Improving the Quality of Entrepreneurial Education by ICT Education of HEI Pedagogical Staff

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Abstract – In spite fact, that current unemployment rates reach a historical minimum since the last world economic crisis, the numbers connected to the unemployment of young people are still not encouraging. The rates of young people’s unemployment are almost double in comparison with the unemployment of other groups of EU citizens. The Erasmus+ is EU funding scheme, which aims to support education, training, youth, and sport in Europe. Within this scheme, the project ReStart was designed. It aims to reinforce the entrepreneurial and digital skills of students and teachers to enhance the modernization of higher education in Moldova. Its’ main objective is to innovate the education in the field of entrepreneurship in connection with European Union best practices, local market expectations with a better understanding of relevant entrepreneurship and digital learning needs of students, teachers, and local businesses. The paper will describe the present status of the education innovation process including the implementation of new pedagogical approaches based on using ICT. Also, the results of the ReStart project will be presented.

Keywords – entrepreneurial education; LMS Moodle; interaction; teachers’ education; ICT

I. INTRODUCTION

The consequences of the economic and financial crisis persist in the economy. However, unemployment rates slowly decrease each year. Moreover, the impacts of the present and continuing COVID-19 crisis of the economic environment of all countries around the world are more-less still unpredictable. But the fact is, that rates of unemployment in the EU will rise in comparison with status before March 2020. Following the strategic documents of the European Union (EU), the unemployment rate of the young citizens is almost double in comparison to the unemployment rate of the other EU citizens in productive age. This is the reason, why the employment of young people is one of the key challenges in Europe. European Commission performs several activities to improve the current situation (e.g. Youth Employment Initiative, European Qualification Framework, etc.). One of the most important tools that can be used to decrease youth unemployment is education. As the previous pandemic months showed us, education needs serious reform in way of using modern available technologies to enhance students’ motivation to learn at their home and use the different on-line platform to share our knowledge and skills. Unfortunately, the situation showed, that there is a lot of work before all participants of the education process. But the positive of the situation is, that technologies got a chance to be used in different ways and individuals got the opportunity to achieve a relationship to lifelong learning at their homes.

However, to promote the skills of young people and to provide them with the knowledge they will need (especially at the labor market), it is necessary to transform education. One of the biggest challenges is to support higher education areas to promote entrepreneurship education. Students must gain practical skills and experience besides providing them with theoretical knowledge. This is the main objective of the international project “Reinforce entrepreneurial and digital skills of students and teachers to enhance the modernization of higher education in MOLDOVA” (ReStart; supported by EU program Erasmus+). The project aims to improve study programs, students’ and teachers’ entrepreneurial skills by employing digital education. The main purpose of the paper, as we are already in the midterm of the project lifetime, is to present the mentioned project and its already achieved and expected outcomes, without analysis of obtained results that are expected at the end of the year.

II. UNEMPLOYMENT OF YOUTH

Unemployment is one of the crucial economic measures for the country. The economic and financial crisis resulted in young people becoming one of the age groups most at risk of social exclusion. The unemployment of young citizens is usually higher when compared to the other groups of the citizens in productive age [1].

Typically, young new graduates face the reality of finding the job. The unemployment rate of young people aged 15-24 years in the EU reached a height of 24.0 % in February 2013, with peaks of 60.0 % in Greece, 56.2 %
in Spain, 49.8% in Croatia, 44.1% in Italy and 40.7% in Portugal. Since then the youth unemployment rate decreased to 14.2% in 2019, thanks to the economic growth, but this number presents still a high level of unemployment [1].

The increase in employment, productivity, and social cohesion are pillars of the EU's smart growth. Intending to increase employment, especially the employment of the youth and recent graduates, it is important to support their ability to self-employment. The excessively theoretical approach in the educational process was identified amongst the major problems of education. The educational system should provide students the opportunity to acquire practical experience, which represents the advantage when applying for a job or developing their own business.

