

# ANALYSIS OF ENTREPRENEURIAL COMPETENCES AMONG PRIMARY SCHOOL STUDENTS IN NORTH MACEDONIA USING ENTRECOMP MODEL

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## Abstract

Number of countries embraced entrepreneurship education as one of the drivers to more competitive and open economy. There are different approaches of implementation of this type of education in formal and non-formal educational systems worldwide. There have been sporadic attempts towards promotion of entrepreneurship education and implementation of entrepreneurial learning activities within the country since 2000. In 2014, North Macedonia adopted national strategy for entrepreneurial learning and since 2016, the Government has introduced courses of Innovation in 9th grade of primary education, and courses of Innovation and Entrepreneurship in 1st, 2nd and 3rd year of secondary schools in the formal educational system. In 4th year of secondary schools, the course name is Business and Entrepreneurship and has been available since 2012. The main output from the entrepreneurship education is producing students who are equipped with entrepreneurial competences, innovative thinking and proactive mind-set. In this paper, authors analysed the level of development of entrepreneurial competences among students of 9th grade of primary education (~ 14 years old). A survey with more than 1800 students (8% of total population of students in 9th grade) and over 55 teachers was conducted in the period May – June 2020. Students and teachers expressed their views about the level of development of the 15 entrepreneurial competences on Likert scale, according to the model of EntreComp (Bacigalupo et al. 2016). The entrepreneurial pedagogy that was in usage, was examined in the correlation with the level of developed entrepreneurial competences. Recommendations for improving of the teaching process will be submitted to the Government and the educational authorities

Keywords: Entrepreneurship competences, primary school, entrepreneurship education, entrepreneurial pedagogy.

## 1 INTRODUCTION

The quality of the education is the key for the development of a society. Education and training have a fundamental role in achieving the goals of the strategy EUROPE 2020 for rapid, sustainable and comprehensive growth, by providing citizens with skills and competencies necessary for the European economy and society to remain competitive and innovative, while promoting social cohesion and comprehensive inclusion of all, at the same time [1]. The main focus of many countries in the world, along with the development of the education, is the development of the entrepreneurship education, which is seen as a major driver of economic development and a key tool in the fight against unemployment and poverty, especially in poorer countries. Young people around the world have the right to entrepreneurship education, both locally and globally. This objective is also in the focus of the goals of the World Economy Forum's Global Education Initiative [2], the OECD program Education for all [3], as well as the UN's Education for All [4] and Millennium Development Goals [5]. Every individual has the right to know the concepts of the financial literacy, the possibilities of owning a property and the mind-set that leads to the creation of personal and social wealth. These rights are based on the individual's right to own his personality, his labour, his time and his ideas [6].

The entrepreneurial education results with the development of the entrepreneurial competencies for all individuals, regardless of their age. The entrepreneurial competencies refer to the capacity to act

according to perceived possibilities and ideas, and to turn them into values for others. These competencies are based on creativity, critical thinking and problem solving, taking initiative and perseverance and the opportunity for joint collaboration to plan and manage projects that have cultural, social or financial value [7].

The common fact for all competencies, including the entrepreneurial competences, is that the competencies change over time, they can be strengthened or acquired new through learning, training and experience [8]. Therefore, a huge number of definitions and classifications of entrepreneurial competencies can be found in the literature. For some authors (Lee et al. for example), the entrepreneurial competencies directly reflect the personal characteristics, behaviours and motives of the entrepreneur [9]. For others (e.g. Zahra et al.), these competencies are multidimensional in nature and with dynamic characteristics because entrepreneurs make decisions in conditions of uncertainty and they are rational beings, which means they do not create solutions or procedures "once-for-all", but constantly adapt them, or revise the opportunities that they have developed [10]. In one of the most comprehensive researches for the entrepreneurial competences (where several hundred literary sources are analysed), Tittel & Terzidis categorized the elements of entrepreneurial competencies and found 376 sub-categories that are related to the entrepreneurial competencies in the literature [11]. For the purpose of this research, the authors are using the framework of the European Union, where the entrepreneurial competences are determined according to the 15 categories of competences defined in the EntreComp framework [12].

This paper outlines the development of the entrepreneurial education in the Republic of North Macedonia. In the last 10 year many activities towards the development of the entrepreneurship education in the country are implemented. In the Tab. 1 below in the chronological order the key moments that contributed towards the development of Macedonian entrepreneurship education system are presented.

