

INNOVATIVE EDUCATION - IMPACT AND BENEFITS ON REGIONAL DEVELOPMENT

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Abstract. *In various fields or areas of human activity, innovation is used and interpreted differently. It is certain that without innovation no change occurs. In the educational field, innovation is a complex subject that needs to be studied from several aspects and at several levels: at the level of individuals who make the change or who motivate others to innovate, at the social, environmental, and economic levels, where some innovations are accepted and encouraged, and others are inhibited and undervalued. The aim of this study is to analyze the types of innovations in education and highlight the impact of innovations implemented in higher education institutions both at the institutional level and in social and economic environments. Several cognitive, analytical, comparative, and statistical methods were used to carry out the research and to reach the goal. The importance of this article lies in the broad approach of innovation in education, especially in higher education, and its impact on the social, economic, and cultural development of the region.*

Keywords: *innovation, higher education, impact, social, economic.*

INTRODUCTION

Knowledge, invention, and innovation are becoming the key to competition and success, adding particular value to the economic outcome or product through increased productivity, but also through the use of new technologies and inventions, leading to revolutionary changes in all sectors of life.

Today, the importance of innovation is reinforced by the economic crisis and international competition. Ensuring sustainable growth can only be achieved through continuous innovation processes[1]. Innovation develops as a reflection of needs in the business of introducing new services and ideas into key areas of human activity.

A special topic may be *innovation in education*, which is approached as a higher-level creative product leading us to new truths that *transform* the universe of meanings already accepted by culture at a certain point in its historical evolution. In the case of education, we have in mind pedagogical culture, expressed through the products of knowledge (theories, models, paradigms, etc.), but also through mentalities, behaviours, "ways of being" in different situations typical of education, training, educational design and training at the level of the education system and process. In this sense, innovation in education has a broad meaning, necessary and assumed by each teacher through his or her pedagogical, didactic, etc. behaviour, normatively imposed by the principle of pedagogical creativity underlying the qualitative design of any educational activity, carried out, objectively and subjectively, in an *open pedagogical and social context*. [2]

If we look briefly at the problems in the field of education, we could say that, after a considerable period of development, the education systems of most countries are facing two major problems: unequal opportunities for access to education and a significant decrease in financial support from state budgets. It is therefore obvious that the development of the education system in quantitative terms alone (increase in the number of educational institutions, pupils and teaching staff, etc.) is insufficient. Quantitative development had to be continued but also complemented by a qualitative, innovative dimension. Innovation in education/teaching has been manifested from the outset both as *a response to the needs, and the problems facing education* - financial constraints, inequality of educational opportunities, devaluation of diplomas, etc. - and as *a response to the aspirations, the ideals of the population*. For all its

shortcomings, education remains the privileged means by which individuals can gain access to the socio-professional world. [3]

It should be noted that more and more steps are being taken at EU level to support and promote innovation in education. In the European Commission's view: educational institutions - schools, universities, etc. - need to evolve and adapt to today's challenges in order to fulfil their core mission of preparing pupils and students for a complex and interconnected world of rapid technological, cultural, economic, and demographic change. [4]

According to the European Union directives, but also to the provisions of the sectoral strategy "Education 2030", in the Republic of Moldova, *education* is a national priority, being the basic factor in the promotion of democratic values, in ensuring human rights, in the development of human capital, in the formation of national consciousness and identity, in the enhancement of European integration aspirations, with a primary role in creating the premises for sustainable human development and building a knowledge-based society. It is the basic strategy, according to which strategies will be developed at the level of regions, districts, and municipalities, according to which education will become the main pillar in the creation of a sustainable and prosperous society. [5]

Research methods. In the process of carrying out the research, general scientific methods were applied, such as quantitative and qualitative analysis (survey), systemic and synthesis analysis, time series method, tables and graphs method, induction and deduction, comparison, logic principle, and comparative analysis methods.

RESULTS

Innovation in education is a superior, primary product of pedagogical creativity, validated by its originality and confirmed relevance at the social, system and educational process levels. Its relation to pedagogical creativity implies the following:

1) a clear demarcation from other types of *creativity*, expressed as lower-level, secondary *products*, validated only on an individual scale (*expressive* creativity, *technical* creativity);

2) highlighting its specific characteristics acquired at the level of a creative process, engaged in the design and realisation of *new pedagogical products*, during four stages: *preparation - incubation - inspiration - social verification*;

3) utilizing its general psychological, cognitive and non-cognitive resources at the level of the teacher's personality engaged in the design and realization of new pedagogical products, within a specific *creative process* in the context of the educational system and process. [6]

Here we consider it appropriate to define the processes of creativity and innovation to better understand the relation between these two concepts and their importance in the educational process.