The Council addressed this situation and established the Youth Guarantee, a political commitment to ensure that all young people under the age of 25 years receive a good-quality offer of employment, continued education, an apprenticeship or a traineeship within a period of four months of becoming unemployed or leaving formal education. To support this policy EU created the Youth Employment Initiative (YEI). [2]

The Youth Employment Initiative (YEI) includes the following actions to promote the application of youth in the labor market:

- stepping up of early activation and intervention with the development of individual action plans,

- improvements to the quality of general education and training, including reforms in the vocational education and training system and in the apprenticeships system, better digital technologies, and foreign language learning, support for young people who have not completed secondary education to return to education or training,

- easier school-to-work transitions, for instance by helping young people secure their first work experience or traineeship, intending to increase their employability and labor market attachment, including in the public sector,

- acquisition of professional skills in new professions or professions where there are labor shortages, in training and on-the-job training,

- strengthening public employment services capacity, with the establishment of an integrated system of career guidance, help and guidance for job seekers, such as CV and cover letter, or job interview preparation,

- implementation of mentoring schemes as a part of labor market services, either when the young person is in training or on-the-job,

- activation support for self-employment, such as start-up support (including mentoring) for young entrepreneurs,

- incentives for employers, such as wage and recruitment subsidies and reductions of non-wage labor costs. [2]

All the above-mentioned actions are in close connection with strategic document Europe2020 targets, where entrepreneurship was identified as one of the key elements to promote innovation, competitiveness, and economic growth [3]. The entrepreneurship might be defined as a transversal competence, which applies to all spheres of the life: from the nurturing personal development to the actively participating in the society, to (re)entering the job market as an employee or as a self-employed person, and also to start-up ventures (cultural, social or commercial). Therefore, the entrepreneurial education of young generations is highly important.

In general, entrepreneurship represents an individual's ability to turn ideas into action. It includes creativity, innovation, and risk-taking, as well as the ability to plan and manage projects to achieve business objectives [4]. The development of the entrepreneurial skills at the multinational level is covered by the New Skills Agenda for Europe [5], [6] by its particular area - The Entrepreneurship Competence Framework (EntreComp) [7]. EntreComp conceptualizes entrepreneurship as competence needed in the XXI century. It covers the mixture of cognitive skills, social skills and relationship skills, technical skills, and managerial skills, also defined as important in other researches e.g. [8],[9].

A. Youth unemployment in the Republic of Moldova

The problem with youth unemployment is significant also in European countries outside the EU.

The latest global economic and financial crisis strongly influenced the economy of the Republic of Moldova, consequently, the investments in the economy have been reduced, the local currency depreciated, the remittances have been reduced and the purchasing power of the population diminished, etc. Despite these phenomena, Moldova's gross domestic product (GDP) grew by 3.4% in 2018, according to the World Bank data [10]. The most significant influence on GDP growth was the gross added value created in the wholesale and retail trade, transport and storage, hotels, and restaurants. Crediting the economy reflects the first signs of revival, the volume of new loans granted in the economy registered an increase of about 28% [11]. According to the Global Competitiveness Index 2017-2018 issued by the World Economic Forum, Moldova ranks 89th out of 137 included states. [12]

Following Figure 1 shows changes in youth unemployment rates in Moldova since its independence in 1991.
The unemployment of the youth in Moldova increased during years of transformation with the maximum in 1999 at the level of 21.14%. During the 2000s the youth unemployment rate fluctuated until peaking in 2004 (19.51%). Since then it steadily decreased until the economic crisis with another increase peaking at 17.85% in 2010. Since then it decreased and now it is stagnating around 10% (10.03 in 2019). Still, it is a high level of unemployment and it must be addressed by economic measures[13]. The above-stated data show a complicated socio-economic situation in Moldova. The Republic of Moldova signed the Association Agreement with the European Union in 2014. Its agenda outlines the priorities for reform in Moldova. According to its recommendations, the Republic of Moldova should conduct multiple reforms also in the education area. One of the recommendations also includes the promotion of academic cooperation, capacity building, and student and staff mobility through the Erasmus+ program and researchers’ mobility and training through Marie Skłodowska-Curie actions [14]. As the reaction to the economic situation of Moldova and in connection with that recalled necessary education reform, the project ReStart (in which also our university is participating) started under the Erasmus + program.

