University of Kragujevac
Faculty of Technical Sciences Čačak

Proceedings TIE 2022

9th International scientific conference

Technics and Informatics in Education

Čačak, Serbia,16-18 September 2022

University of Kragujevac
Faculty of Technical Sciences Čačak

Proceedings TIE 2022

9th International Scientific Conference
Technics and Informatics in Education

Čačak, Serbia, 16-18 September 2022

Book title:

Proceedings TIE 2022

Organizer:

University of Kragujevac, Faculty of Technical Sciences Čačak, Serbia

Co-Organizers:

University of Kragujevac – Erasmus+ Project DigiPsyRes
University of Kragujevac, Faculty of Education in Užice, Serbia
University of Kragujevac, Faculty of Mechanical and Civil Engineering Kraljevo, Serbia
University of Novi Sad, Technical Faculty "Mihajlo Pupin" Zrenjanin, Serbia
University of Niš, Faculty of Education Vranje, Serbia
Educational Research Association of Serbia

Sponsors:

Ministry of Education, Science and Technological Development of Republic of Serbia
University of Kragujevac, Faculty of Technical Sciences Čačak, Serbia
University of Kragujevac, ERASMS+ project „Enhancing digital and psychological resilience through peer networking in the online environment in times of crises – DigiPsyRes", 2021-1-RS01- KA220-HED000032204

Editor:

Ivan Milićević, University of Kragujevac, Faculty of Technical Sciences Čačak

Papers included in these Proceedings were reviewed by independent referees:

Veljko Aleksić, University of Kragujevac, Faculty of Technical Sciences Čačak
Saule Amanzholova, International IT University, Almaty, Kazakhstan
Dauren T. Askarov. International University of IT, Department of economics and business, Kazakhstan
Dragana Bjekić, University of Kragujevac, Faculty of Technical Sciences Čačak
Miroslav Bjekić, University of Kragujevac, Faculty of Technical Sciences Čačak
Marija Blagojević, University of Kragujevac, Faculty of Technical Sciences Čačak
Milevica Bojović, University of Kragujevac, Faculty of agronomy, Čačak
Đorđe Damnjanović, University of Kragujevac, Faculty of Technical Sciences Čačak
Biljana Đorić, University of Kragujevac, Faculty of Technical Sciences Čačak
Željko Jovanović, University of Kragujevac, Faculty of Technical Sciences Čačak
Branko Koprivica, University of Kragujevac, Faculty of Technical Sciences Čačak
Ivana Krsmanović, University of Kragujevac, Faculty of Technical Sciences Čačak
Eugen Ljajko, University of Priština in Kosovska Mitrovica, Faculty of Science and Mathematics, Kosovska Mitrovica
Milentije Luković, University of Kragujevac, Faculty of Technical Sciences Čačak
Vanja Luković, University of Kragujevac, Faculty of Technical Sciences Čačak
Nina Manojlović, University of Kragujevac, Faculty of Philology and Arts, Kragujevac
Goran Marković, University of Kragujevac, Faculty of Mechanical and Civil Engineering in Kraljevo
Nenad Miladinović, University of Kragujevac, Faculty of Educational Sciences, Jagodina
Ivan Milićević, University of Kragujevac, Faculty of Technical Sciences Čačak
Marjan Milošević, University of Kragujevac, Faculty of Technical Sciences Čačak
Vladimir Mladenović, University of Kragujevac, Faculty of Technical Sciences, Čačak
Miloš Papić, University of Kragujevac, Faculty of Technical Sciences, Čačak
Uroš Pešović, University of Kragujevac, Faculty of Technical Sciences, Čačak
Marko Popović, University of Kragujevac, Faculty of Technical Sciences, Čačak
Olga Ristić, University of Kragujevac, Faculty of Technical Sciences Čačak
Marko Rosić, University of Kragujevac, Faculty of Technical Sciences Čačak
Vesna Ružičić, University of Kragujevac, Faculty of Technical Sciences, Čačak
Olga Safonkina, National Research Mordovia State University, Saransk, Russia
Nebojša Stanković, University of Kragujevac, Faculty of Technical Sciences Čačak
Nenad Stefanović, University of Kragujevac, Faculty of Technical Sciences Čačak
Milica Stojković, University of Kragujevac, Faculty of Technical Sciences Čačak
Riste Temjanovski, University "Goce Delčev" at Štip, Faculty of Economics, North Macedonia
Vlade Urošević, University of Kragujevac, Faculty of Technical Sciences Čačak
Jasmina Vesić Vasović, University of Kragujevac, Faculty of Technical Sciences Čačak
Lidija Zlatić, University of Kragujevac, Faculty of Education in Užice

Disclaimer:

The authors take full responsibility for the content of their papers.

Technical Editor:

Veljko Aleksić, University of Kragujevac, Faculty of Technical Sciences Čačak

Publisher:

University of Kragujevac, Faculty of Technical Sciences Čačak, Serbia

For Publisher:

Danijela Milošević, PhD, Dean of Faculty of Technical Sciences Čačak, University of Kragujevac, Serbia

Edition:

100 copies

Printed by:

University of Kragujevac, Faculty of Technical Sciences Čačak, Serbia

ISBN: **978-86-7776-262-9**

Preface

Ninth international scientific conference Technics and Informatics in Education – TIE 2022 aims to promote and support research in education of new generations in technical and technological fields at all levels of education and contribute to technology development and education improvement.

After double-blind reviewing, 72 papers were accepted for the current edition of Proceedings in the form of plenary lectures and original scientific papers, within various fields of technical, IT and technology- supported education at all educational levels – primary, secondary, higher education and education for adults. Two more papers were accepted to be published in Appendix A of the Proceedings (on Serbian language) for the Symposium "Technics and Informatics in Education: School Teachers for Teachers" that is organized within TIE 2022.

