256>**R. B. Seksenbaeva, A. Ye. Zhakupova, D. M. Kalmanova**L. N. Gumilyov Eurasian National University,
Republic of Kazakhstan, Nur-Sultan**INTEGRATION PROCESSES IN THE SYSTEM OF HIGHER
EDUCATION OF THE REPUBLIC OF KAZAKHSTAN**

The article discusses the integration processes in the system of higher education, which are currently the priority. The integration processes of education, science and production are the joint use of the capabilities of educational, scientific and industrial organizations in mutual interests. Integration processes cover a wide range of different activities and are manifested in a wide variety of forms. In addition, they are considered one of the most effective forms of transformation. We also set out the main aspects of integration processes in the higher education system of Kazakhstan on the example of the Eurasian National University, namely the Department of «Space technology». As an organizational model, the option of creating educational and industrial innovative complexes, which provide a continuous cycle of training of specialists, was chosen. The model allows to reach the most developed relations of higher educational institution and the enterprise. In conclusion, several key and most promising areas of integration development are listed.

Keywords: integration processes, education system, higher education.

Introduction

Although the education systems of the CIS countries have a single historical root, over the years of reforming the education system in different countries have acquired national characteristics. Only close cooperation of modern universities in the development of joint educational programs, exchange of experience and the use of innovative laboratory facilities in the educational process will provide a significant increase in the quality of education and the release of specialists in demand in the competitive labor market.

Distinctive features of educational systems of different countries consist in various degree of flexibility and variability of training; integration with industrial and financial corporations; introduction of market mechanisms; centralization and

autonomy of educational institutions, their variety in the sizes, functions, curricula, sources of financing, forms of management, educational norms; concentration and distribution of educational institutions on the country, a share of independent work of trained in total volume of educational hours. However, these signs and trends in the development of national vocational education systems do not prevent us from considering international integration in education as a result of the development and deepening of the internationalization process and bringing it to the level of integration of national educational systems [1].

Materials and methods. In the Republic of Kazakhstan in the framework of the State program of industrial-innovative development (SPIID) for 2015–2019 identified 14 priority sectors in 6 manufacturing sectors (metallurgy, chemistry, petrochemistry, mechanical engineering, construction materials, food industry) and innovative sectors (industry of mobile and multimedia technologies, nano- and space technologies, robotics, genetic engineering, search and discovery of future energy) [2]. It is on its basis that it is planned to reduce the gap between education and science, to ensure the influx of talented young people into these areas, to increase the efficiency of scientific research and the quality of educational programs.

In the 2015–2016 academic year of Gumilyov Eurasian National University started training on two educational programs of the profile magistracy: «Innovative technologies of production of building materials, products, designs and construction» and «Space engineering and technologies» of the corresponding specialties.

Long-term agreements have been signed with large enterprises and industrial associations such as «Kazakhstan Garysh Sapary», «Mashsvar» LLP, «Baikonur» complex, «Galam» LLP, branches of departments, joint laboratories and educational centers have been created and developed. Targeted training gives the company the opportunity to replenish the personnel potential of young professionals with professional skills and abilities that meet the requirements of the enterprise, have a corporate culture, ready without a long adaptation period to join the process of production management.

At present, the system of higher education is characterized by profound transformations in the organizational and managerial field. Radical changes in this area are focused on updating the regulatory framework of educational institutions and the conditions for their implementation in order to ensure the self-realization of students, creating a single educational space, providing state guarantees of the quality of education [3].

As an organizational model, the option of creating educational and industrial innovative complexes, which provide a continuous cycle of training of specialists,

was chosen. The model allows to reach the most developed relations of higher educational institution and the 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 the connection of 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 decisions.

Active work on the development of creative cooperation with leading foreign universities is carried out by the Department of «Space engineering and technology» under the project «Development of a two-level innovative program for microelectronic engineering (DOCMEN)».

Funding and support for all project activities is carried out within the framework of the European Union «ERASMUS+ program-Capacity building And Higher Education» program to support cooperation in the field of education and vocational training in order to modernize the educational process in the field of microelectronics at universities in Kazakhstan, Armenia and Israel by exchanging experiences with technical universities in Germany, Italy, Poland and Bulgaria in accordance with the provisions of the Bologna process.