Creativity is a mental and social process that involves the generation of new ideas or concepts or new associations of the creative mind between existing ideas or concepts [1]. If in this definition "creativity" is approached more as a philosophical concept, it is more explicit regarding the purpose of creativity. Thus, in the *Romanian Explanatory Dictionary*, *creativity* is defined as the ability to be creative; creative power, or capacity to create, to produce values [7].

According to *Webster's Dictionary* (1996) creativity has three meanings:

- the state or quality of being creative;
- the ability to transcend traditional ideas, rules, patterns, relationships and to create new and meaningful ideas, forms, methods, interpretations, etc.; originality or imagination;
- the process by which creative ability is used [1].

This approach is one of the clearest, but to see a close link between creativity and innovation, we propose the following definition, which basically highlights the sources/means of origin of innovations.

The *Encyclopaedia Britannica* presents a definition focused on the objectives of creative activity: creativity is "the ability to make or, in other words, to produce something new, either a new solution to a problem or a new method or device or a new artistic object or a new artistic form" [8].

Teresa M. Amabile, head of the Entrepreneurial Management Unit at Harvard Business School (USA), and co-authors define creativity as "the production of new and useful ideas in any area" of human activity, from the sciences to the arts, in education, in business or in everyday life [9].

Liviu Băloiu and Ioan Frăsineanu define creativity as "the production or revelation of a new fact, law, relationship, device, product, process or system, which is based on accessible knowledge, but which does not arise directly, simply or by means of a logical process from the information available to us" [10]. *Thus, we can say that creativity is the result of intellectual thinking based on intuition.*

In this context, innovation is the implementation of creative ideas in an organisation. Creative input is an essential part of the problem-solving that occurs in all phases of the innovation process. The creativity of individuals and teams "is a necessary condition for innovation" [11]. Ideas are the basis of innovation, but to solve all problems, which may arise in the innovation process, we need creativity.

In the specialized literature on inventions and innovations, as forms of creativity, we mention *discovery*, *invention*, and *innovation*.

In the economic literature the term 'innovation' is approached by several authors from different perspectives. According to the Romanian Explanatory Dictionary "**innovation** is novelty, change, transformation, solving a technical or work organization problem with the aim of improving (productivity) of work, technical enhancement or rationalization of

applied solutions” [7].

Depending on the object and subject of research, innovation has been treated differently by several foreign researchers. B. Twist, B. Santo and E. Mansfield treated *innovation as a process*: “...the overall process of technological and commercial creativity, the transfer of a new idea or concept to the final stage of a new product, process or service activity accepted by the market” [1].

Researchers in Russia, Romania, and the Republic of Moldova view innovations as a “means of change”, as in Marian Jalencu’s view that “innovation consists in an organized and purposeful search for change and in the systematic analysis of the opportunities that these changes might provide for economic or social innovation” [12].

If we are to refer to innovation in education, the definition that is considered the benchmark for all those considering the topic of innovation in education is Huberman’s definition, published in 1973 – “innovation is a measurable, deliberate, lasting improvement unlikely to occur frequently”. Huberman also differentiates between innovations that introduce technical changes, innovations of a conceptual nature (new courses, new curricula, new teaching methods) and innovations that introduce changes in interpersonal relationships.[13] Innovation in education is, therefore, a deliberate activity, which follows the introduction of a deliberate vital novelty in a given context and is pedagogical because it aims to substantially improve the preparation of pupils (students) through a situation of interaction and interactivity.[14]

According to the findings of the Social Research and Demonstration Council on Technological and Social Innovation in Canada, three dimensions are proposed when defining innovation in education:

- ❖ curricular dimension - at the curriculum level,
- ❖ pedagogical dimension - innovation in the learning process;
- ❖ organisational dimension - innovation at the level of structure, roles and functions performed by people involved in education.