*Table 1. Key activities that supported development of entrepreneurship education in the Republic of North Macedonia with focus on primary and secondary education.*

<b>Year</b>	<b>Activity</b>
2007	<ul style="list-style-type: none"> <li>• Course "Business and Entrepreneurship" - introduced as an obligatory course for gymnasiums in IV year (age 17-18) with 2 hours per week. Teachers who were recruited were mainly teachers with economic background and experience from VET economic secondary schools.</li> <li>• Basic two-day training on the new curriculum was realized by Bureau for development of education (BDE) and experts.</li> <li>• Teachers used mainly university textbooks for teaching the subject, as well as textbooks from VET Economy secondary schools.</li> </ul>
2007	<ul style="list-style-type: none"> <li>• National business plan competition for students begins in organization of Business Start-up Centre, Faculty of Mechanical Engineering, Ss. Cyril and Methodius and after 2010 National Centre for development of Innovation and Entrepreneurial Learning (NCDIEL).</li> <li>• Patron of the competition in 2010 was the President of the country, and in 2012 the Prime-minister of the Government.</li> </ul>
After 2010	<ul style="list-style-type: none"> <li>• Continuous support of trainings and students competition by donor community, NGO sector and businesses: - Junior Achievement program (USAID) and UPSHIFT program (UNICEF), NGO and business sector (NCDIEL, Macedonia2025, Banks, etc.)</li> </ul>
2011	<ul style="list-style-type: none"> <li>• Under the auspice of the President of the country (supported by the Ministry of economy and Ministry of education and science) established National Entrepreneurship Education Network (university professors + school teachers)</li> </ul>
2012	<ul style="list-style-type: none"> <li>• Updated curriculum and new textbook was introduced for course "Business and Entrepreneurship" for IV year gymnasiums</li> </ul>
2012	<ul style="list-style-type: none"> <li>• Course "Innovation and Entrepreneurship" - introduced as a project activity course for gymnasiums in I, II and III year (age 15-17) with 1 hours per week.</li> <li>• 1300 teacher were on 2-day training organized by BDE and experts</li> </ul>
2013	<ul style="list-style-type: none"> <li>• Topics related to innovation and entrepreneurship were introduced in six subjects in 9<sup>th</sup> grade of primary school (math, informatics, chemistry, biology, physics and arts).</li> <li>• Entrepreneurship related training was conducted to these teachers.</li> </ul>

2013	<ul style="list-style-type: none"> <li>National Fund for Innovation and Technology Development was established</li> </ul>
2014	<ul style="list-style-type: none"> <li>National strategy for entrepreneurial learning 2014-2020 with action plan adopted by the Government.</li> <li>Inter-ministerial group (where participates members of BDE, Chambers of Commerce, VET Centre, Adult learning Center, NGOs and representatives from above mentioned Ministries), led by the state secretary from the Ministry of education and science was responsible for monitoring of implementation of the strategy</li> </ul>
2014	<ul style="list-style-type: none"> <li>Course "Innovation" - introduced in 9<sup>th</sup> grade as an obligatory course – with 1 hour per week.</li> <li>600 teachers passed 2 days entrepreneurship training related to the new curriculum.</li> </ul>
2015	<ul style="list-style-type: none"> <li>Supported by World Bank project (experts' team led by A. Penaluna), new compulsory and progressively evaluated Entrepreneurship and Innovation curriculum introduced for all courses: "Innovation" in 9<sup>th</sup> grade, "Innovation and Entrepreneurship" for 1<sup>st</sup>, 2<sup>nd</sup> and 3<sup>rd</sup> year and "Business and Entrepreneurship" for 4<sup>th</sup> year of secondary schools [13].</li> </ul>
2016	<ul style="list-style-type: none"> <li>Second Action plan 2016-2018 for the Strategy for Entrepreneurial Learning developed (also first action plan 2014-2016 evaluated)</li> </ul>
2017	<ul style="list-style-type: none"> <li>Restart of Junior Achievement activities in North Macedonia</li> </ul>
After 2017	<ul style="list-style-type: none"> <li><b>FITD</b> - financially supports all activities related to development of innovative thinking and entrepreneurial mindset among youth (domestic and international competitions, student fairs, trainings, etc.)</li> </ul>
2017	<ul style="list-style-type: none"> <li>Organized by BDE one-day training for 2300 secondary school teachers conducted on the topic (teaching and learning for 21-st century training was related to the EntreComp and DigiComp topics)</li> </ul>
2019	<ul style="list-style-type: none"> <li>Introduced course "Innovation and Entrepreneurship" as an obligatory course at the Pedagogical Faculty, University St. Clement of Ohrid in Bitola. (this Faculty "produces" teachers for young students from primary school 1<sup>st</sup> to 5<sup>th</sup> grade 6-10 years old childrens)</li> </ul>
2006-2020	<ul style="list-style-type: none"> <li>North Macedonia participated in three Erasmus + project related to EntreComp: <ul style="list-style-type: none"> <li>Eco System Up (local partner NCDIEL)</li> <li>EntreComp for Techers (local partner NCDIEL)</li> <li>Youth@Work Partnership (local partner: National Agency for European mobility)</li> </ul> </li> </ul>