Authors are responsible for any spelling, grammar and stylistic errors in their work.

Articles in the *Proceedings TIE 2022* are organized by the following topics:

- Technics, Technology and Informatics in Education;
- Educational Technology;
- Engineering Education and Practice;
- IT Education and Practice;
- Professional Development and General Education Topics;
- ESP and Technics and Informatics: Challenges and Perspectives;
- Digital and Psychological Resilience.

Special activities within the Conference are the following:

- Tribute to Professor Dragan Golubović – founder of conference and creator of Technics and Informatics education in Serbia;
- Round Table: Digital and psychological resilience support by networking and peer problem solving;
- Open discussion: Education of technics and technology teachers – university–school cooperation.

Within the TIE 2022 conference, a special thematic segment is dedicated to the current ERASMUS+ cooperation partnerships in higher education project "Enhancing digital and psychological resilience through peer networking in the online environment in times of crises – DigiPsyRes" (2021-1-RS01- KA220-HED000032204). This multidisciplinary project deals with the problem of the growing need for psycho-social support in times of crises by enhancing digital and psychological resilience through peer networking in the online environment. The main goal of the project is to build capacities, readiness and procedures to empower students to enhance their digital and psychological resilience. The project is coordinated by the University of Kragujevac (2021-2024) and partner institutions are University in Foggia, Italy, and Kazimierz Wielki University in Bydgoszcz, Poland.

The Scientific and Organizing Committee wishes to express gratitude to all the professionals from various fields who contributed to the Conference.

We would like to thank Partner Institutions which participated as co-organizers of the Conference.

We express special thanks to the Ministry of Education, Science and Technological Development of the Republic of Serbia for financial contribution to this scientific gathering.

Ivan Milićević
Editor

Presidents' Foreword

Faculty of Technical Sciences Čačak, University of Kragujevac, has the honour to organize the ninth international scientific conference "Technics and Informatics in Education – TIE 2022".

The Conference follows the tradition of gathering teachers, researchers and professionals engaged in various levels of technical, technological and IT education. Over the past 50 years, these gatherings have been organized in numerous forms (conferences, seminars, consultations, etc.) in Serbia and the region. From 2006 to 2016 the conference Technics and Informatics in Education – TIE was organised biennially at the Faculty of Technical Sciences as a national conference with international participation. As of 2018 TIE has a form of an international conference. Eight conferences titled Technics and Informatics in Education were held from 2006 to 2020. The TIE conferences have had a huge impact on the development of IT, technical and scientific subjects in both primary and secondary education. The significant impact has also been perceived in diverse fields related to technical and IT education at university level. However, the new circumstances necessitate organising scientific assemblies in the field of technics and the related technologies.

The TIE 2022 conference aims to improve the exchange of knowledge and experience between experts, professionals, researchers and teachers from Serbia and the region. The conference is expected to provide an analytical review of technical, technological and IT education, focusing on teacher training, terminology in the related fields, as well as the achievements regarding teaching aids, student books, educational assistive technology, technology supporting the enhancement of mental health and well-being, etc.

The Conference involves all the levels of technical, technological and IT education: from preschool institutions, primary and secondary schools over higher and university education, to various forms of lifelong learning.

Furthermore, the special emphasis is given to the importance and role of informatics and computer science in technical education, as well as the correlation between technical education and other natural, social and education sciences. The thematic field of ESP, encompassing foreign/second and professional languages in the realm of technics, technology and informatics, is the new aspect of the Conference.

Within the TIE 2022 conference, a special thematic segment will be dedicated to the current ERASMUS+ project which is realized under the section strategic partnerships in higher education and is run by the University of Kragujevac (2021-2024). Project activities within the conference propose a round table, a symposium, and a workshop addressing the issue of the psychological and social resilience of students in times of crisis.

The results of the conference are anticipated to contribute to planning the development of education in the fields of technics, technology, engineering, IT and computer sciences. The results are also expected to support the exchange of educational patterns and the alignment with regional, EU and global trends in fields in the focus.

We hope that experience gained at the Conference will be very useful both for the participants and for the development of technical-technological education field.

Presidents of the Scientific Committee and Organizing Committee

Organization

The 9th International Scientific Conference Technics and Informatics in Education - TIE 2022 is organized by the Faculty of Technical Sciences Čačak, University of Kragujevac, Serbia. The Conference is held under the patronage of:

- Ministry of Education, Science and Technological Development of Republic of Serbia
- University of Kragujevac, Faculty of Technical Sciences Čačak, Serbia

Scientific Committee

Co-Chairs:

Dragana Bjekić, University of Kragujevac, Faculty of Technical Sciences Čačak, Serbia
Nebojša Mitrović, Vice-Dean of Faculty of Technical Sciences, Čačak, University of Kragujevac, Serbia

Members:

Danijela Milošević, Dean of Faculty of Technical Sciences Čačak, University of Kragujevac, Serbia
Dragan Đurčić, coordinator of the ERASMUS+ project DigiPsyRes, University of Kragujevac, Serbia
Snežana Marinković, Dean of Faculty of Education in Užice, University of Kragujevac, Serbia
Mile Savković, Dean of Faculty of Mechanical and Civil Engineering Kraljevo, University of Kragujevac, Serbia
Dragica Radosav, Dean of Technical Faculty "Mihajlo Pupin" Zrenjanin, University of Novi Sad, Serbia
Dragana Stanojević, Dean of Faculty of Education in Vranje, University of Niš, Serbia
Dragica Pavlović Babić, President of Educational Research Association of Serbia; University of Belgrade, Faculty of Philosophy, Serbia
Damir Purković, University of Rijeka, Department of Polytechnics, Croatia
Ivan Luković, University of Belgrade, Faculty of Organizational Sciences, Serbia
Vladan Pantović, IEEE Education Society Chapter of IEEE Serbia & Montenegro Section, Serbia
Tatijana Dlabač, University of Montenegro, Faculty of Maritime Studies Kotor, Montenegro
Ljubica Kazi, University of Novi Sad, Technical Faculty "Mihajlo Pupin" Zrenjanin, Serbia
Tatjana Atanasova–Pačemska, University "Goce Delčev" Štip, Faculty of Electrical Engineering, North Macedonia
Dragana Glušac, University of Novi Sad, Technical Faculty "Mihajlo Pupin" Zrenjanin, Serbia
Marian Greconici, Politehnica University of Timişoara, Faculty of Electrical and Power Engineering, Romania
Lefkothea Kartasidou, University of Macedonia, Department for Educational and Social Policy, Thessaloniki, Greece
Stefan Kirilov Kartunov, Technical University Gabrovo, Faculty of mechanical engineering and engineering, Bulgaria
Srdjan Nogo, University of East Sarajevo, Faculty of Electrical Engineering, Bosnia and Herzegovina
Dionysios Politis, Aristotle University of Thessaloniki, Faculty of Sciences, Greece
Olga Safonkina, Ogarev Mordovia State University, Saransk, Russia
Riste Temjanovski, University "Goce Delčev" Štip, Faculty of Economics, North Macedonia
Jelena Timotijević, University of Brighton, United Kingdom
Gulnara Zakirova, International University of Information Technology, Almaty, Kazakhstan
Blagica Zlatković, University of Niš, Faculty of Education in Vranje, Serbia
Miroslav Bjekić, University of Kragujevac, Faculty of Technical Sciences Čačak, Serbia
Snežana Dragićević, University of Kragujevac, Faculty of Technical Sciences Čačak, Serbia
Ivan Milićević, University of Kragujevac, Faculty of Technical Sciences Čačak, Serbia
Jasmina Vesić Vasović, University of Kragujevac, Faculty of Technical Sciences Čačak, Serbia

Organizing Committee

Co-Chairs:

Milica Stojković and Biljana Đorić, University of Kragujevac, Faculty of Technical Sciences Čačak, Serbia

Secretary:

Ivana Krsmanović and Lena Tica, University of Kragujevac, Faculty of Technical Sciences Čačak, Serbia

Members:

Veljko Aleksić, University of Kragujevac, Faculty of Technical Sciences Čačak, Serbia
Marija Blagojević, University of Kragujevac, Faculty of Technical Sciences Čačak, Serbia
Đorđe Damnjanović, University of Kragujevac, Faculty of Technical Sciences Čačak, Serbia
Aleksandar Dragašević, University of Kragujevac, Faculty of Technical Sciences Čačak, Serbia
Andrijana Gaborović, University of Kragujevac, Faculty of Technical Sciences Čačak, Serbia
Nataša Gojgić, University of Kragujevac, Faculty of Technical Sciences Čačak, Serbia
Jelena Ivić, University of Kragujevac, Faculty of Technical Sciences Čačak, Serbia
Zoran Jevremović, University of Kragujevac, Faculty of Technical Sciences Čačak, Serbia
Milka Jovanović, University of Kragujevac, Faculty of Technical Sciences Čačak, Serbia
Željko Jovanović, University of Kragujevac, Faculty of Technical Sciences Čačak, Serbia
Aleksandra Kalezić Glišović, University of Kragujevac, Faculty of Technical Sciences Čačak, Serbia
Katarina Karić, University of Kragujevac, Faculty of Technical Sciences Čačak, Serbia
Ksenija Lajšić, University of Kragujevac, Faculty of Technical Sciences Čačak, Serbia
Milentije Luković, University of Kragujevac, Faculty of Technical Sciences Čačak, Serbia
Milan Marjanović, University of Kragujevac, Faculty of Technical Sciences Čačak, Serbia
Marina Milošević, University of Kragujevac, Faculty of Technical Sciences Čačak, Serbia
Marjan Milošević, University of Kragujevac, Faculty of Technical Sciences Čačak, Serbia
Miloš Papić, University of Kragujevac, Faculty of Technical Sciences Čačak, Serbia
Lidija Palurović, University of Kragujevac, Faculty of Technical Sciences Čačak, Serbia
Lidija Paunović, University of Kragujevac, Faculty of Technical Sciences Čačak, Serbia
Vladan Paunović, University of Kragujevac, Faculty of Technical Sciences Čačak, Serbia
Darko Petrović, University of Kragujevac, Faculty of Technical Sciences Čačak, Serbia
Vesna Petrović, University of Kragujevac, Faculty of Technical Sciences Čačak, Serbia
Uroš Pešović, University of Kragujevac, Faculty of Technical Sciences Čačak, Serbia
Jelena Plašić, University of Kragujevac, Faculty of Technical Sciences Čačak, Serbia
Marko Popović, University of Kragujevac, Faculty of Technical Sciences Čačak, Serbia
Jelena Purenović, University of Kragujevac, Faculty of Technical Sciences Čačak, Serbia
Ana Radović Firat, University of Kragujevac, Faculty of Technical Sciences Čačak, Serbia
Olga Ristić, University of Kragujevac, Faculty of Technical Sciences Čačak, Serbia
Vesna Ružičić, University of Kragujevac, Faculty of Technical Sciences Čačak, Serbia
Nebojša Stanković, University of Kragujevac, Faculty of Technical Sciences Čačak, Serbia
Mihajlo Tatović, University of Kragujevac, Faculty of Technical Sciences Čačak, Serbia
Vojislav Vujičić, University of Kragujevac, Faculty of Technical Sciences Čačak, Serbia

Tribute to Professor Dragan Golubović – the founder of the Conference and creator of Technics and Informatics education in Serbia

Today's international scientific conference „Technics and Informatics in Education – TIE2022", which was established as the national conference „Technical Education in Serbia/Tehničko obrazovanje u Srbiji – TOS2006", is one of the most important professional results of a very diverse and rich professional and scientific career of Prof. dr Dragan Golubović.

