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WP2: Enhancing Entrepreneurship Education and Skills Development

D 2.1 Report on status quo on entrepreneurship education, labour market requirements and knowledge/skills mismatches

L.N. Gumilyov Eurasian National University
Kazakhstan

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Table of Contents

1. Introduction 4

2. Overview of current offer in entrepreneurship education at the HEI 6

2.1. Existing entrepreneurship education offer at BA level 7

2.2. Existing entrepreneurship education offer at MA level 8

2.3. Existing entrepreneurship education offer at PhD level 9

2.4. Other activities in entrepreneurship education 9

2.5. National/institutional regulations to implement changes at the course level and to initiate new extra-curricular activities 11

3. Results of the HEInnovate self-assessment for the dimension “Entrepreneurial Teaching and Learning” and “Preparing and Supporting Entrepreneurs” 13

3.1. Dimension “Entrepreneurial Teaching and Learning” 13

3.2. Dimension “Preparing and Supporting Entrepreneurs” 14

4. In-depth survey (employers, alumni) 16

4.1. Dimension “Ideas” 17

4.2. Dimension “Resources” 18

4.3. Dimension “Actions” 20

4.4. Dimension “Digital Skills” 21

4.5. Dimension “Financial Skills” 22

4.6. Dimension “Marketing” 23

4.7. Dimension “Innovation management” 24

5. Identified gaps and skills mismatches 25

6. Conclusions: Steps to further develop entrepreneurship education at the university 29

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1. Introduction

The present report provides an overview of the status quo of entrepreneurship education at L. Gumilyov Eurasian National University in Kazakhstan and aims to identify related labour market requirements and possible knowledge/skills mismatches of university graduates. The report was developed as part of Work Package 2 on "Enhancing Entrepreneurship Education and Skills Development" (WP2) of the Erasmus+ Capacity Building in Higher Education Project "Triggering innovative approaches and entrepreneurial skills for students through creating conditions for graduate's employability in Central Asia" (TRIGGER).

The report first provides an overview of the current offer in entrepreneurship education at the university. Second, relevant results of an HEI self-assessment are provided which was conducted based on the HEInnovate[1] tool in WP1.[2] For the requirements of WP2 the present report specifically looks at the self-assessment findings of the university for the HEInnovate dimensions "Entrepreneurial Teaching and Learning" and "Preparing and Supporting Entrepreneurs".[3] Third, results of a survey among employers and graduates are provided to identify labour market qualification requirements and possible skills mismatches for graduates in the field of entrepreneurial skills. The survey was implemented by the university in spring 2021 as part of WP2. Fourth, a summarizing discussion of the identified gaps and skills mismatches is provided. In sum, the mentioned aspects allow for comprehensive audit of the state of entrepreneurship education at the university. Finally, conclusions for the further development of entrepreneurship education at the university are derived.

Before digging deeper into the status of entrepreneurship education at the university, this section closes with a summary on the notion of entrepreneurship education as adopted in the TRIGGER project:

- **Entrepreneurship Education** (EE) seeks to provide students with knowledge, skills and motivation to create ideas in entrepreneurial action in different environments, both as self-employed entrepreneur and as employee in established organisations (EC 2015, Lackéus et al. 2020).

[1] For further details see: https://heinnovate.eu/en
[2] For further detail see Deliverable 1.1 on "The Methodology for the Analyses of HEI preparedness for future challenges" of Work Package 1.
[3] For further results of the self-assessment along all 8 HEInnovate dimensions see Deliverable 1.2 "The Report on HEI preparedness for future challenges in CA countries" of Work Package 1.

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- **Entrepreneurship** is a key competence for all learners, supporting personal development; active citizenship; social inclusion and employability (see European Commission et al. 2016: 21).
- **Organizational change** of HEIs is needed, since „the capacity to implement the entrepreneurship and innovation agenda depends on the governance arrangements, organisational capacity and the institutional culture of HEIs as well as characteristics of the surrounding economy“ (OECD 2019: 12).

The Eurasian National University is one of the leading classical universities in Kazakhstan. The educational policy of the university is aimed at training specialists with the knowledge and skills (including self-education skills) necessary for the production of new knowledge, technologies, goods and services that are competitive in the world labor market. ENU them. L.N. Gumilyov offers educational programs in the most popular areas today - technical, economic, natural science, and humanitarian. Training is only full-time. Training profiles differ depending on the faculty.

ENU includes 28 scientific institutions (research institutes, laboratories, centers), 13 faculties, the Institute of Continuing Education and Advanced Training, a military department, cultural and educational centers of various states. The system of training specialists at the Eurasian National University is conducted at 3 levels of education: higher basic education (bachelor's degree), master's and doctoral studies. The university prepares specialists in 65 specialties of bachelor's degree, 68 - magistracy and 38 - doctoral studies. Educational activities at ENU. LN Gumilyova is conducted according to a three-level training system: bachelor's - master's - doctoral PhD in Russian and Kazakh languages only on a full-time basis, which allows to ensure a high quality of education.

Within the framework of the development strategy of L. Gumilyov ENU, great attention is paid to the issues of instilling entrepreneurial education among graduates. In the direction of the development of entrepreneurial education, the university is conducting systematic work. In 2016, top managers and heads of structural divisions of the ENU completed training in the areas of "Entrepreneurial university" and "Research university". Teachers of the Faculty of Economics underwent advanced training at the Damu Fund (Entrepreneurship Support Fund).

Teaching entrepreneurial skills within the curriculum is conducted at the Department of Economics and Entrepreneurship. The teachers of the department have developed disciplines in entrepreneurship and business for Bachelor's and Master's degrees. Classes are conducted in three languages Kazakh, Russian and English. In the 2016-2017 academic year, the discipline "Foundation of Entrepreneurship" was implemented for bachelor students of all faculties.

The School of Entrepreneurship operates at the Faculty of Economics, where students can gain additional knowledge on entrepreneurship and business, meetings are organized with company

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leaders, young businessmen, club members take part in competitions at the institutional, regional and national level, are participants in business projects, etc.

Within the framework of the Erasmus + project CACTLE at the ENU in 2018was opened The Entrepreneurship Center, the activities of the center are aimed at developing students' entrepreneurial skills, entrepreneurial thinking, through training, helping in generating business ideas, providing advisory support to ENU start-up teams, help in developing business plans. The center helps in the professionalization of teachers, through courses and provides training for the company's employees. The center is actively developing international cooperation in the direction of entrepreneurial education, expanding ties in the Central Asian region and developing partnerships with universities in Europe and the United States. The new direction of the Center is to assist in the development of entrepreneurial skills among students of creative specialties.