Based on these dimensions, innovation in education is defined as “a deliberate process of transforming practices by introducing a curricular, pedagogical or organisational novelty, which is subject to determination, and which aims to improve the educational achievement of pupils and students in a sustainable way”. Therefore, the analysis of these definitions allows us to identify the main characteristics of innovation in education:

- ✓ The innovation proposes an improvement that can be measured (increase in the level of education of the population, school participation rate, results, educational performance of pupils in various examinations, national and/or international tests, etc.);
- ✓ Innovation must be sustainable (decentralisation of education);
- ✓ Innovation must be a deliberate action that contributes to the educational success of as many individuals as possible. [15]

In the last 10 years, the concept of 'innovation' has been increasingly used in national strategies and policies to denote essential modernisation in various social, economic, political and scientific fields.

The European Commission supports innovation in education through the following initiatives:

- *University-Business Cooperation and University-Business Forum*. Building closer relationships between business and academia is beneficial because it encourages knowledge transfer and exchange, creates long-term partnerships and diverse opportunities, and stimulates innovation, entrepreneurship and creativity. Closer cooperation between universities and businesses can also help graduates to acquire the skills and mindsets required in the labour market, as well as to develop personally.
- *Supporting entrepreneurship and innovation in higher education*. The OECD Skills Studies series aims to provide a strategic approach to skills policies. It presents internationally comparable OECD indicators and policy analyses covering issues such as: quality of education and curricula; school-to-work transition; vocational education and training (VET); employment and unemployment; innovative learning at work; entrepreneurship; brain drain and migrants; and job matching skills.
- *Knowledge Alliances*, the European Education and Culture Executive Agency (EACEA) manages funding for education, culture, audiovisual, sport, citizenship and volunteering.
- *Higher Education for Smart Specialisation (HESS)*.
- The Digital Literacy Action Plan. The Action Plan for Digital Education (2021-2027) is a renewed European Union (EU) policy initiative to support the sustainable and effective adaptation of EU Member States' education and training systems to the digital age. Two priority areas are set out to achieve the objectives set out in this plan:
 1. Fostering the development of a high-performance digital education ecosystem
 2. Developing digital skills and competences relevant to digital transformation.
- *Working Group on Digital Education: learning, teaching, and assessment*. Building on the results of the Education and Training 2020 working groups, as part of the new cycle of European cooperation in education and training (2021-2030), based on the Communication on the European Education Area and the Council Resolution of February 2021, the working groups will contribute to making the European Education Area a reality. The working groups will continue their work until their current mandate expires in December 2025. They focus, within the framework of mutual learning, on exchanging information on the reform of national education policies and promoting positive change in the European Union (EU).

- *The European Institute of Innovation and Technology (EIT)* is the European Union’s (EU) initiative to support innovation at a systemic level - from education to market players. It is based in Budapest, Hungary. The EIT brings together organisations working in education, research and innovation (the so-called knowledge triangle) to form dynamic cross-border partnerships and create environments that foster innovation.
- *Entrepreneurship education.* The development of entrepreneurship is supported through several actions under the Erasmus+ programme. These are aimed at people studying, training or participating in strategic partnership projects abroad. The EU has developed a set of guidelines to support entrepreneurship in education and training. [4]
- *Heinnovate.* HEInnovate is a European Commission initiative launched in 2013 in partnership with the OECD. HEInnovate is a self-reflection tool for higher education institutions to explore their innovative potential. It helps to identify, prioritise and plan actions in eight key areas. It diagnoses strengths and weaknesses, opens discussions on the entrepreneurial/innovative nature of the HEI, and allows comparison and analysis of developments over time. HEInnovate can be used by all types of higher education institutions.

In order to identify the innovation capacity and readiness, the public institution Cahul State University “Bogdan Petriceicu Hasdeu”, used this tool (HEInnovate) at the beginning of 2023. As the survey was conducted in the framework of the project 101081787 – “skills4future” – “Developing and improving the STEAM skills of students and teachers for curriculum innovation and sustainable development of higher education institutions and local businesses”, funded by the European Union through the Erasmus+ Programmes, only 10 teachers, involved in the project, participated. The target group for this survey includes 10 teachers from Cahul State University “Bogdan Petriceicu Hasdeu”, Republic of Moldova, who teach in the Bachelor of Business Administration program, nine of them (90%) have a PhD degree. The overall result of the survey is illustrated below (Figure 1):