Prof. dr Dragan M. Golubović
(1947–2021)

Prof. dr Dragan Golubović was born on 21st May 1947 in Lopaš (Požega Municipality). After attending primary school in Prilipac, near his village, he finished Technical High School in Užice in 1966. In 1971 he graduated from the Faculty of Mechanical Engineering at the University of Belgrade. His master's thesis „Considerations of the possibilities for using the equivalents of the chip for optimising the metal treatment by drilling" was defended in 1975, while his PhD thesis „Addition to optimising the stability of vehicle control" was defended in 1980 at the Faculty of Mechanical Engineering, the University of Kragujevac.

He started his professional career at Technical High School in Čačak in 1970, and in 1975 he was registered as the first employee at the newly founded Pedagogical Technical Faculty in Čačak. He was appointed an assistant professor in 1980, associate professor in 1985, and in 1992 he obtained the academic title of full professor for the narrow scientific field of Technical Mechanics.

His scientific and research work was very fruitful. He presented at numerous international and national scientific and professional conferences and he published a great number of papers in international and domestic journals. Professor Dragan Golubović's list of references includes over 250 titles. He was the author of six monographs, six university textbooks and over fifty other publications.

He was the leader or participant of the research teams for the implementation of more than 20 projects supported by the Ministry of Education, Science and Technological Development of the Republic of Serbia or the Economy of Serbia. He was the author of several technical solutions.

Dragan Golubović was the mentor of six defended doctoral dissertations, 29 master's theses, and over 150 graduation theses. He participated in the work of committees for the selection of all associate and teaching positions at the Faculty of Technical Sciences in Čačak, but also at other faculties, such as the Faculty of Engineering Sciences in Kragujevac and the Faculty of Mechanical and Civil Engineering in Kraljevo.

He was the creator of two innovative study programmes: Mechatronics, which was first introduced in Serbia at the Technical Faculty in Čačak, back in 1990, and Technology and Informatics, a study programme where the largest number of technical education professors who were employed in the education system in Serbia obtained their diploma.

He was also the founder of the laboratory for mechanical tests, which from the very beginning significantly contributed to the development of cooperation between the Faculty and the economy. He performed important professional and leadership duties at the Faculty of Technical Sciences in Čačak. Professor Golubović was the head of the Department of Mechanics and Mechanical Constructions twice, from 1980 to 1982 and from 2001 until his retirement in 2012. He performed the duties of the Vice Dean for Teaching from 1986 to 1988 while he was the Dean of the Faculty from 1988 to 1992. At the University of Kragujevac, he was the Vice Chancellor for Finance and Development from 1994 to 1996, a member of the Council for Technical Sciences and a member of the University Council.

He attended professional trainings in well-known institutes and universities throughout the country and abroad: University of Krakow, MADI - Moscow, ČVUT - Prague, Technical University - Dresden, Technical University - Timisoara, University - Lancaster and others. Above all, professor Golubović made a special contribution to the improvement of the education and training system, particularly in the technical culture domain.

Professor Golubović was a member of numerous national entities in the field of education as well as working groups of the Ministry of Education. He was a member of the Education Council of Serbia from 1982 to 1986, a president of the Association of Organizations for Scientific and Technical Creativity of the Serbian Youth (1982-1984), a president of the Commission for Technical Education from 1980 to 1990, a head of the Center for Improvement of Technical Education and Training (1981-1986), a member of the Commission of the Institute for the Improvement of Education and Training (2001-2008), a chairman of the License Commission for Technical and IT Education of the Ministry of Education of the Republic of Serbia (2006-2011). He was a member of the Society of Engineers and Technicians of Serbia (1972-2012), as well as the Society for Engines and Motor Vehicles of Serbia (1980-2012).

Professor Golubović devoted his 42 years long career to research in technology and education. He made a special contribution to the improvement of education in the field of technology and informatics on various educational levels, ranging from primary to higher education. He laid the foundations of technical and IT education in Serbia and for more than 30 years he wholeheartedly promoted the improvement of the teacher education.

The professor paid particular attention to the careers and professional development of his former students. He was the author of several accredited professional training programs for teachers in the field of technology and informatics, which were attended by over 1,000 teachers throughout Serbia from 2007 to 2015. More than 20 generations of primary school students studied the subject of Technical Education, which was later renamed Technical and IT Education. Even nowadays, the school subject Technics and Technology is taught from the textbooks signed by Professor Golubović.

He was a gatherer of numerous rewards and one of the most important was the December Prize of Čačak Municipality which he gathered in the same year when he retired.

Professor Golubović started this conference with the idea to improve and support the education and professional development of the teachers and researchers in the technical-technological field, as well as their mutual collaboration.

Within the 9th International Scientific Conference "Technics and Informatics in Education - TIE2022", we bring back our memories of the Conference founder and the university teacher who was outstanding in the field of technology and informatics education. The round table will be open for fellow teachers and researchers, the professor's students of all the levels of studies, as well as the professionals to whom he was a model for their professional and personal improvement and development.