In addition, this paper explores the level of entrepreneurial competences gained by the students when they finish their primary education. For that purpose, two surveys for teachers and students were designed and conducted with 55 teachers and more than 1800 students who are in their final grade of the primary education, which is 8% of total population of students in 9<sup>th</sup> grade in the country. The results from the assessment revealed important conclusions that will provide useful information and advices for the policy makers and institutions in-charge for the education, for the enhancement of the entrepreneurial education and learning on a national level.

## 2 METHODOLOGY

For assessing the gained entrepreneurial competences by the students finishing the primary school and investigating the factors that might influence the level of the competences, the quantitative research methodology was used. The methodology was consisted of two surveys which were conducted in the period between May and June 2020. For assessment of the entrepreneurial competences, the questions were structured according to the EntreComp framework [12] and the questions were answered on a four-point Likert scale. The total number of examiners is 1857, out of which, 55 are teachers and 1802 are students from the primary schools. The examiners belong to both, urban and rural schools, and in total 60 primary schools from the country have participated in the research (Fig. 1). Both sexes are almost equally represented in the sample of the students, as it could be seen on the Fig. 2.

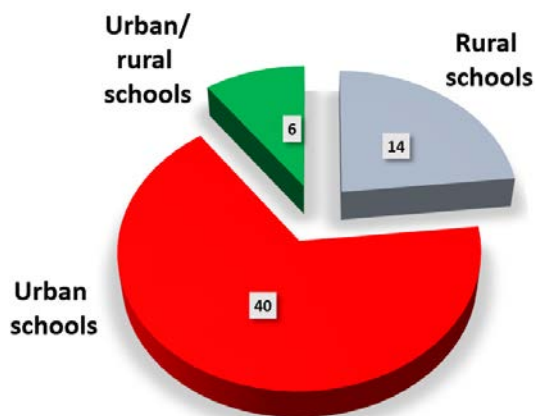


Figure 1. Location of the schools

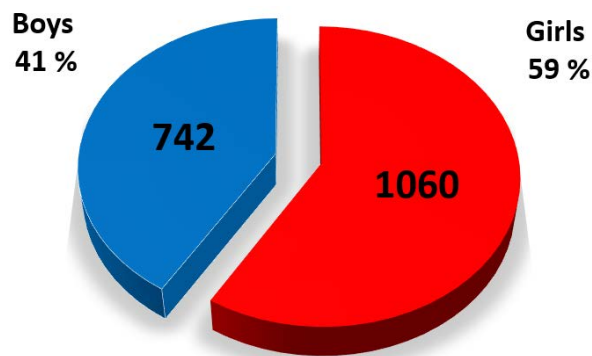


Figure 2. Representation of the genders in the sample of students

From particular interest in this paper is the influence of the support for entrepreneurial activities by the school and the environment. Therefore, the three independent variables: *Support by the school for off-school visits*; *Support by the school management for all types of entrepreneurial activities*; and *Support by the local community and businesses* were also measured with the survey. The hypothesis: *The support for the teachers who teach innovation in the final grade of the primary school by the school and the environment significantly influences the improvement of the entrepreneurial competences among students*, is tested statistically with the linear regression on two ways. Firstly, the influence of each independent variable on the dependent variable is tested separately, by testing the three sub-hypotheses with the single linear regression, and secondly, the influence of the all three independent variables on the dependent variable is tested with multiple linear regression. The level of significance that is used for these statistical tests is 0.001. The results of the statistical analyses are given in the next section.

### 3 RESULTS

It is interesting to be noticed that the average scores given by the students slightly differ than the average scores given by the teachers for each of the examined 15 entrepreneurial competences. Fig. 3 presents the average scores given by the students, while Fig. 4 the same information given by the teachers.