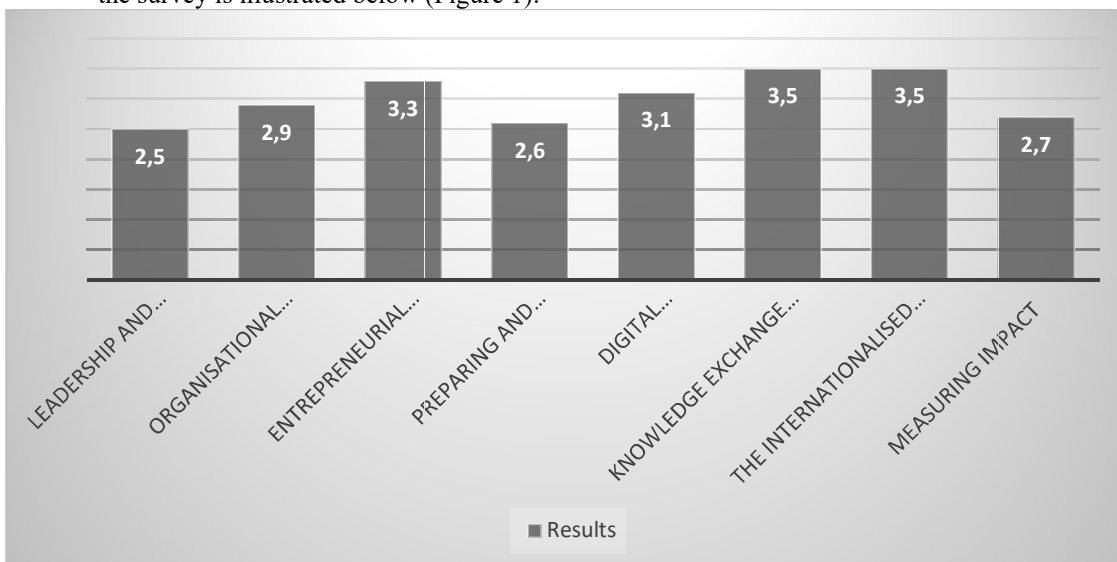


Figure 1. Overall result of the HEInnovate survey at the Department of Economics for 8 key directions
 Source: authors' elaboration based on data <https://heinnovate.eu> [16]

From the results of the survey, shown in the above graph, we can see that teachers rate the following most highly: knowledge exchange and collaboration (3.5), the internationalised institution (3.5), entrepreneurial teaching and learning (3.3) and digital transformation and capability (3.1). But the lowest rated was leadership and governance, with an average score of 2.5. This average index is formed as the average of the accumulated responses for several questions in each category. Respectively, we will dwell in more detail on the analysis of the answers given by teachers, only in some categories.

Entrepreneurial teaching and learning, involves assessing the perceptions of higher education teachers with regard to the learning opportunities to facilitate innovative teaching and learning revealed in the following results:

- ⇒ *The range of formal learning opportunities offered by institution to develop entrepreneurial mind sets and skills* - is presented in figure 2.

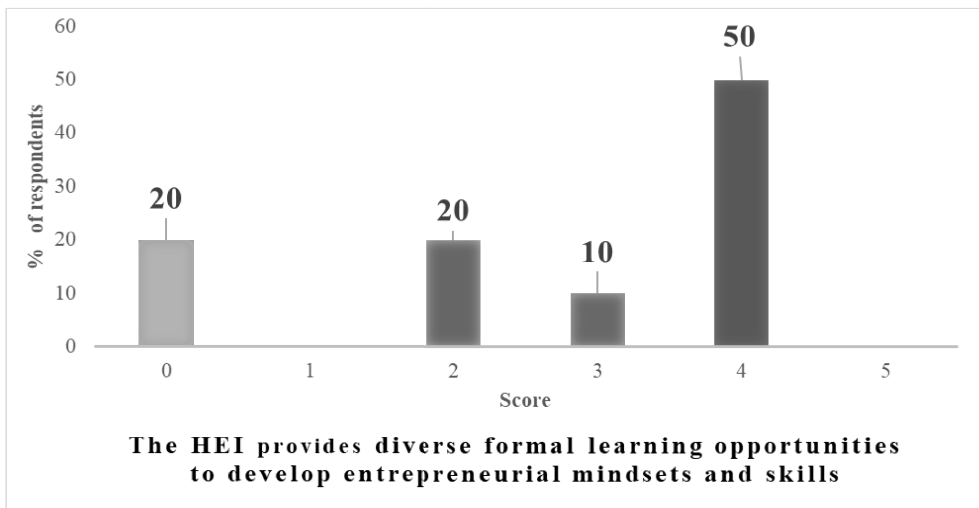


Figure. 2 Formal learning opportunities offered by the institution

The results of surveying the academic staff about diverse formal learning opportunities reported that half of the respondents consider that Cahul State University has a strong commitment to providing different formal learning opportunities to develop entrepreneurial mindsets and skills. However, the other half of respondents disagree by providing the following score: „3” – 10 % of professors, „2” – 20 % and „0” – 20 %.