Table of Contents

9th International scientific conference
Technics and Informatics in Education – TIE 2022
16-18 September 2022

Session:*Professional Development and General Education Topics*
Review paper
DOI: 10.46793/TIE22.358A

Entrepreneurial education in emerging countries: how to keep abreast with global competitive needs

Monika Arsova and Riste Temjanovski
[1]"Goce Delčev" University, Faculty of Economics, Štip, Republic of North Macedonia
monika.arsova@ugd.edu.mk, riste.temjanovski@ugd.edu.mk

Abstract: *Entrepreneurship is considered to be the driving force and generator of economic and social development worldwide. Entrepreneurship is a kind of expression of creativity and innovation while Entrepreneurs are the lifeblood of any economy. So entrepreneurial skills are moving the world today, creating new jobs, more humane social progress and economic growth. But what the entrepreneurial developed world has been analyzing, promoting and applying for more than 300 years, the emerging countries have been developing and institutionalizing for barely 30 years. To overcome such a time and institutional gap, universities must keep abreast of business and entrepreneurial needs and be forced to use their entire intellectual and academic "arsenal" of instruments to help young people with innovative knowledge and practice to "instill" the entrepreneurial mindset. Otherwise, a mass exodus of highly skilled individuals arguably will weaken local knowledge networks and will reduce social welfare (hence, brain drain or white plague). This paper aims to explore the real possibilities and practices in reformed entrepreneurship education in emerging countries to meet the global competitive needs.*

Keywords: *emerging countries, entrepreneurial skill, academic program, brain drain.*

1. INTRODUCTION

Education within a national economy is the main thread on which the future directions of the country depend. On the other hand, entrepreneurship is a link without which modern society cannot survive. The cohesion between these two fields is very important, ie., it is necessary to support and supplement them. To be able to talk about a quality entrepreneur, his education must be at a high level - a person who is professionally trained and can respond to the challenges of globalization. Education in which professional and practical examples are not largely included does not allow the person to learn much and prepare for their future.

Education, knowledge and practical skills are a key factor for the development of any economy. Promoting and stimulating the entrepreneurial mind for starting and developing a business is a generator of all positive changes in a country. Therefore, education and the acquisition of practical knowledge should be high on the scale of priorities in each country and cannot be excluded from the marginal excuses of education policy makers in a country. Therefore, in line with EU recommendations, a coordinated policy response is needed to ensure that the energy and incentives of young people are best used to meet the needs of the 21st century economy. Rising youth unemployment threatens economic and political stability. Countries with high youth demographics are even more at risk. Furthermore, negative growth means a reduction in job opportunities and the need for alternative means of job creation. Youth entrepreneurship can be part of the solution [1].

Entrepreneurship is one of the eight defined life competencies that the European Union declares, and that every individual needs to succeed in life. Defined sense of innovation - initiating an idea and entrepreneurship refers to the opportunities for the individual to turn the idea into action. It includes creativity, innovation and risk-taking, as well as the ability of the individual to plan and implement projects to achieve certain goals. This concept supports everything from activities in everyday life, digital solutions in homes, in society; makes employees more aware of the organization of their work and more able to take advantage of digital technology.

2. ENTREPRENEURIAL EDUCATION – DEFINITION AND IMPORTANCE

The term enterprise education is primarily used in United Kingdom and has been defined as focusing more broadly on personal development, mindset, skills and abilities, whereas the term entrepreneurship education has been defined to focus more on the specific context of setting up a

venture and becoming self-employed. Entrepreneurship education helps the entrepreneur to upgrade and build into a true entrepreneur [2].

Entrepreneurial education is defined as a whole education and training activity that try to develop participants' entrepreneurial intention or some factors that affect the intention, such as knowledge, desirability, and feasibility of the entrepreneurial activity. Entrepreneurial education is related to career choice and personal skills, also entrepreneurship is an important factor for the development of an economy. The economic growth and development of a country depends on the entrepreneurs in that country, hence the need to create courses and programs that are entrepreneurial at the Universities themselves [3].

Developing the entrepreneurial potential of young people, citizens and organizations is one of the key goals for the European Union and its members. The view that "investing in entrepreneurship education is one of the highest return investments that 'Europe can do' is stated in the Entrepreneurship Action Plan 2020" [4].

In this regard, the European Framework of Reference for Key Lifelong Learning Competencies defines entrepreneurship as "A sense of initiative and entrepreneurship is the ability to turn ideas into action. It includes creativity, innovation and risk-taking, as well as the ability to plan and manage projects in order to achieve goals. The individual is aware of the context of his work and can take advantage of the opportunities that arise. It is the basis for acquiring more specific skills and knowledge needed by those who establish or contribute to social or commercial activity. "This should include awareness of ethical values and the promotion of good governance."

The "Entrepreneurship Education" study seeks to cover all educational activities "that would prepare people to be responsible, entrepreneurial individuals who have the skills, knowledge and attitudes needed to prepare to achieve the goals they have set for living a full life [5]. Hence, it covers a wide range of activities across all levels of education - from creativity classes in primary education to business master's degrees.

The most important thing is the impact that entrepreneurial education leaves on students, ie., how through this education they will develop as individuals. Entrepreneurial education greatly helps students develop a perception of innovation. Innovative awareness and innovative ability are the core process of students' innovation activities, which are also influenced by innovation personality. The educational system of universities has to provide an academic environment that may serve as a catalyst for high-technology start-ups. Entrepreneurs are made by imparting the knowledge and skills needed for a new business venture. The process of shaping the ability of student entrepreneurs is a social interaction process in which information resources are acquired and transformed in the form of observation or direct participation in entrepreneurship education. Entrepreneurship education may change a student's attitudes toward entrepreneurship. Students' perception and attitudes toward entrepreneurship education can determine whether students' creativity will be expressed and constitutes a self-judgment of one's perceived competence in generating novel ideas. [6] This education helps students to enter the markets much more prepared, which in today's conditions of globalization is a very important criterion. In recent years, technological breakthroughs have particularly emphasized the need for innovation, creativity and ingenuity in young people to penetrate and stay in the market. The young generations and their technical-technological readiness need to be upgraded and combined with entrepreneurial education to build a good entrepreneur [7].