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

Results and discussion. In the framework of the project, the Department formed a research team on the basis of the survey of employers and students, analysis of teaching materials international faculty, developed new educational-methodical complexes on special subjects 30 undergraduate and graduate educational programs of the specialty «Space engineering and technology».

Table 1 – participants of the project «DOCMEN»

	Project participant	University
1	European country	Poland, Germany, Bulgaria, Italy
2	Republic of Kazakhstan	L. Gumilyov Eurasian national University, Shakarim State University, «Caspian public University», M. Kozybaev North Kazakhstan state University.
3	Armenia	Yerevan State University, national Polytechnic University, Gavar State University
4	Intermediary partners from the relevant field	Joint stock company «national center for space research and technology» (RK), Armenia, Israel, ESM company (Germany)

Leading teachers of the Department in accordance with the program of academic mobility of this project have been trained on the basis of related departments of leading European universities on the topics «Nanocoatings and nanostructures-theory and practice» of leading scientists of the Technical University of Sofia, conducted practical classes in educational laboratories on microelectronics, got acquainted with the technological process of sensor production in the scientific and technological Park «AMG Technology» (Botevgrad). Also, the teachers attended lectures on «BIO / CMOS interface Design», «Nanoelectronics and Photonics», «Internet of things Applications and data management» at the Polytechnic University of Turin, got acquainted with the achievements of scientific laboratories.

During the period of training in Italy, the teachers visited the enterprises specializing in microelectronic engineering. In Krakow technical University we attended practical and laboratory classes in educational laboratories on microelectronics, technologies of using alternative energy sources, as well as in a number of other laboratories for students of engineering specialties. Specialists from universities of the European Union conducted lectures, laboratory classes in 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.

It is time to rethink the experience gained, and the ENU is constantly taking initiatives to conduct a number of events of national scale. Thus, in June 2017, the UNIVERSITY held the first Republican scientific and methodological seminar on the exchange of experience in the development and implementation of innovative educational programs for SPIID-2, when representatives of 11 universities arrived in Astana, they exchanged views, shared their colleagues and the difficulties they have to face. In order to ensure the quality of master's projects, innovation and practice-oriented in the implementation of graduate works by undergraduates, as well as for the further development of the integration of science with the production sector on November 23-24, 2017 in Astana on the basis of Gumilyov Eurasian National University the work of the II Republican scientific and practical Workshop «Energy of young people for industrial and innovative development of Kazakhstan» was held at a high level. Projects of 75 candidates from 5 Kazakhstan universities were presented.

As part of the project, a new microelectronics laboratory MicLab was opened at the Department of «Space engineering and technology», which was equipped with computer equipment and new educational laboratory facilities at the expense of the project funds: «Industrial sensors of technological information», «Microcontrollers and microprocessor technology», «Study of a personal computer», «Digital and microprocessor technology». The laboratories are equipped with unique equipment that allows its use in interdisciplinary fields of science.

The space industry is a rich field of activity, and the University would like to present a wider range of training. In addition to «Remote sensing of the Earth», there are launch complexes, launch vehicles, the infrastructure of the cosmodrome - that's what I would like to train specialists for, but the forces and means are not enough. First of all, there is a lack of qualified personnel, because certain conditions need to be created to attract a specialist from the same technical University of Berlin or a domestic teacher.

Conclusion

To modernize the educational process, depending on the model of the program, it is effective to involve University partners and employers in the development of project themes and final qualifying works, participation in the state final, as well as to strengthen the individualization of training in the magistracy. Let us list a few key and, as it seems to us, the most promising areas for the development of integration, adequate to this approach.

1 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 research. These include, for example, a variety of centres of excellence (centres of excellence), created by bringing together the most productive University, academic and industry research teams with the necessary resources and funded on a competitive basis.

2 Expanding the practice of joint participation of research institutes and universities in competitions for grants and orders for research and development, publishing, awarding joint scholarships, international programs and projects; organization of joint scientific councils in scientific areas, specialized councils for awarding degrees on the basis of research institutes and universities. This will create an environment favorable for any integration initiatives in the scientific and educational community.