The results of surveying the academic staff about diverse formal learning opportunities reported that half of the respondents consider that Cahul State University has a strong commitment to providing different formal learning opportunities to develop entrepreneurial mindsets and skills.

⇒ **The range of informal learning opportunities offered by institution to develop entrepreneurial mind sets and skills** - is presented in Figure 3.

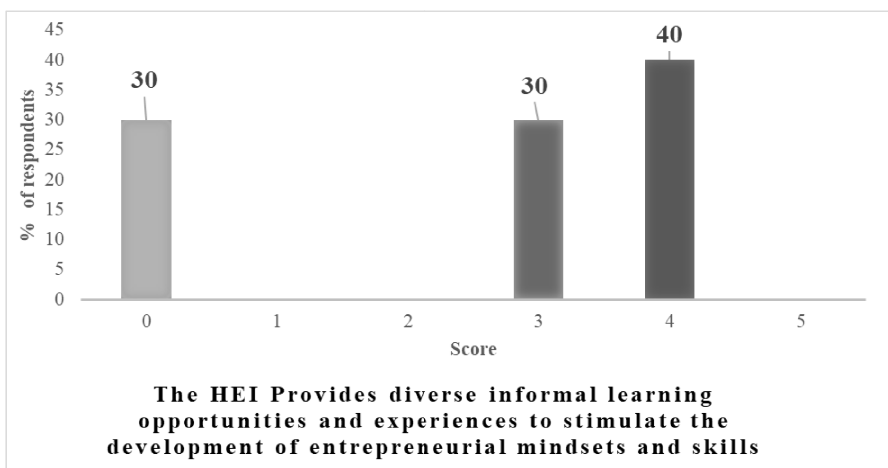


Figure 3. Informal Learning Opportunities Offered by the Institution

The results of surveying the academic staff about diverse informal learning opportunities showed a slightly different result: only 40 % of respondents consider that Cahul State University provides enough opportunities for informal learning to develop entrepreneurial mindsets and skills.

Institutional Capacity to Strengthen Innovation

Assessing the perceptions of higher education teachers with regard to the institutional capacity to strengthen innovation revealed the following results:

➤ *Perception of existing institutional capacity to support innovation* - is presented in Figure 4.

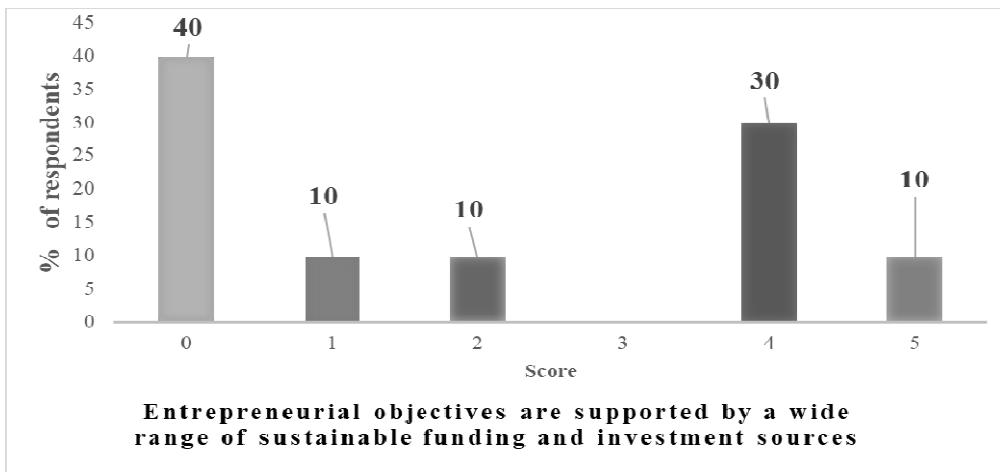


Figure 4. The range of sustainable funding and investment sources

According to the survey results, only 40 % of respondents on the “Perception of existing institutional capacity to support innovation” dimension, the Cahul State University “Bogdan Petriceicu Hasdeu” has a wide range of sustainable funding and investment sources that support Entrepreneurial objectives (10 % - strongly agree, 30 % - agree) (figure 4.).