The need for entrepreneurial education is eminent and important for every economy, but the opportunities for development of this type of education vary from country to country. There are countries that are highly economically developed, technologically advanced and the beginnings of the development of entrepreneurship education have been observed for a long time. In emerging countries, opportunities for development have emerged later, so the beginning of entrepreneurship education is in recent decades.

3. NEED OF ENTREPRENEURIAL EDUCATION IN EMERGING COUNTIRES

The need for entrepreneurial education applies to every country, regardless of the level of development. However, in order for emerging countries to move closer to highly developed countries, it is necessary to introduce this education as officially at universities [8]. Entrepreneurship education will help accelerate development in many ways in these countries. First, it will be possible to create professional and capable staff, then new entrepreneurs will be created in the markets who will see the ideas as a challenge. Another important component for the economic development of these countries is that it will enable the retention of some young people. [9] That is, the opportunity to learn entrepreneurial skills and hear about different experiences will encourage them and some of them will decide to complete their education in their countries, and then contribute with their knowledge. In these countries the processes of digitalization and automation are at a much lower level, which is another additional reason to introduce this type of education [10]. That is, today's innovative ideas could not be realized and give results if they do not

include digital solutions. From that aspect, the inclusion of entrepreneurial education will cause interest for greater digitalization in work and of course everyday life. The trend of digitalized activities in these countries has gained momentum in the last two years with the emergence of the pandemic caused by Covid 19. That is, the need for digital living has emerged, which is especially noticeable among the young population that is more educated. Within these countries there are young people who have an entrepreneurial spirit and can come up with ingenious ideas in the future, but the fear of failure, poor preparation by the education system and of course the lack of sufficient technical and technological support affects young people not to approach in realization of their ideas and even worse to leave their country and get involved in the work process in another highly developed country [11].

An example of emerging countries is the Western Balkans - they are located in Europe.

3.1. Emerging countries in Western Balkans

In European politicians often mention the idea that the periphery of Europe is reduced to a single region called "Western Balkans" (a term that encompasses the countries of former Yugoslavia minus Slovenia but Albania) is a kind of experiment from which depends on the future of Europe. Balkans should be western to not balkanized Europe.

The member states of the Western Balkans can be mentioned as a category of emerging countries, and it consists of six countries: Albania, Kosovo*, Montenegro, North Macedonia, Serbia, Bosnia and Herzegovina. About 20 million people live in this territory, which although small yet a potential market for the emergence and development of entrepreneurs.

In addition, at table 1, the GDP growth by country is shown, as well as the total of the 6 countries.

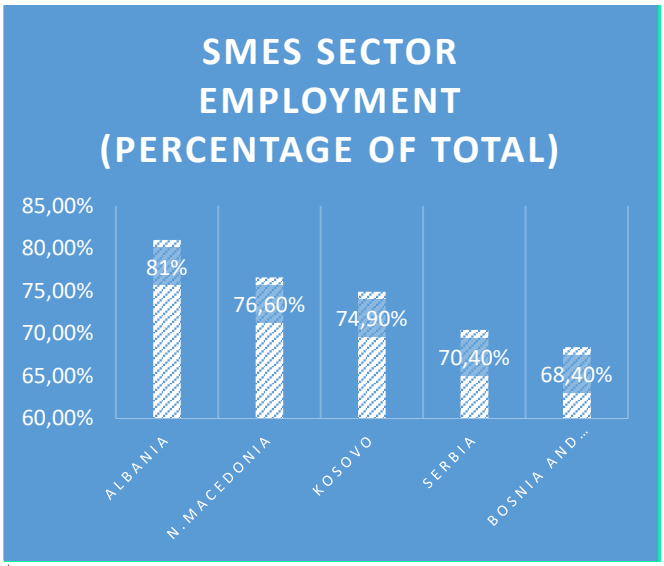
Table 1. GDP growth per countries in Western Balkans

Real GDP growth (%)	2019	2020	2021 estimate	2022 forecast	2023 forecast
Albania	2.2	-4.0	7.2	3.8	3.7
Bosna and Herzegovina	2.8	-3.2	4.0	3.0	3.2
Kosovo*	4.8	-5.3	7.1	4.1	4.4
North Macedonia	3.2	-4.5	4.6	3.7	3.4
Montenegro	4.1	-15	10.8	5.6	4.8
Serbia	4.3	-0.9	6.0	4.5	4.0
WB (6)	3.6	-3.1	5.9	4.1	3.8

* Kosovo – (under United Nations Security Council Resolution 1244/99)

What is noticeable is that in 2020 in each of the countries individually as well as the total GDP has a negative sign. This is a result of the pandemic caused by Covid 19, from which both the countries of the world and the dragons of the Western Balkans felt negative consequences.

The driving force in these economies are small and medium enterprises, i.e most of the employment is realized within these enterprises. The future entrepreneurs are the owners of exactly this type of enterprises, so the need for development of entrepreneurship education is seen as a branch of the Universities. Innovation is started and developed by SMEs, and students are the ones who should be encouraged to innovate activities (awareness and perception). SMEs provide jobs for around three-quarters of the total number of employed, as can be seen on graph 2 what percentage of total employment is generated by this sector.