Since 2017, at the ENU was opened Business Incubator to support the business initiatives of university students. To date, 12 residents (start-up teams) are accommodated in the business incubator, based on a bi start-up team can be from 1 to 2 years while receiving consulting support from the bi and the center of entrepreneurship. There are quite successful examples of student start-up projects that continue to develop and grow their business after a period of incubation at the university.

2. Overview of current offer in entrepreneurship education at the ENU

This section provides an overview of the status quo of entrepreneurship education at the university, looking at BA, MA, and PhD levels.

Analysis of entrepreneurial education programs at the bachelor and master's level. The analysis shows:

- significant heterogeneity of the implemented entrepreneurial education programs from the point of view of the balance of “hard” and “soft” skills;
- the prevalence of "hard" skills, which is in contrast to the general trends in the development of entrepreneurial education and the growing role of "soft" skills, noted by researchers and experts;
- limited scope of implementation of entrepreneurial education programs, underdevelopment of trajectories of entrepreneurial education in the segment of natural science, social and technical areas of training

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2.1. Existing entrepreneurship education offer at BA level

Entrepreneurship and business The course "Entrepreneurship and Business" through theoretical, scientific and practical knowledge will help to form students' readiness for entrepreneurial activity and for organizing a business. The discipline presents a systematization of regulatory, economic, organizational and managerial knowledge on the establishment, managing entrepreneurship and business, which will become the basis for the development of entrepreneurial thinking for solving specific problems and business situations.

State regulation of entrepreneurial activity *(Economics of Entrepreneurship and Business)* - Goals are to ensure the safety of goods, works, services for the life and health of people produced and sold by a business entity, protection of their legitimate interests, safety for the environment, national security of the Republic of Kazakhstan, protection of the state property interests.

Innovative entrepreneurship *(Management)* - Innovative entrepreneurship is a special innovative process of creating something new, a management process based on a constant search for new opportunities, an orientation towards innovation. It is associated with the entrepreneur's willingness to take on the entire risk of implementing a new project or improving an existing one, as well as the resulting financial, moral and social responsibility.

Engineering and reengineering in entrepreneurship *(Economics of Entrepreneurship and Business)* - Reengineering is an innovative process aimed at redesigning a business to achieve significant, incremental improvements in an enterprise's performance.

Basics of individual entrepreneurship *(Economics of Entrepreneurship and Business)* - The meaning of the individual entrepreneurship and the entrepreneur essence changed with the emergence of commodity-market relations pace, the development of exchange, the manufacture of various goods and the distribution of goods and services; the development of scientific and technological progress also plays an important role.

Fundamentals of Educational Entrepreneurship *(Social pedagogy and self-knowledge)* - aims to form entrepreneurial culture of students, the formation of an orientation towards practical skills, on the ability to apply knowledge, to implement their own projects in entrepreneurial activity.

Entrepreneurial law *(State audit)* - The legal foundations of entrepreneurial activity are the preferred academic discipline for students specializing in state audit, since they are a branch of business law that regulates activities related to commodity-money, property and personal non-property relations in society.

Entrepreneurship *(Economics)* - theory and practice of entrepreneurship as a system of economic, organizational and legal relations of entrepreneurial structures.

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Forms and methods of protecting the rights of business entities *(Jurisprudence)* - The course involves the study of methods and forms of protecting the rights of entrepreneurs, normatively established measures (mechanisms) for the restoration or recognition of violated or contested rights and interests of their owners, within the legally defined boundaries. Substantive and procedural measures for the restoration of violated rights enshrined in law. Application of legal liability measures to violators, as well as a mechanism for the practical implementation of these measures.

Small and medium enterprises economy *(Economics of Entrepreneurship and Business)* - The economy of small and medium enterprises is stimulation of economic growth, which is one of the most important tasks of the economic policy of any country, since economic growth contributes to an increase in the well-being of the population. Small and medium enterprises are one of the factors of economic growth. The role of small and medium enterprises is irreplaceable in solving the most pressing economic and social problems. Without requiring significant costs from the state, small and medium enterprises contribute to the formation of a "healthy" competitive environment, the establishment of market equilibrium, the creation of new jobs, the formation of a middle class, and satisfaction of various needs of the population, which ultimately leads to sustainable economic growth.

All disciplines given in this section implemented based on different faculties and specialties: *Economics of Entrepreneurship and Business, Management, Social pedagogy and self-knowledge, Jurisprudence, State audit, Economics and this disciplines not individual courses.*

Analyses to show that most of the disciplines are implemented at the Faculty of Economics in reality not so many disciplines in entrepreneurship are offered by the university for bachelor students, it should be especially noted that individual faculties and specialties, in addition to the foundation of entrepreneurship, do not offer other courses or disciplines for develop entrepreneurship skills .

2.2. Existing entrepreneurship education offer at MA level

Business models of entrepreneurship *(Management)* - Implementation of business planning using applied software and the development of practical skills among undergraduates in the formation of competence in developing a business plan and assessing the economic efficiency of business projects in the development of modern information technologies for the development of a business plan in the activities of entrepreneurial structures.

Entrepreneurial management *(Entrepreneurial management)* - Forming the competence of future specialists in organizing modern business on the basis of theoretical and practical material in a scientifically grounded view of entrepreneurship as a necessary component of an economist-manager

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activity, as well as the ability to identify and evaluate the commercial (business) perspective of entrepreneurial ideas on a possible sphere of applying one's own forces.

Internet economy and entrepreneurship *(Economics)* - The course is focused on studying the micro- and macroeconomic foundations of Internet entrepreneurship, the integration of the traditional economy into the Internet economy, the economic efficiency of networks such as the Internet, problems and prospects for the development of e-business and Internet entrepreneurship in Kazakhstan.

Risk management in innovative entrepreneurship *(Innovation management)* - Change and innovative breakthroughs shows that the growth of innovation also determines the growth of risks. Forming knowledge of graduates on the implementation of innovations in the company and training of managers in the field of risk management, who must find the optimal balance of risks and benefits. After all, in the end, companies that effectively manage innovation risks are more effective at introducing appropriate innovations. Improvement of the risk management program is determined by knowledge of the risks essence, risk management functions, changes in the management of development trajectories, the essence of the strategic programs formation for the company's growth.