Teachers’ expectations for knowledge exchange & collaboration. Assessing the perceptions of higher education teachers regarding expectations for knowledge exchange and collaboration revealed the following results:

- ✓ **Perception of existing opportunities to take part in innovative activities** - is presented in Figure 5.

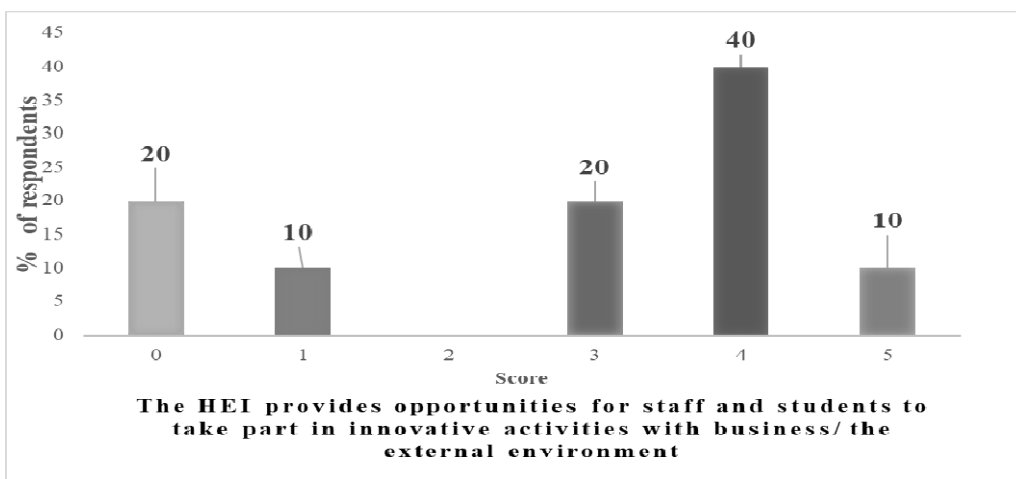


Figure 5. Degree of Staff Engagement with External Environment

The results of surveying the academic staff about „Perception of existing opportunities to take parts in innovative activities” reveal that 50 % of respondents agree with the statement “The HEI provides opportunities for staff and students to take part in innovative activities with business/ the external environment”, while 20 % have a neutral position and 30 % disagree with this statement.

- ✓ **Perception of Existing Opportunities to Integrate Research, Education and Industry** - is presented in Figure 6.

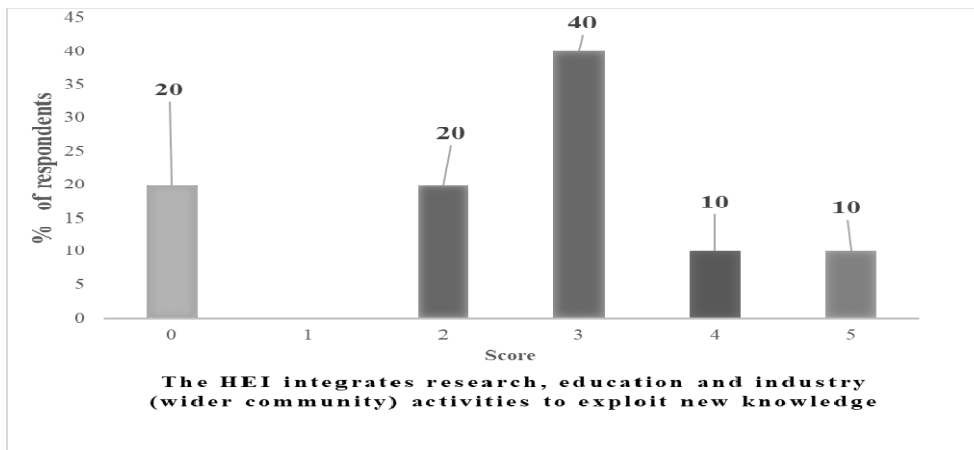


Figure 6. Degree of relationships with external environment

According to the staff opinion on the “Perception of existing opportunities to integrate research, education and industry”, only 20 % of the respondents consider that the HEI integrates research, education and industry (wider community) activities to exploit new knowledge, 40 % have a neutral position and the last part of respondents (40 %) disagree with this statement.