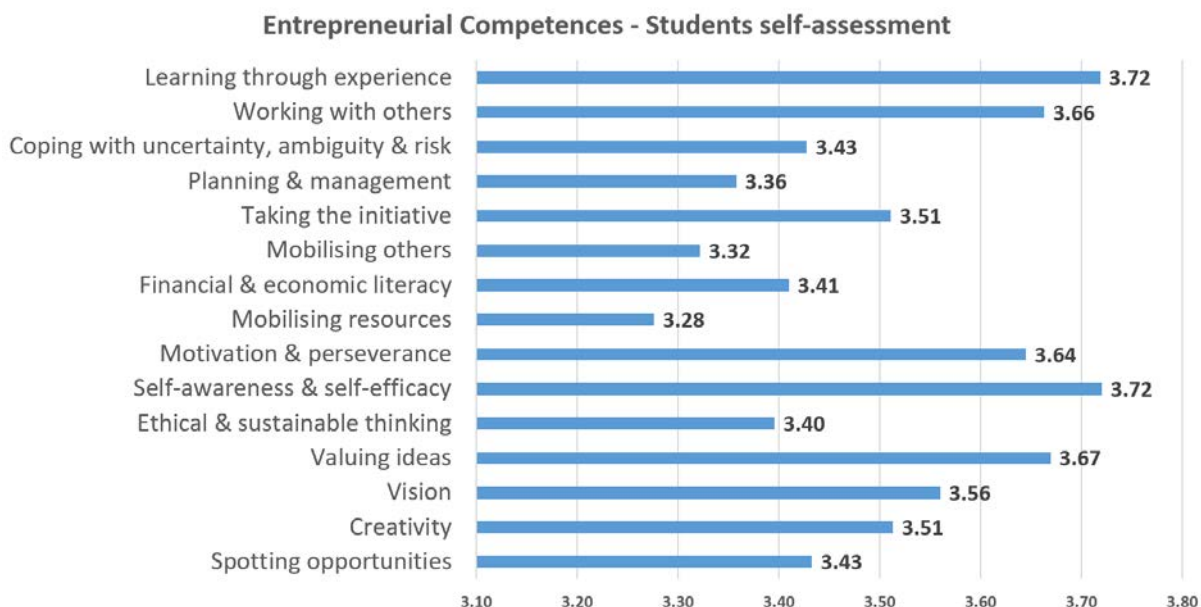


Figure 3. Entrepreneurship competences in primary school – student self-assessment.

Generally speaking, the teachers assessed the entrepreneurial competences among students with lower levels, compared to the students' self-assessment. There are also differences in the strengths and weaknesses identified by students and teachers. According to the teachers, the entrepreneurial competence that is the least developed among students is *Mobilising resources* (Fig. 3). When it comes to the strong sides in this respect, the competences: *Learning through experience* and *Self-awareness & Self-efficacy* have highest average scores given by the students.



Figure 4. Entrepreneurship competences in primary school – teachers' assessment.

The results originating from the teachers' sample provide different conclusions (Fig. 4). The lowest scored competence by the teachers is *Coping with uncertainty, ambiguity & risk*, while the highest scored competence is *Working with others*.