2.3. Existing entrepreneurship education offer at PhD level

Analysis of doctoral programs at L. Gumilyov ENU at faculties in all specialties showed that, unfortunately, now there are no courses or programs aimed at teaching entrepreneurial skills and entrepreneurial thinking. Analysis of PhD programs at the Faculty of Economics, showed the absence of special courses or programs in entrepreneurship and business. In addition, it should be noted that all interns and practices for PhD students have a direction only in science and research.

There is a logical relationship in teaching engineering students entrepreneurial skills, for example, the specialty "Artiflcial Intelligence Technologies" in the first year of study at the undergraduate study Entrepreneurship and business and in the senior year StartUp Technology entrepreneurship and IT StartUp at the master's level, they study the course Artificial intelligence in project management - in the second year of study in the master's program.

2.4. Other activities in entrepreneurship education

To create a healthy innovative entrepreneurial ecosystem, as an element of the university innovation infrastructure, at the L. Gumilyov ENU was opened an Entrepreneurship Center CACTLE and Business Incubator.

CACTLE Entrepreneurship Centre ENU

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Since 2018 at the ENU named after I. L. Gumilyov opened the CACTLE Entrepreneurship Center within the framework of the Erasmus + program. The main activity of the center is aimed at developing entrepreneurial skills, creative thinking among students, conducts training for university teachers in teaching methods and didactics, trainings for the preparation of business trainers. Based on the Center we organizing trainings for teachers not only ENU also for teachers of the city of Nur-Sultan and the region.The center conducted training in entrepreneurial skills for 499 students, 65 undergraduates and doctoral students took part in seminars on teaching research skills, 485 teachers were trained in training to improve teaching methods, more than 100 entrepreneurs in the creative industry took part in trainings on business skills.

The Entrepreneurship Center successfully implements projects that contribute to the development of entrepreneurship and international cooperation. Since 2018 ENU them. L. Gumilyova is a member of the Creative Spark program funded by the British Council, our partners are two UK universities, Oxford Brooks University and the University of Birmingham. Not only students and teachers of ENU, but also such countries as Ukraine, Cambodia, Northern Cyprus, Turkey, Uzbekistan, Kyrgyzstan and Azerbaijan, take part in the Center's events.

The center contributes to the greater internationalization of ENU through the development of international partnerships and organizing joint training and information events to develop entrepreneurial knowledge, skills and thinking: British Council (Oxford Brookes University, University of Birmingham), American Council (Washington State University), Baku Slavak University (Azerbaijan), Fergana State University (Uzbekistan), Kyrgyz National University Zh. Bolasagyn (Kyrgyzstan)

The center develops cooperation with state and public institutions at the local level: NPP Atameken, Damu Fund JSC, Astana Hub,Urban Astana, Eurasian Culture Allians, Department of Entrepreneurship Development Akimat of Nur-Sultan, Kaz Angel, KazFrench

Business incubator ENU

The Business Incubator is the main tool for supporting youth entrepreneurship: from the development of an idea to its commercialization, innovative projects and the educational process in the direction of entrepreneurship based on the L.N. Gumilyov ENU.

The Business Incubator is the center of innovation at the university. We develop a culture of entrepreneurship in the student environment. The main goal of the Youth Business Incubator (MBI) is to provide a free platform for the implementation of business projects; training within the framework of an acceleration program for subsequent entry into potential markets for goods and services; improving the quality of training of young specialists through the introduction of systemic trainings and events with the participation of students in the development and commercialization of business projects.

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The end product of a business incubator is an independent entrepreneur, well adapted to the market environment. The university administration has created all the conditions: a spacious room, created workplaces for residents, equipped with office equipment, furniture, a projector, an interactive whiteboard, and Wi-Fi. As a result of competitive selection, the most creative university students are admitted to the business incubator. Here students receive help in finding business models, support for business projects - from an original idea to its implementation.

Business Incubator creates conditions for the commercialization of start-up projects of students, undergraduates, doctoral students of the university. Identifies the needs of business and entrepreneurship. Involves students of the University in the process of creating and implementing entrepreneurial activities.

2.5. National/institutional regulations to implement changes at the course level and to initiate new extra-curricular activities

NJS Eurasian National University (ENU) have academic autonomy as another 128 universities in Kazakhstan. In 2018, a law was passed expanding the academic autonomy of universities. This law provided an opportunity for universities to create their own educational programs, determine the qualification requirements for teachers. As a result, the academic freedom of universities was expanded to 85%. The academic freedom of universities has been expanded so that universities have the opportunity to independently bear responsibility for the quality of the education provided. There are several regulatory documents for an educational institution in terms of organizing the learning process:

1. Order of the Minister of Education and Science of the Republic of Kazakhstan dated October 30, 2018 No. 595. p. 30. The teacher of OVPO independently chooses teaching methods, methods and forms of organizing and conducting training sessions based on the educational program, working curricula (syllabuses) and the best international teaching practices.

2. On approval of the Rules for the organization of the educational process on credit technology of education Order of the Minister of Education and Science of the Republic of Kazakhstan dated April 20, 2011 No. 152.

For each Educational Program, the educational organization develops a catalog of elective disciplines (CED). CED provides students with the opportunity to choose an alternative choice of elective academic disciplines for the formation of an individual educational trajectory. Based on the educational program and QED, students with the help of advisers develop an Individual Curriculum

3. When developing and implementing a new educational program, it is important to enter the program in the register. This is a mandatory process.

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IS "Register of educational programs of higher and postgraduate education (Center for the Bologna Process and Academic Mobility of the Ministry of Education and Science of the Republic of Kazakhstan The EP register performs an accounting and information function and allows you to inform interested parties about educational programs implemented in the OVPO. The inclusion of an educational program in the EP Register confirms compliance with the qualification requirements for educational activities of universities. The presence of an educational program in the EP Register is one of the criteria for obtaining a state educational order. To improve the management of educational programs based on the best practices of foreign universities, Academic Committees for the development of educational programs have been created at the faculties.

Study programs are developed in accordance with the National Qualifications Framework, sectoral qualifications frameworks, and professional standards and agreed with the Dublin descriptors and the European Qualifications Framework. All educational programs are focused on learning outcomes and reflect the qualification levels and key competencies of the graduate.

All educational programs undergo an examination of the academic environment and stakeholders, which, in turn, is based on an analysis of the professional requirements necessary in a specific area of professional activity. Educational programs are built on the basis of a modular system and are Major programs that form professional competencies for the selected programs. Academic committees for admission in 2021 have developed 260 educational programs, of which 108 are bachelor's, 100 master's, 52 doctoral studies.