The survey results reveal that Cahul State University “Bogdan Petriceicu Hasdeu” has a lot to improve regarding entrepreneurship education, including the leadership and governance dimension, preparing and supporting entrepreneurs and measuring impact. Finally, entrepreneurial teaching and learning as well as knowledge exchange and collaboration are an integral part of Cahul State University’s entrepreneurial agenda, that should be continuously developed.

Cahul State University “Bogdan Petriceicu Hasdeu”, a university located in the southernmost region of the country, is part of several national, international, cross-border projects, and programs. Both the scientific and teaching staff, the students, as well as the administration of the institution are actively involved in projects that bring innovation in education and with their support contribute to transformations and modernizations in all spheres of activity of the region, contributing to its growth and development.

The initiatives proposed in the European Union's actions to implement and promote innovations in education are actively supported and implemented by state organizations in the Republic of Moldova. In the national education system, several projects have been launched which are already producing results and will have a strong impact with major transformations at all educational levels in the country. But the projects are being implemented not only at the general national level but also at the level of regions, districts, municipalities, villages, and even individual institutions. Some projects have already yielded results, others are still in the process.

DISCUSSIONS

Higher education, according to the Education Code [17], is a key factor for the cultural, economic, and social development of an increasingly knowledge-based society and a promoter of human rights, sustainable development, democracy, peace, and justice. As a form of education and training, it has as its mission the following:

- a) the creation, preservation, and dissemination of knowledge at the highest level of excellence;
- b) training highly qualified specialists who are competitive in the national and international labour market;
- c) creating opportunities for lifelong vocational training;
- d) preservation, development, and promotion of national cultural-historical values in the context of cultural diversity.

The development of the education system focuses on changes and innovative approaches, determined by the strategic guidelines of the state, trends in the evolution of the educational field, European standards and current scientific approaches. The environment in which higher education institutions in the Republic of Moldova operate has essentially changed: the knowledge and professional skills that students accumulate are the main promoters of the country’s economic development.

The promotion of innovative changes in the higher education system can be successfully achieved, including by identifying and taking over European best practices in the field and implementing/institutionalising elements beneficial and valuable for the national higher education system. We note that the integration of higher education into the European learning and research area is an irreversible process.

Several objectives of the development strategies have been achieved through the projects implemented through the European Union education initiatives and programmes:

- ✓ development of innovation infrastructure at institutional, enterprise, and regional levels,
- ✓ infrastructure development for entrepreneurship,

- ✓ increase the level of tripartite collaboration: LPAs-Education institutions -Business. Here several projects have been carried out at different levels of education and with several actors: territorial labour offices, local entrepreneurs, dual education, cross-border and good neighbourliness projects, etc...
- ✓ informing and empowering young people about starting a business, etc.,
- ✓ developing digital skills in different categories of young people,
- ✓ equipping educational institutions with modern IT equipment,
- ✓ digitising more processes and services.

These initiatives and programs developed and implemented by the European Union in higher education in the Republic of Moldova contribute to its economic and social development through:

- successful digital transformation, which changes many things and processes such as increasing the degree of awareness and understanding of the business ecosystem, adopting innovation as a business model, adopting agile methods for planning and governance and, finally, the evaluation criteria to underpin strategic digital initiatives at enterprise level.
- the continuous IT skills development for human resources which are necessary to achieve and support the desired level of knowledge necessary to effectively fulfil their roles at work.
- the activity and strategic directions of the universities are oriented and adapted to the demands of the regions where they are located.

Therefore, the higher education institutions can play a critical role in stimulating entrepreneurship through offering entrepreneurship education, facilities and advice for graduates starting businesses, and incentives for academics for spin-off enterprises and innovation collaborations with off-campus businesses. Their strategies and practices are evolving rapidly, supported by important government reforms.

CONCLUSIONS

In conclusion, we can say that innovative education and innovations in education, including digitalisation, will contribute to the growth and education of generations of young people able to adapt easily to all social, economic and political changes. Respectively innovations must be implemented, proportionally, at all educational levels, so there will be a logical link in the development of certain skills in children. This logical link is missing today in the educational system of the Republic of Moldova. Because several projects are implemented simultaneously in the country's education system, but there is no logical and correct link between these projects, the desired or expected results are not achieved at the country level. Instead of seeing an evolution in education and a synchronic development of the country by increasing the standard of living in the regions, we see an even greater degradation of the educational centres further away from the capital.

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