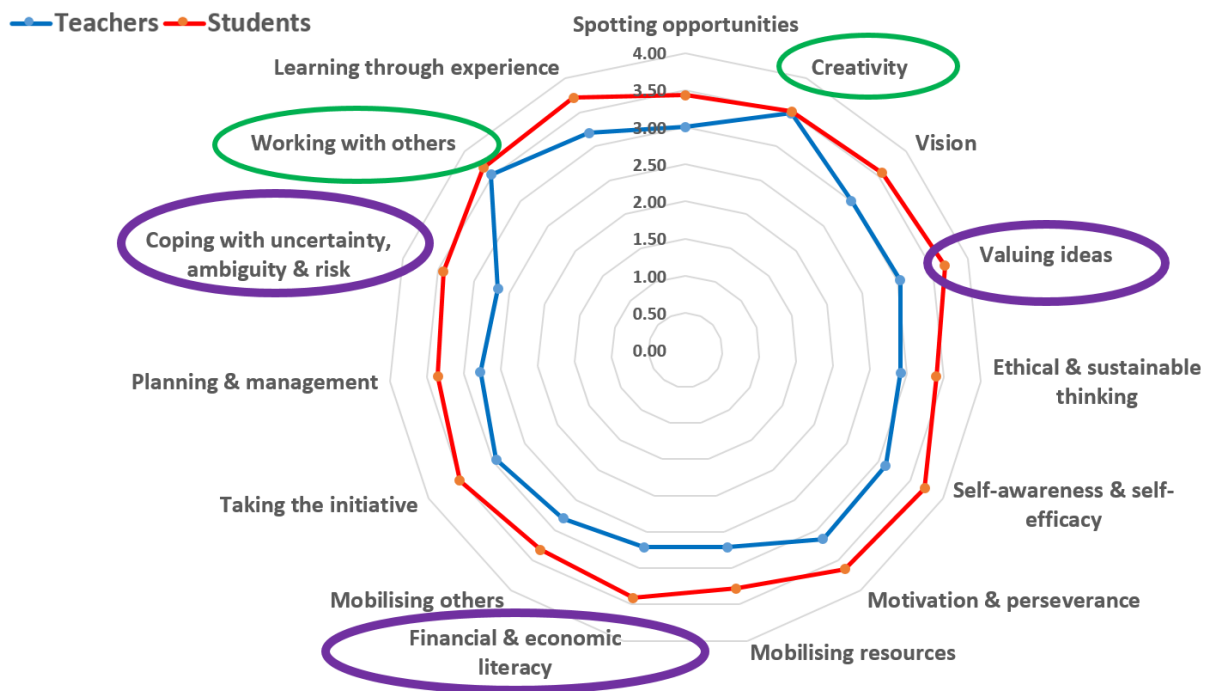


Figure 5. Entrepreneurship competences assessment – teachers vs. students.

For better visual presentation, the results given by the two groups of respondents are plotted on the radar diagram (Fig. 5). It is obvious that, for the three entrepreneurial competences marked with

purple colour (*Coping with uncertainty, ambiguity & risk; Financial & economic literacy; and Valuing ideas*), the students and the teachers have the most divergent opinions on the development stage among students, while for the two competences marked with green colour (*Creativity and Working with others*), the average scores given by the students and teachers are almost the same. These results showed which are the areas where educational authorities and experts who develop study programs, write textbooks and organise teacher trainings, should focus in order to shrink these gaps.

The results from the statistical test of the main hypothesis, assessing the influence of the school and environment support on the entrepreneurial competences among students, as well as the three sub-hypotheses, assessing the influence of each individual independent variable on the entrepreneurial competences among students are given in the Tab. 2.

Table 2. Regression statistical testing summary.

Independent variable	Correlation R	R Square	F	p-value	p-level
Support by the school for off-school visits	0.5576	0.3110	23.9189	0.0000	p<0.001 sig
Support by the school management	0.7626	0.5816	73.6804	0.0000	p<0.001 sig
Support by the local community and businesses	0.6142	0.3772	32.1015	0.0000	p<0.001 sig
Overall support by the school and the environment	0.8080	0.6528	31.9682	0.0000	p<0.001 sig

The statistical results evidenced strong positive relation between the independent variables: *Support by the school for off-school visits; Support by the school management for entrepreneurial activities; and Support by the local community and businesses* and the dependent variable *Entrepreneurship competences development level*, on the both testing ways (individually each independent variable and all three variables together), with significance level of p<0.001 sig. The value given for R Square indicates what percentage of the dependent variable can be predicted by the independent variables. Overall, for the all three variables this value is 0.65, which means that 65% of the *Entrepreneurship competences development level* can be predicted by the overall support by the school and the environment. Therefore, the tested hypothesis is confirmed with statistically significant result. It could be concluded that with the improved support to the teachers by the school and the environment, the entrepreneurial competences of the students will be enhanced.

## 4 CONCLUSIONS

Republic of North Macedonia is walking its path toward strengthening the entrepreneurship education in the country. Many activities are done, and much more should be done. Part of the recommendations that will be submitted to the national educational authorities are:

- Teachers need higher support from school principals, state education authorities and business community in order to implement right entrepreneurial pedagogy (guest lecturers, company visits, etc.) in the schools;
- Students must be encouraged to participate in entrepreneurship competitions and non-school activities an projects;
- More teachers' training is needed; educational authorities should ensure that within professional teacher development, they should ensure at least every second year teachers to have trainings related to 'entrepreneurial pedagogy', different specific topic related to innovation and entrepreneurship, participation to entrepreneurship related conferences and student competitions, etc.;
- Measuring level of the students entrepreneurial competences at the end of primary school should become obligatory activity every year. This is in line with the EU recommendations towards increasing the entrepreneurial attitudes among youth!
- Strengthening the support from Macedonian diaspora and their involvement in the educational system:

- Participation to business plan competition of secondary school students as members of Jury, providing award money, mentorship, support to continue studying on international level, etc.;
  - Direct scholarship and mentorship for students in secondary schools and universities;
  - Better utilisation of Erasmus + programs to link our students, researchers, teachers and start-up companies with international companies where people from North Macedonia work or are owners (<https://www.erasmus-entrepreneurs.eu/>, <https://intervetwb.net/>, <https://www.macedonia2025.com/executive-study-tour/>, etc.)
  - Establishing “diaspora fund” for financing projects that will support entrepreneurship education.
- Strengthening the links between the Fund for Innovation and Technology Development and educational authorities in order to continue and extend the current support;
  - Evaluating the results of the implementation of National Entrepreneurial Learning Strategy 2014-2020 and development of its extension;
  - Supporting schools to develop project applications in the area of innovations and entrepreneurship within the Erasmus + projects, and other EU and donor funding schemes.

This paper provides brief overview of key activities in development of Macedonian entrepreneurship education with focus on primary and secondary education, and insights about the gained entrepreneurial competences at the end of the primary education on a national level, by application of the statistical analyses and EntreComp model. The results and recommendations presented in this work make significant theoretical contribution to the theory of entrepreneurship competences, but more importantly, the practical implications reflected in the future measures and activities for addressing the identified weaknesses will assist the policy-makers in the overall improvement of the entrepreneurship education in the country.

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## REFERENCES

- [1] Council conclusions on the role of education and training in the implementation of the ‘Europe 2020’ strategy, *Official Journal of the European Union*, 4.3.2011. Retrieved from <http://eur-lex.europa.eu/LexUriServ/LexUriServ.do?uri=OJ:C:2011:070:0001:0003:EN:PDF>.
- [2] Global Education Initiative - Retrospective on Partnerships for Education Development 2003-2011, World Economic Forum. Retrieved from <https://www.weforum.org/reports/global-education-initiative-retrospective-partnerships-education-development-2003-2011>.
- [3] OECD initiative: Education for all. Retrieved from <https://www.oecd.org/education/education-for-all.htm>.
- [4] Sustainable Development Goals. 4. Quality Education, United Nations. Retrieved from <https://www.un.org/sustainabledevelopment/education/>.
- [5] Millennium Development Goals and Beyond 2015, United Nations. Retrieved from <https://www.un.org/millenniumgoals/>.
- [6] S. Mariotti, *Opening the Door of Entrepreneurial Possibility*, Kauffman Thoughtbook, 2005.
- [7] Key Competences for lifelong learning. European Commission, DG Education and Training, 2019.
- [8] T. Volery, S. Mueller, B. von Siemens, "Entrepreneur ambidexterity: A study of entrepreneur behaviours and competencies in growth-oriented small and medium-sized enterprises", *International Small Business Journal*, vol. 33, no. 2, pp. 109-129, 2015.

- [9] H. Lee, J. Lee, K. Shim, "Entrepreneurial characteristics: A systematic literature review". In *Pacific Asia Conference on Information Systems (PACIS)*, Association For Information System, 2016.
- [10] S.A. Zahra, H.J. Sapienza, P. Davidsson, "Entrepreneurship and dynamic capabilities: A review, model and research agenda", *Journal of Management studies*, vol. 43, no. 4, pp. 917-955, 2006.
- [11] A. Tittel, O. Terzidis, "Entrepreneurial competences revised: developing a consolidated and categorized list of entrepreneurial competences", *Entrepreneurship Education*, vol. 3, no. 1, pp. 1-35, 2020.
- [12] M. Bacigalupo, P. Kamylyis, Y. Punie, G. Van den Brande, *EntreComp: The entrepreneurship competence framework*. Luxembourg: Publication Office of the European Union, 10, 593884, 2016.
- [13] "Entrepreneurial Learning: formal vs. in- and non-formal education and training", The methodology matrix for entrepreneurship education in primary and secondary schools. Retrieved from [http://ee-hub.eu/component/attachments/?task=download&id=37:Matrix\\_Macedonia](http://ee-hub.eu/component/attachments/?task=download&id=37:Matrix_Macedonia).