III. REStart PROJECT

Project ReStart (Reinforce entrepreneurial and digital skills of students and teachers to enhance the modernization of higher education in Moldova) is co-funded by the program Erasmus+. The international consortium of the project is composed of universities from Moldova (State University of Moldova, Alecu Russo State University of Balti, Academy of Economic Studies of Moldova, State Agrarian University of Moldova and BP Hasdeu State University of Cahul), Bulgaria (University of Ruse "Angel Kanchev"), Romania (Politehnica University of Bucharest and The Agence Universitaire de la Francophonie - Central and Eastern Europe Office) and Slovakia (Technical University of Košice). Its primary objective is to contribute to the update of 2nd-degree study programs of Moldavian partner universities in the field of Business & Administration with the main aim of improving the entrepreneurial skills of students and teachers through digital education [15].

The most important benefits for the students of the project include:

- improving the level of knowledge in the field of entrepreneurship and business plan development,
- improving the level of digital skills,
- improving student preparedness for labor market needs.

The most important benefits from the teachers’ point of view of the project include:

- development of 6 innovated curricula in the field that they can use in their university environment,
- the possibility of acquiring new information, knowledge, and skills on how to implement modern pedagogical approaches with the possibility of using tools and methods of digital education.

Since the start of the project, several activities were conducted that aim to achieve the main objective:

- assessing the needs of the current business in the Republic of Moldova,
- identifying the level of digital skills of participants in the educational process in Moldovan universities;
- integration of the “Best practices” into the education process and share of the experiences of the EU partner universities.

Best practices integration is realized through:

- organizing so-called "Training of Teachers", where the knowledge, skills, and experience are shared directly at the European universities,
- practical demonstrations of the teaching units carried out directly by the European partners in the environment of the Moldavian universities,
- creation of innovated curricula and courses in the LMS Moodle online environment,
- reviewing the curricula developed by the European partners with the aim of continuous improvement of created modern learning environment using innovative approaches and digital technologies.

Developed educational materials and online courses are directly tested as part of pilot testing by individual Moldavian universities. Students who have completed the courses then present the acquired knowledge within the so-called “Business Plan Competition”, where students from all participating universities compete with each other. The students’ business plans are evaluated by experts from European universities. The project outputs are communicated to the public in various ways, in all cases, it is not only a one-sided presentation of the project results, but the aim of the events is also to get feedback from the professional public (educators, entrepreneurs, etc.) operating in the Republic of Moldova. Most significant events include:
IV. IMPROVING THE QUALITY OF EDUCATION BY ICT PRACTICES

A. Advanced ICT Practices in LMS Moodle

When using LMS Moodle for education, teachers have multiple advanced ICT tools or practices suitable for improving the quality of education. Students might be navigated through the content of the Moodle course in the desired way using principles of the learning path. A learning path is a sequence or a structure of the content and activities that help students to get the right knowledge, in the right order, and without wasting time. To say it simply, a teacher could define, which content and activity are available and when, for example after completing a previous activity, quiz, etc. The learning paths could include intermediate quizzes, videos, presentations, assignments, and text.

Using this approach, the students’ performance might be tracked and analyzed for two purposes:

• to improve the course in the following iteration,
• and to provide the feedback about achieved knowledge and skill to the student and the teacher.

Using the learning paths represents a tool for the student’s higher engagement in the educational process, as it provides the student with feedback and pace of learning adapted to his/her knowledge and skills. Furthermore, the environment of LMS provides students the possibility to cooperatively work on practical problems and peer-assess their performance, which should be used as another tool to enhance the students’ involvement in the education process. Following examples of advanced activities in LMS Moodle that might be used to improve the education process:

Workshop - module enables the collection, review, and peer assessment of students’ work. Students can submit any digital content or type text directly into a field. Submissions are assessed using a multi-criteria assessment form defined by the teacher. The process of peer assessment and understanding the assessment form can be practiced in advance with example submissions provided by the teacher, together with a reference assessment. [16]

Quiz - the quiz activity enables a teacher to create quizzes comprising questions of various types, (e.g. multiple-choice, matching, short-answer, etc.). The teacher can allow the quiz to be attempted multiple times, with the questions shuffled or randomly selected from the question bank. Quizzes may be used as course exams, mini-tests for reading assignments or topics, exam practice using questions from past exams, to deliver immediate feedback about performance and for self-assessment.[16]

Survey - module provides several verified survey instruments that have been found useful in assessing and stimulating learning in online environments. A teacher can use these to gather data from their students that will help them learn about their class and reflect on their teaching. [16]

B. Training-of-Teachers Event for Improving the Quality of Entrepreneurial Education

Training-of-teachers event was part of the Restart project and it was called “Transforming Teachers Mindsets Through Digital and Entrepreneurial Skills Development”. The event was attended by 37 teachers from 5 different Moldavian universities and it took place in October 2019. The event contained the following modules:

• Module 1 – Innovative teaching and learning – which included analysis and training of soft skills training with a psychologist during the teaching session, and also practical advanced ICT-practices in blended learning courses using LMS Moodle.