3 Creation, development and priority support of a network of leading research universities as the largest scientific and educational organizations. As the world experience shows, such universities provide interrelation of values of fundamental education and possibilities of flexible satisfaction of requirements in shots on perspective scientific directions and high technologies.

4 Integration as an organizational and economic process means, first of all, combining the resources of scientific and educational complexes, including their innovative potentials, to obtain socio-economic and commercial effects. This implies that the state will stimulate the development of both simple and more advanced forms of it. These include, in particular, innovation consortia that unite universities, research organizations, enterprises and, possibly, financial institutions, with the subsequent formation of sustainable innovation clusters on this basis.

The movement in these and other directions will contribute to the creation of a balanced scientific and educational complex in Kazakhstan, ensuring the solution of the most important socio-economic problems facing our country. The policy to support integration is a real chance for Kazakhstan to overcome the long-term stagnation of domestic science and education and achieve what is so necessary for their development – mutual understanding and cooperation.

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Р. Б. Сексенбаева, А. Е. Жақупова, Д. М. Калманова

Қазақстан Республикасының жоғары білім беру жүйесіндегі интеграциялық үдерістер

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Р. Б. Сексенбаева, А. Е. Жақупова, Д. М. Қалманова

Интеграционные процессы в системе высшего образования Республики Казахстан

Евразийский национальный университет имени Л. Н. Гумилева,
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Мақалада бүгінгі күні бірінші кезектегі жоғары білім беру жүйесіндегі интеграциялық үдерістер қарастырылады. Білім, ғылым және өндірістің интеграциялық процестері – бұл білім беру, ғылыми және өндірістік ұйымдардың мүмкіндіктерін өзара мүдделер үшін бірлесіп пайдалану. Интеграциялық процестер әртүрлі қызметтің кең спектрін қамтиды және әртүрлі формада көрінеді. Сонымен қатар, олар трансформацияның ең тиімді формаларының бірі болып саналады. Сонымен қатар, біз Еуразиялық ұлттық университет, атап айтқанда «Ғарыштық техника және технологиялар» кафедрасының мысалында Қазақстанның жоғары білім беру жүйесіндегі интеграциялық үдерістердің негізгі аспектілерін баяндаймыз. Ұйымдастыру үлгісі ретінде мамандарды дайындаудың үздіксіз циклін қамтамасыз ететін білім беру – өндірістік инновациялық кешендерін құру нұсқасы таңдалды. Модель жоғары оқу орны мен кәсіпорынның негүрлым дамыған байланыстарына қол жеткізуге мүмкіндік береді. Қорытындыда интеграцияны дамытудың бірнеше негізгі және негүрлым перспективалы бағыттары атап өтілді.

Кілтті сөздер: интеграциялық процестер, білім беру жүйесі, жоғары білім.

В статье рассматриваются интеграционные процессы в системе высшего образования, которые на сегодняшний день являются первоочередными. Интеграция образования, науки и производства – это совместное использование потенциала образовательных, научных и производственных организаций во взаимных интересах. Данные интеграционные процессы охватывают широкий спектр различных направлений деятельности и проявляются в самых разнообразных формах. Кроме того, они считаются одной из наиболее эффективных форм трансформации. Также нами изложены основные аспекты интеграционных процессов в системе высшего образования Казахстана на примере Евразийского

национального университета, а именно кафедры «Космическая техника и технологии». В качестве организационной модели выбран вариант создания образовательно-производственных инновационных комплексов, которые обеспечивают непрерывный цикл подготовки специалистов. Модель позволяет достичь наиболее развитых связей высшего учебного заведения и предприятия. В заключении перечислены несколько ключевых и наиболее перспективных направлений развития интеграции.

Ключевые слова: интеграционные процессы, система образования, высшее образование.

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Торайғыров университеті

140008, Павлодар қ., Ломов к., 64, 137 каб.

«Toraighyrov University» баспасы

Торайғыров университеті

140008, Павлодар қ., Ломов к., 64, 137 каб.

8 (7182) 67-36-69

e-mail: kereku@tou.edu.kz

www.vestnik.tou.edu.kz