* Kosovo – (under United Nations Security Council Resolution 1244/99)

Figure 1. *Employment by SMEs sector*

Looking at these results it can be seen that most of the young people in these countries end up in these enterprises. However, good readiness and support will influence them to take steps and be employers in the future. In the Western Balkans there are other problems and obstacles that affect the opportunities as well as the desire and persistence of young people to become entrepreneurs.

The emergence of courses, programs and directions at universities in these countries will encourage young people to get involved in this educational process and certainly make them professional entrepreneurs who will not be afraid to start their own businesses, ie to generate their own ideas.

3.2. Entrepreneurial education in the Western Balkans – challenges

As we said before WB is composition of 6 countries, which are similar in many parameters: economic growth and development, number of inhabitants, GDP per capita, etc. Also, a common feature for them is the low level of technology development, digitalization of the private and public sector. An annual forum is held at the level of the Chambers of Commerce and Industry of the 6 member states where proposals, solutions and initiatives for entrepreneurship development are given. Safet Gërxhaliu, Secretary General expresses the need to link entrepreneurship and education. He believes that the business sector should be more involved in the educational process, ie. to financially support young entrepreneurs. But in order to discover and develop such entrepreneurs it is necessary to have specialized education. Formal study programs at universities in the field of entrepreneurship education are found, but they are very few and are usually part of existing study programs. In the direction of this education in the territory of the Western Balkans, there are several initiatives that provide assistance and support in terms of education and preparation of young people to become good entrepreneurs. One of those initiatives is REGIONAL INCUBATOR FOR SOCIAL ENTREPRENEURS (RISE), this is regional three-year project that intends to open new spaces of reconciliation for the youth of the Western Balkans Six (WB6) through a regional program to support social entrepreneurship. The support program for social entrepreneurs aims to promote dialogue and cooperation between actors and territories through the mobility of participants, organization of regional trainings, exchange workshops and events, as well as through the creation of a real network around ideation and incubation of the RISE. According to them there is no direct support, ie encouragement of young people by institutions within these countries such as universities. In fact, young people here idealize their business innovations based on their personal motivation.

Another encouraging initiative on the territory of the Western Balkans is from the Foreign and Commonwealth Office, that is a project named project "Encouraging youth entrepreneurship in Western Balkans". The purpose of the project is to support young people from the region to start their own businesses and improve employability skills through quality training programs and UK experiences, and to influence Western Balkans decision makers to empower the next generation of young entrepreneurs [12].

There are several such initiatives that mainly come from highly developed countries that direct their human capital and resources to the development of emerging countries such as those in the Western Balkans. Each such initiative emphasizes the need and necessity of connecting, ie including education in entrepreneurship as an area on which the development of the country depends. It should be mentioned that within the study programs within the education at universities there are various programs that enable international mobility of students in highly developed countries. The reason for that is gaining direct experience among young people, and thus encouraging or motivating them to get ideas and their realization. Some of these programs are developed by the European Union such as ERASMUS+, COSME and others. Their presence in the education system is to be welcomed and certainly of great importance, but the need for formal pre-primary education still remains.

The main challenge these countries face is brain drain, ie in each of them the number of emigrated young people is increasing daily. There are a number of reasons for this, but the most important are mistrust in the system, lack of sufficient financial resources and inability to get good jobs - according to their qualifications.

4. YOUNG MIGRATION – RESULT OF GLOBALIZATION OR URGENT NEED TO REFORMING ACADEMIC ENTREPRENEURSHIP

Modern cultural and social conveniences, facilitated by the emphasis on international migration flows, have blurred the boundaries and differences between young people in the world, in terms of country of origin. In the era of globalization, people's mental horizons have expanded, and they are eager to move to other places and countries to realize their full productive potential, and increasingly so in Europe [13]. At the same time conflict, poverty, inequality and lack of decent jobs are among the reasons that compel people to leave their homes in search of better futures for themselves and their families [14]. The problem with the migration of young and educated people is especially pronounced in the Western Balkans.

Migration has contributed to the richness in diversity of cultures, ethnicities and races in developed countries. Individuals who migrate, experience multiple stresses that can impact their mental well-being, including the loss of cultural norms, religious customs, and social support systems, adjustment to a new culture and changes in identity and concept of self. Indeed, the rates of mental illness are increased in some migrant groups [15].

One of the difficulties encountered when trying to tackle this challenge is the lack of data (regarding the brain drain phenomenon only scarce data is available, both in the country of origin as well as in the country of destination). Those people leaving Western Balkan's region, but migration process is still grown and other countries in South-Eastern

Europe. The impact of the exodus of a large proportion of highly skilled individuals from the developing and transition countries remains controversial. A mass exodus arguably weakens local knowledge networks and reduces social welfare (hence, brain drain or white plague) and adversely affects institution building so crucial for the transformation into liberal democracies (Elster et al., 1998) [16]. For studies abroad are not able to provide a definitive answer regarding the timeframe of their stay abroad, as most of them also aim to find employment in the country where they will study. In same time, we have and one other phenomena, there are countries enjoying the effects of brain gain, such as Austria and Germany, and the inflow of highly qualified workers on their labour markets (with the help of special legislation in this field).

However, as antimigrant feelings continue to increase throughout Western Europe, affecting the political discourse and power relations in various countries, the best solution for all stakeholders is to have strategies for brain circulation encouraging international studies and mobility, but also return to the country of origin. Most of the students that are living their countries for study abroad make plans in advance to stay in that country or some other that is more developed. The main reason is because they are thinking that their capacity after the studies in that country will be waste of time if they came in their country of origin. They think of their countries as areas where they cannot improve. Regarding the destination countries that the students prefer in case of migration for any intended purpose, the results indicate that most of their chosen countries are the developed countries of the European Union and the United States of America. Going abroad and studying in developed countries can be seen as a positive thing, as they can return their experiences and knowledge to their home countries [17].