• Module 2 – Gaming in education (games implemented in management and marketing courses).

• Module 3 – Entrepreneurship skills development for teachers and students case studies (lectures on topics of Entrepreneurship, Family business problems and prospects, family business case studies, etc.).

• Module 4 – Technological transfers – lecture on technology transfers and start-up incubators.

• Module 5 – Pedagogical aspects in counseling and mentoring of students (Key subjects in digital and entrepreneurial skills for teachers; Pedagogical aspects in counseling and mentoring of students).

• Module 6 – Professional insertion of MD students, international call for dual-learning projects, lessons learned, and best practices in dual-learning.

Within Module 1 of the Training-of-Teachers event, the innovative ICT tools and activities available in LMS Moodle were introduced by lecturers and practically tried by participating Moldavian teachers. The main idea was to improve the practical experience of teachers from Moldavian universities by working with LMS Moodle within the education process. However, to better understand the functioning of the entire education process, one of the goals was to demonstrate how students see the activities in the courses and on the other hand, how the teachers see them.
Before the Training-of-Teachers event, we reviewed the courses developed by the participants in LMS Moodle provided by their university. The result was that the courses in LMS Moodle used by participants did not use the potential of the given LMS to support the educational process as they were only at the basic level. Their courses used Moodle as a closed environment for publishing static content. Therefore, various advanced activities within practical exercises were presented to increase the attractiveness of participants’ courses in LMS Moodle. The usage of advanced education tools in the LMS Moodle that offer to control the acquired knowledge and skills and to control the educational process of individual students was therefore demonstrated.

During the session design phase, the study material and demonstrations were prepared for participants, containing basic information about resources and activities, blended learning, learning paths, learning analytics, and their creation in LMS Moodle. The basic experience with LMS Moodle (to create static contents – uploading the texts, pdf files, titles, etc.) was assumed as the participants already prepared theoretical lectures during earlier training sessions aimed at basic use of LMS Moodle.

To ensure the efficient use of resources and time during a session, the participants were asked within the training proposals to prepare the following materials for advanced ICT practices training in advance:

- content of topic in their course (arbitrary depending on participant’s specialization, research, etc.),
- resources – uploaded into the course by participants during the course content development,
- minimum of 5 different questions (and corresponding answers) for the test based on the content of the course topic,
- a task which other participants should solve while acting as students (short activity e.g. on-line text, essay, and detailed description of how the assignment would be evaluated by others).

During the realization phase, firstly, the participants were asked to answer the questionnaire focused on their experience with LMS Moodle and blended learning. It confirmed that all participants had basic experience with the usage of LMS Moodle. Almost 91% of them heard about learning competencies but only 54% ever set the learning competencies in their LMS. Just above 77% knew about the learning path but only 36% set the learning path in their course at least once before. Around 23% knew some of the tools for learning analytics in LMS Moodle and used them before. Similarly, around 23% ever involved students in the activity evaluation process. Following Table 1 contains participants’ answers on questions regarding their experience with advanced tools in LMS Moodle.