For admission in 2021, students are given the opportunity and advantages in building an individual educational trajectory, by choosing additional competencies, while increasing the opportunity to find a job and be more attractive in the labor market. At the meeting of the Academic Council, the Minor catalog was approved, which consists of 24 programs developed taking into account the requirements of the market and modern trends in education.

When developing educational programs, foreign practices are taken into account when determining the competence of a graduate and creating modules of educational programs with similar programs of the countries of the Bologna Process (Tuning Educational Structures in Europe).

General educational competences for the Bachelor's EP are formed on the basis of the requirements of the State Compulsory Standard for Higher Education (https://www.enu.kz/ru/ucheba/normativno-metodicheskie-dokumenty/), for Master's EP - the State Compulsory Standard for Postgraduate Education, which are developed and approved by the Ministry of Education and Science of the Republic of Kazakhstan (https://www.enu.kz/ru/ucheba/magistratura/normativnye-dokumenty/)

The EP of a bachelor's degree consists of general compulsory modules and compulsory modules in the specialty, aimed at the formation of general and professional competencies, elective modules in the

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specialty, ensuring the formation of professional competencies in certain subject areas of the corresponding EP, and also includes all types of professional practices, final certification, physical culture, which are separate modules. The EP of the master's degree includes compulsory and elective modules in the specialty, teaching and research practice, research and development work, as well as final certification.

3. Results of the HEInnovate self-assessment for the dimension "Entrepreneurial Teaching and Learning" and "Preparing and Supporting Entrepreneurs"

As part of WP1 a HEI self-assessment was conducted based on the HEInnovate tool. For the requirements of WP2 this section specifically looks at the self-assessment results of the university for the HEInnovate dimensions "Entrepreneurial Teaching and Learning" and "Preparing and Supporting Entrepreneurs".[4]

3.1. Dimension "Entrepreneurial Teaching and Learning"

For this block, the average response score was 4.47 (average) points, which is quite a high indicator. Entrepreneurial teaching and training provides an opportunity to get acquainted with the entrepreneurial experience and acquire skills and competencies for the development of entrepreneurial thinking. The University provides a number of learning opportunities that promote innovative teaching and training. The University conducts a number of activities to encourage the use of various innovative approaches in teaching. The university has an institute that promotes additional non-formal education. The university, together with external stakeholders, develops and implements training programs that can be used in teaching entrepreneurship. The University regularly interacts with stakeholders to understand future skills needs.

Measures that should be taken by ENU:

1. Support and train staff to create a new curriculum related to student-centered, as well as interdisciplinary and practical training of entrepreneurship.
2. Expand access to student business clubs, societies, competitions and expand the boundaries of awareness for students to participate in such kind of events.

[4] For further results of the self-assessment along all 8 HEInnovate dimensions see Deliverable 1.2 "The Report on HEI preparedness for future challenges in CA countries" of Work Package 1.

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3. Increase the number of non-formal entrepreneurship training courses with practicing entrepreneurs.
4. In the educational programs of the university, include the possibility of mastering the skills and competencies of entrepreneurship for obtaining an academic degree.
5. Maintain a variety of collaborative partnerships with local communities and organizations, local and regional authorities, chambers of commerce, industries, and alumni.

3.2. Dimension "Preparing and Supporting Entrepreneurs"

Universities can help students, graduates and employees consider starting a business as a career.
For the questions in this block, the respondents answered 29 questions with an average rating of 4.47 (average). Unlike the first block of questions, there are no unambiguous answers in this block. If we look at each of them in more detail.
The university raises awareness of the value of entrepreneurship and encourages the entrepreneurial intentions of students, graduates and employees to create a business or enterprise. The university provides, if necessary, a sabbatical, the opportunity to work at a lower rate, but there are no such opportunities for students. The university uses various communication channels to raise awareness of opportunities and demonstrate entrepreneurship among staff and students in all parts of the institution. The university provides support to students in preparing for a startup, such as developing an idea, finding a team, and studying the technical and market aspects for the implementation of the project. And conducts events to generate and evaluate business ideas. The university has a platform for mutual mentoring, where aspiring entrepreneurs can get advice and develop their business networks. The youth business incubator provides a range of services, from the development of ideas to their commercialization, innovative projects and the educational process in the field of entrepreneurship at the university. They also offer future entrepreneurs an affordable place to access an integrated package of coaching, mentoring and training services.
Measures that should be taken by ENU:
1. Provide a supportive framework environment for Startups, such as providing an opportunity for students to extend the duration of their study programs to support the opening of a new venture during their studies.
2. Offer funds to support market feasibility studies.
3. Training should transfer relevant knowledge and skills in a wide range of areas, such as financing, legal and regulatory issues, working with people and building relationships, managing innovation processes, how to deal with success, stress and risk, and ways to restructure or exit.
4. Provide participants with various funding tools, such as grants, prizes, loans, and promotions.

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5. Embed incubation facilities in the research and educational infrastructure of the university to enhance synergy.

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4. In-depth survey (employers, alumni)

As part of WP2 the university conducted a survey among employers and graduates to identify labour market qualification requirements and possible skills mismatches for graduates in the field of entrepreneurial skills.

In this chapter, results from the online survey of employers and alumni are presented. The rationale of the survey was to identify the skills gaps in terms of skills needed and the actual skills state of university graduates as perceived by companies and alumni.

The survey was conducted in May and June 2021. Each TRIGGER partner in Kazakhstan, Uzbekistan and Tajikistan distributed the same questionnaire independently in order to gain comparable data. The questionnaire was developed based on the Entrepreneurship Competence Framework[5] and other studies on entrepreneurship.[6]

In total, the questionnaire comprised 130 items on three EntreComp dimensions „Ideas“, „Resources“ and Actions“ and in four dimensions on „Digital Skills“, „Financial Skills“, „Marketing Skills“ and „Skills in Innovation Management“, plus 8 questions on demographic variables, such as position of the survey participant in the company, company size, and sector of company/professional activity. All items were presented with a five-point Likert scale anchored with 1 = not at all important to 5 = very important.

[5] Bacigalupo M., Kampylis P., Punie Y. and Van Den Brande L. (2016) EntreComp: The Entrepreneurship Competence Framework. Luxembourg (Luxembourg): Publications Office of the European Union; Online: https://publications.jrc.ec.europa.eu/repository/handle/JRC101581 (accessed 2021-02-02).