The return of young people, the brains that have flowed to other countries can greatly contribute to the development of these countries. In fact, their return offers certain advantages such as: overflow of knowledge and experience in the country of origin; if the student has stayed in a foreign country for a long time and has managed to increase his / her capital assets, he / she can "return" them to the country of origin, ie to invest them. The most important thing they can do is to develop entrepreneurship, ie to start businesses in their countries of origin, encouraged and motivated by foreign markets. Another way that can contribute to the development of entrepreneurship as well as this type of education is the return of the diaspora. Within these countries the number of people leaving the diaspora is huge and the impact they can make on their countries of origin (mainly from the Western Balkans) is significant.

Research shows that in some countries of the Western Balkans, larger investments have been made by the diaspora within their countries of origin, and in some less. For example, Albania and the Republic of Northern Macedonia have a higher percentage of returnees investing funds at home, unlike Kosovo*.

The return of the diaspora and especially of those highly qualified and educated people is very important for these countries. they can be seen as a way to develop entrepreneurship education and entrepreneurship in general. As we said previously percentage of returnees, in Republic of North Macedonia as the part of Western Balkans countries, is high. That means that in these countries the potential of developing the entrepreneurial education in the future is high.

However, it remains to be seen how entrepreneurial education can become part of everyday life and improve with the population that is already in the country. It is also considered how to reduce the trend of emigration of young people and certainly not to drain the brain in other countries. This will mean greater opportunities for the development of entrepreneurship in the Republic of Northern Macedonia. In addition, we can see the efforts that this country is making to develop this type of education, and thus to influence young promising students and young people.

5. CONCLUSION

The role of higher education in global economic and social development is a primary incentive resource that will decide the future economic positions of each country. Such competencies will increase from year to year, and this will continue in the coming decades. Quality higher education, enriched with modern practices and skills, is an essential need for every society, especially in emerging countries whose economic gap is widening precisely because of inadequate competitiveness in industry. In practice, universities must be in sync with business and entrepreneurship. Only academic programs that promote knowledge, competition, and digitalization can be competitive and relevant to the market. What real change can happen, depending on the symbiosis of study programs and business needs.

REFERENCES

[1] European Training Foundation (2014). Empowering a next generation of young entrepreneurs. Issue 19, July 2014 (https://www.etf.europa.eu/sites/default/files/m/A1A914D40D0ACB54C1257D5B002C8748_INFORM_19_Youth%20entrepreneurs.pdf)

[2] Welsh, D., H., B., Dragusin, M. (2011). Entrepreneurship education in higher education institutions as a requirement in building excellence in business: The case of

The University of North Carolina at Greensboro.
[3] Neck, H. M., & Greene, P. G. (2011). Entrepreneurship education: Known worlds and new frontiers. *Journal of Small Business Management*, 49 (2011), pp. 55-70
[4] European Commission Action Plan. (2020). Circular economy action plan. (https://ec.europa.eu/environment/strategy/circular-economy-action-plan_en#:~:text=The%20European%20Commission%20adopted%20the,new%20agenda%20for%20sustainable%20growth.)
[5] European Commission (2015). Entrepreneurship Education: A road to success A compilation of evidence on the impact of entrepreneurship education strategies and measures. (https://op.europa.eu/en/publication-detail/-/publication/c6590fd6-3e54-4989-bbe0-21d9785dff54)
[6] Vanevenhoven, J., Liguori, E. (2013). The impact of entrepreneurship education: Introducing the entrepreneurship education project. *Journal of Small Business Management*, 51 (2013), pp. 315-328
[7] Welsh, D., H., B., Dragusin, M. (2013). The new generation of Massive Open Online Courses (MOOCS) and entrepreneurship education. *Small Business Institute Journal*, 9, pp. 51-65
[8] Nelson, R., E. (1977). Entrepreneurship education in developing countries. *Asian Survey*, 17(9), pp. 880-885. DOI: https://doi.org/10.2307/2643595
[9] Nganunu, T., E., M. (2019). Entrepreneurship education in developing countries: Evaluation on start and improve your business program in Botswana. Faculty of Business and Enterprise Swinburne University of Technology Melbourne Australia.
[10] Permatasari, A., Anggadwita, G. (2019). Digital Entrepreneurship Education in Emerging Countries. Research Gate. DOI: 10.4018/978-1-5225-7473-6.ch008
[11] Soluk, J., Kammerlander, N., Darwin, S. (2021): Digital entrepreneurship in developing countries: The role of institutional voids
[12] Andjelic, J., Petricevic, T. (2020). Regional Study and Guideliness on Social Entrepreneurship in the Western Balkans. Regional incubator for social entrepreneurs
[13] Cipuseva, H., [et all] (2013). Brain circulation and the role of diasporas in the Balkans – Albania, Kosovo and Macedonia. Tetovo: South East European University, Institute for Development Research, University of Tirana. 2013. p.54
[14] United Nations: International Migration. Report 2015. New York: United Nations: Department of Economic and Social Affairs. 2016. p.2.
[15] King, R. (2002). Towards a new map of European migration. *International Journal of population geography*. Vol 8, pp. 89-106
[16] Elster, J., C., Offe, U., K., R. (1998). Institutional design in post-communist societies: Rebuilding the ship at sea. Cambridge University Press
[17] European Commission (2015). From creativity to initiative, building entrepreneurial competencies in schools: Guidance note for policy makers. (http://www.oecd.org/employment/leed/E360-guidance-note-policy-makers.pdf)