| TABLE I. ANSWERS ON QUESTIONS REGARDING PARTICIPANTS’ EXPERIENCE WITH ADVANCED TOOLS IN LMS MOODLE |
|---------------------------------------------------------------|------------------|-------------------|------------------|--------------------|------------------|
| In which roles do you use LMS Moodle?                         | administrator    | manager           | teacher          | a teacher without  | student          | host             |
|                                                               | 9.09%            | 9.09%             | 100.00%          | possibility to    | 13.64%           | 4.55%            | 4.55%            |
| Which resources in LMS Moodle do you know?                    | URL              | Page              | File             | Folder            | Book             | Label            |
|                                                               | 81.82%           | 68.18%            | 86.36%           | 95.45%            | 59.09%           | 36.36%           |
| Which activities in LMS Moodle do you know?                   | Assignment       | Quiz              | Choice           | Workshop          | Database         | Glossary         |
|                                                               | 59.09%           | 81.82%            | 45.45%           | 22.73%            | 27.27%           | 50.00%           |
| Which of the available resources do you use most often?       | URL              | Page              | File             | Folder            | Book             | Label            |
|                                                               | 9.09%            | 4.55%             | 40.91%           | 45.45%            | 0.00%            | 0.00%            |
| Which of the activities do you use for your students most often? | Assignment       | Quiz              | Choice           | Workshop          | Wiki             | Other            |
|                                                               | 45.45%           | 45.45%            | 45.55%           | 4.55%             | 0.00%            | 4.55%            |
| Which of the advanced Moodle activities have you ever used before? | Workshop         | Wiki              | Database         | Glossary          | Survey           | None of the mentioned |
|                                                               | 13.64%           | 0.00%             | 4.55%            | 9.09%             | 40.91%           | 31.82%           |

The main idea was to achieve experience in the course development as a teacher, but also gain insight into the education process from the student's side. From that point of view, practical training was divided into two parts. Firstly, when participants acted as teachers, they created the content of their course. Every content should have the character suitable for increasing student engagement in the course (in LMS Moodle: poll, forum, chat, dictionary, feedback, test, wiki, and workshop). Further, participants designed the quiz based on the content of the topic. Lecturers also described the possibilities of the workshop activity available in LMS Moodle and participants tried to prepare a workshop while acting as teachers. In the second part of the event, participants tried the roles of students in the course and tried out the content created by other participants (including tests and workshops). Switching the role between the student and the teacher was necessary (to manage their topics) until the end of the event. In LMS Moodle, a t
Moodle only 32 topics were edited, while some of the teachers rather worked in pairs.

At the end of the practical training, participants gave feedback on this part of the training event. Almost 68% appreciated the professionalism of lecturers in the eLearning area and over 74% valued the possibility of consultation with the experts. More than 90% welcomed the chance to directly try out the advanced tools of eLearning. Almost 71% of participants appreciated acquiring new knowledge and 81% the skills trained during the event. Furthermore, over 29% of participants are planning to create new courses in their LMS Moodle and almost 71% will further develop and improve their current courses, from that 68% through increasing the interactivity of their courses. More than 93% of respondents will implement approaches of eLearning into education for increasing the interactivity and the motivation of students. Around 13 % will include quizzes and bank of questions into their courses (the most of respondents already used the quizzes).

All of the participants added that they learned something new in the area of advanced tools in LMS Moodle. They particularly highlighted achieved practical experience with quiz and workshop activities in LMS Moodle, which they are planning to implement into their courses. All of them agree that they can apply acquired skills and knowledge in their teaching praxis.

V. CONCLUSION

Youth unemployment is a very serious problem, which can be partially addressed by improving the quality of education. Especially, the entrepreneurial education can promote the self-employment of the youth. However, to improve entrepreneurial education, it is important to integrate the most up-to-date educational approaches and make use of available modern technologies. Innovation and improvement of entrepreneurial education in Moldova is the key aim of the ReStart project presented in the paper. Its outputs are the creation of innovated curricula and also the exchange of experience between educators from different universities, different states, and different business environments. The paper also indicates the results of the Training-of-Teachers event aimed to improve the quality of entrepreneurial education including practical try-out of advanced ICT practices available in LMS Moodle by teachers from Moldavian universities. This exchange of experiences drives the further development of the education process, which benefits not only the students themselves but also the labor market. The main aim of the paper was to present the share of knowledge and experience in the higher education innovation process at the Moldovan universities. The process is still in progress and the results of the “ReStart” project implementation are expected at the end of this year.

ACKNOWLEDGMENT

This contribution was made thanks to the participation of authors in an international project ReStart (Reinforce entrepreneurial and digital skills of students and teachers to enhance the modernization of higher education in Moldova) co-financed by the European Commission under the program Erasmus+, KA2 Program – Capacity Building in the Field of Higher Education.

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