[6] The dimension on „Digital Skills“ was developed from Carretero, S. / Vuorikari, R. / Punie, Y. (2017). DigComp 2.1: The Digital Competence Framework for Citizens with eight proficiency levels and examples of use, doi:10.2760/38842; the further dimensions were built on Loué, C. & Baronet, J. (2012) Toward a new entrepreneurial skills and competencies framework: a qualitative and quantitative study. In: International Journal of Entrepreneurship and Small Business, Vol. 17, No. 4, pp. 455-477.

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4.1. Dimension "Ideas"

Table 1: Dimension "IDEAS"	Employer						Alumni					
		Importance		Graduate level		I ± GL		Importance		Graduate level		I ± GL
	N	Mean	SD	Mean	SD		N	Mean	SD	Mean	SD	
Items												
Identifying, creating and seizing opportunities.	22	3,9	1,0	3,9	0,9	0,0	24	4,0	1,0	3,7	0,8	-0,3
Uncovering the needs of customers and other stakeholders.	22	3,9	1,0	3,8	0,9	0,0	24	3,7	1,2	3,7	0,8	0,0
Analysing the contexts where value can be created.	22	3,7	1,1	3,6	1,0	-0,1	24	3,8	1,0	3,6	0,9	-0,2
Developing ideas and opportunities to create value.	22	3,9	1,1	3,5	1,1	-0,3	24	3,8	1,0	3,7	0,9	-0,1
Developing better solutions to existing and new challenges.	22	4,1	1,1	3,8	0,9	-0,4	24	4,2	0,8	3,8	0,8	-0,4
Exploring and experiment with innovative approaches.	22	4,0	1,1	3,8	1,0	-0,2	24	4,2	0,8	3,5	0,9	-0,7
Developing a vision to turn ideas into action.	22	4,2	1,1	3,8	1,1	-0,4	24	4,0	1,0	3,6	0,9	-0,4
Judging what value is in social, cultural and economic terms.	22	4,2	0,9	3,7	0,9	-0,5	24	4,0	1,0	3,5	0,9	-0,5
Recognising the potential an idea has for creating value.	22	3,9	0,9	3,7	0,8	-0,2	24	3,8	1,1	3,6	1,0	-0,1
Identifying suitable ways of making the most out new ideas.	22	4,0	1,0	3,8	1,0	-0,3	24	4,0	1,0	3,7	0,9	-0,3
Assessing the consequences of ideas that bring value on the target community, the market, society and the environment.	22	3,9	1,1	3,7	1,0	-0,2	24	4,0	1,0	3,7	0,9	-0,3
Reflecting on how sustainable long-term social, cultural and economic goals are.	22	3,9	1,1	3,7	0,8	-0,2	24	3,8	1,0	3,6	0,9	-0,2
Acting responsible.	22	4,5	0,8	4,0	1,0	-0,6	24	4,4	0,8	3,9	0,8	-0,5

Similarities within employer ratings and within alumni ratings are with a little deviation as *Uncovering the needs of customers and other stakeholders*; -0.4 in *developing better solutions to existing and new*

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challenges, *developing a vision to turn ideas into action*; -0.5 *judging what value is in social, cultural and economic terms.*

The most striking differences can be seen at the item as *Exploring and experiment with innovative approaches* with deviation in Graduate alumni level as – 0.7 and also in item acting responsible with deviation in employer side as -0.6.

4.2. Dimension "Resources"

Table 2: Dimension "Resources"	**Employer**						**Alumni**					
		Importance		**Graduate level**		**I ± GL**		**Importance**		**Graduate level**		**I ± GL**
	N	Mean	SD	Mean	SD		N	Mean	SD	Mean	SD	
Items												
Reflecting on your needs, aspirations and wants in the short, medium and long term.	22	3,8	0,9	3,7	0,8	-0,1	24	3,7	0,9	3,5	1,3	-0,3
Identifying and assess one's own individual and group strengths and weaknesses.	22	3,8	1,1	3,7	0,8	-0,1	24	3,7	0,9	3,7	1,2	0,0
Believing in one's own ability to influence the course of events, despite uncertainty, setbacks and temporary failures.	22	4,0	1,1	3,8	0,8	-0,1	24	3,6	0,9	4,1	1,0	0,5
Being determined to turn ideas into action and satisfy one's own need to achieve.	22	3,9	1,0	3,7	1,1	-0,2	24	3,9	0,8	3,8	1,2	-0,1
Being prepared to be patient and keep trying to achieve long-term individual or group aims.	22	4,1	0,9	3,8	1,0	-0,3	24	3,8	1,2	3,5	1,0	-0,3
Being resilient under pressure, adversity, and temporary failure.	22	4,1	0,9	3,9	1,0	-0,2	24	3,8	1,1	3,6	1,0	-0,2
Getting and managing the material, non-material and digital resources needed to turn ideas into action.	22	4,0	0,9	3,6	1,0	-0,4	24	4,0	1,1	3,7	0,9	-0,3

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Making the most of limited resources.	22	4,0	0,8	3,7	0,8	-0,3	24	3,8	1,1	3,8	0,8	0,0
Getting and managing the competences needed at any stage, including technical, legal, tax and digital competences through suitable partnerships, networking, outsourcing and crowd-sourcing.	22	3,8	1,0	3,6	0,9	-0,2	24	4,1	1,0	3,8	1,0	-0,3
Estimating the cost of turning an idea into a value-creating activity.	22	3,6	0,9	3,7	0,8	0,1	24	4,2	0,9	3,7	0,9	-0,5
Planning, putting in place and evaluating financial decisions over time.	22	3,9	0,9	3,6	1,0	-0,3	24	3,6	1,2	3,6	1,0	0,0
Managing financing to make sure my value-creating activity can last over the long term.	22	3,8	0,9	3,6	0,8	-0,1	24	4,3	0,9	3,6	1,0	-0,6
Inspiring and enthusing relevant stakeholders.	22	3,7	0,9	3,7	0,8	0,0	24	3,7	1,1	3,6	1,0	0,0
Getting the support needed to achieve valuable outcomes.	22	3,9	1,0	3,7	0,8	-0,2	24	3,7	1,3	3,5	1,0	-0,1
Demonstrating effective communication, persuasion and negotiation.	22	4,0	0,9	3,8	1,0	-0,3	24	3,8	1,1	3,6	1,1	-0,2
Demonstrating effective leadership.	22	3,9	1,0	3,8	0,9	-0,1	24	3,6	1,3	3,5	1,1	-0,1

Similarities within employer ratings and within alumni ratings are being prepared to be patient and keep trying to achieve long-term individual or group aims as -0,3; *being resilient under pressure, adversity, and temporary failure* as – 0.2*; Inspiring and enthusing relevant stakeholders* as 0.0; *demonstrating effective leadership* as -0.1.

Striking difference is showed in managing financing to make sure my value-creating activity can last over the long term in alumni ratings with deviation as - 0.6, whether the deviation in employee side is - 0.1

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4.3. Dimension "Actions"

Table 3: Dimension "Actions"	Employer						Alumni					
		Importance		Graduate level		I ± GL		Importance		Graduate level		I ± GL
	N	Mean	SD	Mean	SD		N	Mean	SD	Mean	SD	
Items												
Initiating processes that create value.	22	3,7	1,0	3,9	0,8	0,2	24	3,5	1,0	4,0	0,9	0,5
Taking up challenges.	22	3,7	1,0	3,8	0,9	0,1	24	3,6	1,1	4,0	1,1	0,4
Acting and working independently to achieve goals, stick to intentions and carry out planned tasks.	22	4,2	0,8	4,0	0,9	-0,2	24	3,6	0,9	3,8	1,2	0,2
Setting long-, medium- and short-term goals.	22	4,1	0,8	4,0	0,8	-0,2	24	3,5	1,1	4,0	1,0	0,5
Defining priorities and action plans.	22	4,2	0,8	4,0	0,9	-0,3	24	3,8	1,0	3,6	1,2	-0,2
Adapting to unforeseen changes.	22	4,2	0,8	3,9	0,9	-0,3	24	3,9	1,0	3,7	1,0	-0,2
Making decisions when the result of that decision is uncertain, when the information available is partial or ambiguous, or when there is a risk of unintended outcomes.	22	4,0	1,0	3,9	0,9	-0,2	24	4,0	1,0	3,8	0,9	-0,2
Testing ideas and prototypes from the early stages to reduce risks of failing.	22	3,9	1,1	3,8	1,0	-0,1	24	3,9	1,1	3,5	1,0	-0,4
Handling fast-moving situations promptly and flexibly.	22	4,4	0,7	3,8	0,9	-0,6	24	4,0	1,1	3,5	1,0	-0,6
Working together and cooperate with others to develop ideas and turn them into action.	22	4,4	0,7	4,0	0,7	-0,5	24	4,1	0,8	3,6	1,0	-0,5
Networking with others to organise skills and expertise needed for goal attainment.	22	4,3	0,7	4,0	1,0	-0,3	24	4,1	1,1	3,5	0,9	-0,6
Solving conflicts and facing up to competition positively when necessary.	22	4,4	0,7	3,8	0,8	-0,5	24	3,8	1,0	3,5	1,2	-0,3
Using any initiative for value creation as a learning opportunity.	22	4,2	0,8	3,8	0,9	-0,4	24	4,0	0,9	3,7	1,0	-0,3
Learning with others, including peers and mentors.	22	4,4	0,6	3,9	0,8	-0,5	24	4,0	1,0	3,6	1,0	-0,3

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Reflecting and learning from both success and failure (your own and other people's).	22	4,2	0,7	3,8	0,9	-0,4	24	3,9	1,0	3,8	1,0	0,0

Similarities within employer ratings and within alumni ratings are making decisions when the result of that decision is uncertain, when the information available is partial or ambiguous, or when there is a risk of unintended outcomes as -0.2 in deviation; *Handling fast-moving situations promptly and flexibly* as – 0.6 in deviation, which is also the striking highest deviation considerably. *Working together and cooperate with others to develop ideas and turn them into action* as -0.5 also considered almost striking point in deviation.

Networking with others to organize skills and expertise needed for goal from alumni side is also an item which is considered as high deviation point consider with employee – 0.3 deviation.

4.4. Dimension "Digital Skills"

Table 4: Dimension "Digital skills"	**Employer**						**Alumni**					
		Importance		**Graduate level**		**I ± GL**		**Importance**		**Graduate level**		**I ± GL**
	N	Mean	SD	Mean	SD		N	Mean	SD	Mean	SD	
Items												
Using data and information from digital environments to assess the potential of ideas.	22	3,9	0,9	3,8	0,7	-0,1	24	3,5	1,1	4,1	1,1	0,6
Deploying digital media, apps or web-based tools for marketing.	22	4,0	1,0	3,8	1,0	-0,1	24	3,5	1,1	4,0	1,0	0,4
Using knowledge on automation and artificial intelligence for improving products, processes and services.	22	3,7	1,1	3,8	1,0	0,1	24	3,8	1,1	4,1	0,9	0,3

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Understanding and using information from the web and other digital sources to identify customer needs.	22	4,0	0,8	3,9	0,8	-0,1	24	3,6	1,1	3,9	1,1	0,3
Using software apps and digital tools for managing collaboration with teams and partners.	22	4,0	0,8	3,9	0,7	-0,1	24	4,0	1,0	3,9	1,0	-0,2

In dimension digital skills there are no similarities in standard deviations, but from employer side the items: using data and information from digital environments to assess the potential of ideas, deploying digital media, apps or web-based tools for marketing, understanding and using information from the web and other digital sources to identify customer needs, using software apps and digital tools for managing collaboration with teams and partners have the of actual skills compared against employer rating -0.1.

The highest deviation from alumni side is -0.2 in *using software apps and digital tools for managing collaboration with teams and partners*.

4.5. Dimension "Financial Skills"

Table 5: Dimension "Financial skills"	**Employer**						**Alumni**					
		Importance		**Graduate level**		**I ± GL**		**Importance**		**Graduate level**		**I ± GL**
	N	Mean	SD	Mean	SD		N	Mean	SD	Mean	SD	
Items												
Knowing how to read and analyse a balance sheet.	22	4,0	1,1	3,8	1,0	-0,2	24	3,8	1,0	3,8	1,4	0,0
Drawing conclusions and deriving potential courses of action from balance sheets.	22	3,9	1,1	3,7	1,0	-0,2	24	3,5	1,2	3,5	1,4	-0,1

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Managing cash flow.	22	3,9	1,2	3,8	1,0	-0,1	24	3,9	1,0	3,5	1,3	-0,3
Identifying and meeting the organization's financial needs in the short and long term	22	3,9	1,1	3,6	1,0	-0,2	24	3,8	1,0	3,4	1,4	-0,3
Calculating costs, cost prices, and margins.	22	3,8	1,2	3,8	1,0	0,0	24	3,9	1,3	3,5	1,1	-0,4

In dimension financial skills there are no similarities in standard deviations. Deviations from employer side vary from 0.0 to – 0.2 which shows not too high difference. From alumni side deviation varies from 0.0 to -0.4, which is the highest point in calculating costs, cost prices, and margins.

4.6. Dimension "Marketing"

Table 6: Dimension "MARKETING"	**Employer**						**Alumni**					
		Importance		**Graduate level**		**I ± GL**		**Importance**		**Graduate level**		**I ± GL**
	N	Mean	SD	Mean	SD		N	Mean	SD	Mean	SD	
Items												
Deploying sales arguments with a view to persuading clients to buy.	22	3,1	1,2	3,7	1,0	0,5	24	3,5	1,1	3,5	1,3	-0,1
Negotiating while using specific techniques	22	3,4	1,1	3,7	0,9	0,3	24	3,2	1,1	3,4	1,3	0,2
Developing commercial strategies and means whereby to attract new clients	22	3,8	1,2	3,8	1,1	0,0	24	3,3	1,2	4,3	0,8	1,0
Using specific techniques to encourage client loyalty.	22	3,4	1,3	3,6	1,0	0,3	24	3,4	1,2	4,3	0,9	0,9
Creating a positive image of the firm, promoting an ethical image of the firm.	22	4,3	1,0	4,0	0,9	-0,3	24	3,2	1,4	3,5	0,9	0,3
Building relationships of trust with clients and partners.	22	4,4	1,0	4,0	0,9	-0,4	24	3,5	1,1	3,5	0,9	-0,1

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Dimension marketing doesn't have similarities in deviation, but the alumni deviation shows more positive deviations rather than employer side. Comparing the item as *deploying sales arguments with a view to persuading clients to buy* from employer side as 0.5 to – 0.1 from alumni side. And the great *difference between the item as creating a positive image of the firm*, promoting an ethical image of the firm from employer side as -0.3 and the alumni side 0.3.

The striking difference point is building relationships of trust with clients and partners from employer side as -0.4.

4.7. Dimension "Innovation management"

Table 7: Dimension "Innovation management"	**Employer**						**Alumni**					
		Importance		**Graduate level**		**I ± GL**		**Importance**		**Graduate level**		**I ± GL**
	N	Mean	SD	Mean	SD		N	Mean	SD	Mean	SD	
Items												
Developing innovation strategies.	22	3,8	1,1	3,6	1,0	-0,1	24	3,4	1,0	3,6	1,3	0,3
Analysing the market potentials of ideas and concepts for new products, processes and services.	22	3,9	0,9	3,5	1,1	-0,3	24	3,5	1,0	3,5	1,4	0,0
Planning, implementing and controlling innovation processes with project management methods.	22	3,8	1,0	3,7	0,9	-0,1	24	3,7	0,8	3,7	1,3	0,0
Selecting and applying methods for exchange of ideas and knowledge in the innovation process.	22	3,9	0,9	3,8	1,0	0,0	24	3,8	0,8	3,8	1,3	0,0

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Managing collaboration between customers, suppliers and development partners in the innovation process.	22	3,7	1,0	3,7	1,1	0,0	24	3,8	1,4	3,4	1,1	-0,4

Similarities within employer ratings and within alumni ratings are selecting and applying methods for exchange of ideas and knowledge in the innovation process from employer side and alumni as 0.0
The highest difference is shown in the item managing collaboration between customers, suppliers and development partners in the innovation process from alumni side deviation is -0.4 whether from employer side is 0.0.

5. Identified gaps and skills mismatches

The analysis showed what differences and gaps in skills exist among graduates.

Dimension Idea

The analysis showed the following results for skills where employers and graduates rate significantly lower than the importance of the relevant skills. So, for example, the parameter "Idea" in which employers and graduates agreed that there are not enough skills: Acting responsible, Judging what value is in social, cultural and economic terms, Developing a vision to turn ideas into action, Developing better solutions to existing and new challenges.
However, at the same time, employers noted that the main disadvantage is the skill “Judging what value is in social, cultural and economic terms”
Graduates noted a lack of skill
• Exploring and experiment with innovative approaches.
• Judging what value is in social, cultural and economic terms.

Dimension "Resources"

This dimension shows to us that skills are equally insufficient for employers and graduates:
• Being prepared to be patient and keep trying to achieve long-term individual or group aims.
• Being resilient under pressure, adversity, and temporary failure
For employers, the weakest skills are:
• Getting and managing the material, non-material and digital resources needed to turn ideas into action,

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While graduates noted the lack of such a skill as

• Managing financing to make sure my value-creating activity can last over the long term.

• Estimating the cost of turning an idea into a value-creating activity

Dimension Actions,

according to which employers and graduates noted the lack of such a skill as

• Networking with others to organize skills and expertise needed for goal attainment.

• Working together and cooperate with others to develop ideas and turn them into action.

At the same time, employers see a lack of skills

• Handling fast-moving situations promptly and flexibly.

• Handling fast-moving situations promptly and flexibly.

• Solving conflicts and facing up to competition positively when necessary.

• Learning with others, including peers and mentors.

Graduates feel they are not sufficiently trained in skills

• Handling fast-moving situations promptly and flexibly.

• Networking with others to organize skills and expertise needed for goal attainment.

Dimension Digital skills

The parameter is relevant for employees of companies, therefore, they employ and marketers noted that such a skill as “Using software apps and digital tools for managing collaboration with teams and partners” is a not enough to work effectively

At the same time, employers noted skills that, in their opinion, are not sufficiently instilled in graduates.

• Using data and information from digital environments to assess the potential of ideas.

• Deploying digital media, apps or web-based tools for marketing.

Understanding and using information from the web and other digital sources to identify customer needs.

Despite the importance of this parameter and the close attention of universities to the development of digital skills, we see that the graduates themselves noted the absence or lack of such digital skills as

Using software apps and digital tools for managing collaboration with teams and partners

Dimension Financial skills

Graduates say there is a skill shortage

• Calculating costs, cost prices, and margins.

• Managing cash flow

According to employers, graduates have insufficiently developed skills

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Identifying and meeting the organization's financial needs in the short and long term
Drawing conclusions and deriving potential courses of action from balance sheets.
At the same time, for both graduates and employers, the most important and underdeveloped skills are
Identifying and meeting the organization's financial needs in the short and long term

Dimension Marketing

As noted by respondents from among employers, graduates have poorly developed skills
Creating a positive image of the firm, promoting an ethical image of the firm.
That being said, graduates noticed skill gaps
Deploying sales arguments with a view to persuading clients to buy.
But both sides noted an underdeveloped skill Building relationships of trust with clients and partners.

Dimension Innovation Management

For employers and graduates, skill is equally low
Planning, implementing and controlling innovation processes with project management methods
At the same time, employers believe that the skill
Analysing the market potentials of ideas and concepts for new products, processes and services will not get used to graduates well enough
Graduates noted skill gaps
Managing collaboration between customers, suppliers and development partners in the innovation process

The survey involved employers and graduates of different fields of activity and this may be due to the presence of deviations in the survey, as the expectations and results of graduates and employers depend on the field of activity. In such areas, a graduate is represented, but there is no employer in this area.
Administrative and maintenance services
Healthcare and social work
Agriculture, forestry, fisheries
And in 2 areas the interests of graduates are not represented

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Table 1: Skills gaps as rated by employers and alumni

Main dimensions of competencies	rated as skills gap by employer **and** alumni	rated skills gap by employers	rated skills gap by alumni
Ideas	Acting responsible. Judging what value is in social, cultural and economic terms. Developing a vision to turn ideas into action. Developing better solutions to existing and new challenges.	Judging what value is in social, cultural and economic terms.	Exploring and experiment with innovative approaches. Judging what value is in social, cultural and economic terms.
Resources	Being prepared to be patient and keep trying to achieve long-term individual or group aims. Being resilient under pressure, adversity, and temporary failure	Getting and managing the material, non-material and digital resources needed to turn ideas into action.	Managing financing to make sure my value-creating activity can last over the long term. Estimating the cost of turning an idea into a value-creating activity
Actions	Handling fast-moving situations promptly and flexibly. Networking with others to organise skills and expertise needed for goal attainment. Working together and cooperate with others to develop ideas and turn them into action.	Solving conflicts and facing up to competition positively when necessary. Learning with others, including peers and mentors.	Networking with others to organise skills and expertise needed for goal attainment.
Digital skills	Using software apps and digital tools for managing collaboration with teams and partners.	Using data and information from digital environments to assess the potential of ideas. Deploying digital media, apps or web-based tools for marketing. Understanding and using information from the web and other digital sources to identify customer needs.	Using software apps and digital tools for managing collaboration with teams and partners.

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Financial skills	Identifying and meeting the organization's financial needs in the short and long term	Identifying and meeting the organization's financial needs in the short and long term Drawing conclusions and deriving potential courses of action from balance sheets.	Calculating costs, cost prices, and margins. Managing cash flow Identifying and meeting the organization's financial needs in the short and long term
Marketing	Building relationships of trust with clients and partners.	Creating a positive image of the firm, promoting an ethical image of the firm.	Deploying sales arguments with a view to persuading clients to buy.
Innovation Management	Planning, implementing and controlling innovation processes with project management methods.	Analysing the market potentials of ideas and concepts for new products, processes and services.	Managing collaboration between customers, suppliers and development partners in the innovation process.

6. Conclusions: Steps to further develop entrepreneurship education at the university

From the above detailed analysis of programs, courses, extracurricular activities at ENU. Gumilyov, we can see what gaps are in the formation of programs for training undergraduate students, masters and doctoral students

The university is doing a lot of work in the direction of developing entrepreneurial skills, but unfortunately, not all these activities bring the expected result due to the existing problems that hinder the development of entrepreneurial education.

- Discrepancy between the content of educational programs and current market needs;
- Lack of mechanisms for forecasting and future demand of the labor market for new professions, new competencies;
- Low level of state support for interaction between education and business;
- Lack of financing mechanisms for entrepreneurial education;
- Unpreparedness of universities for the formation of new competencies of graduates, relevant to the modern labor market.

Synergy between the Center of Entrepreneurship CACTLE with faculties can serve as a platform for strengthening entrepreneurial education at the university through the expansion of the catalog of courses and trainings for student. The university faculties can actively include professional entrepreneurship and business courses and trainings offered by the Center CACTLE in the curricula

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for undergraduate and graduate students. Joint development of training programs of the center with faculties may be more beneficial in terms of the specification of the course for the requests of faculties. Business incubator can expand the list of services offered to support start-up projects.

In addition to the aforementioned problems, one should also note such an important drawback as the isolation of the university system from the labor market. The existing links of universities with the real sector of the economy and business structures are fragmented, there is no consistency in joint work, which leads to a gap between the level of training of students and the requirements of the labor market. The main reason for the existing gap is the lack of motivation, both material and non-material, to stimulate both stakeholders in cooperation.

The issue of the quality of curricula and programs of business schools, emphasis on learning outcomes and managerial competencies of graduates deserves special attention.

For the development and popularization of entrepreneurial education, the following series of activities is recommended:

- creation of a theoretical, methodological and methodological base and development of new educational programs at three levels (bachelor's, master's, doctoral studies): "entrepreneurship and business"; digital technologies and entrepreneurship; social entrepreneurship; business administration, international business aimed at developing entrepreneurial skills with the participation of representatives from the real sector of the economy;
- developing students' entrepreneurial competence;
- introduction of a 3-stage course in entrepreneurship into educational programs of a bachelor's degree in the amount of at least 15 credits: For example, for 1 course "Fundamentals of Economics" - 5 credits, for 2 course "Entrepreneurship and Business" - 5 credits and for 3 course "Business planning and commercialization "- 5 credits;
- Development of a program of continuous three-level entrepreneurial education "bachelor's - master's - doctoral studies";
- Actively include in the training process experienced business coaches, the best managers and directors of large corporations and companies;
- conducting trainings and best practices for teachers on the methodology and didactics of teaching disciplines on entrepreneurship and business, creative approaches in teaching disciplines on entrepreneurship.

It should be noted that high quality and practice-oriented courses introduced into the undergraduate, graduate and doctoral programs can significantly help graduates in employment.

It is necessary to pay attention to the fact that the university may offer additional programs for students in entrepreneurship and business (for example, the Minor program)

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It should not be overlooked that for masters and doctoral students, courses on teaching entrepreneurship skills, generating scientific ideas and its commercialization can be very necessary and useful.

To implement the recommendation to integrate entrepreneurial skills into curricula and courses, it is necessary to ensure greater synergy between faculties, develop the promotion of interdisciplinary courses among faculty students, offer final control in the form of project development and not exams that require only theoretical knowledge. In the final projects of students' works, include an obligatory element of economic calculations for the implementation of the idea, which will contribute to the realism of the vision of the possibilities and the viability of the project idea.

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