



## **PROPOSAL OF PROJECT FOR JOINTLY SUPERVISED DOCTORAL THESIS UNITA**

**Cultural Heritage x;      Circular Economy □;      Renewable Energy□;**

**Interdisciplinary □**

**Title of the project:**

**Development of entrepreneurial competencies in Makerspaces as learning laboratories**

### **UVT**

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## **PARTNER UNIVERSITY**

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## **Description of the PhD project**

Prof.dr.habil. Simona Sava, from the Department of Educational Sciences, West University of Timisoara, with expertise in social education and educational management, together with Assoc. Prof. dr. Monica Mincu, from the University of Torino, and UCL Institute of Education, UK, specialized in comparative education, propose a joint PhD supervision on the development of the entrepreneurial competences in makerspaces as learning laboratories.

While the fab lab and makerspace movement is still in its infancy, developed less than 20 years ago, there is already clear research evidence that it changes how and what people learn in STEM fields, that it helps foster creativity and innovation (Beyers, 2010, Blikstein, 2013, Roma, Minenna, Scarcelli, 2017), increases self-efficacy (Dubriwny et al, 2016) and promotes knowledge sharing (Fleischmann et al., 2016). In his literature review, Yu (2016) outlines the definitions and historical development of makerspaces, how hackspaces naturally grow into makerspaces, defining them as a unique place where people come together and create; it could be any space, in all shapes, sizes and locations. At the same time, research presents different approaches or practices that can support teaching and learning in makerspaces (Andrews, 2017), pointing their contribution as integrated learning spaces based on play and creation to the acquisition of skills needed in the 21st century, such as entrepreneurial, social and digital skills, as the Danish experience demonstrates (Pilgaard et al., 2022).

Developing entrepreneurial capacity is considered a core competence, understood mainly as the ability to dare, to take risks, to think strategically, to take responsibility for a job well done. In this respect, EntreComp, the European Framework of Entrepreneurial Competences (EU, 2018) was developed by the Joint Research Centre of the European Commission. EntreComp is a reference framework aimed at improving the understanding of what it means to be entrepreneurial in all aspects of life and establishes the importance of entrepreneurship and initiative, helping to develop entrepreneurial skills to face economic, social and cultural challenges.

Developing the capacity for social innovation, contributing to societal well-being, entrepreneurial competences and skills of children and young people are desiderata listed in the Learning Compass 2030 released by the OECD (2019). Makerspaces as integrated learning spaces have the potential to contribute to the development of these competences, and the PhD thesis that we propose to coordinate is desirable to identify for the Romanian space the way in which formal or non-formal learning spaces can be resemnified as makerspaces (Geser et al., 2019; Hira, & Hynes, 2018).

The contribution that this PhD thesis brings is to analyze the activities carried out in makerspaces in order to assess, from an educational design point of view, the development of entrepreneurial competences. Consideration will be given to investigating the development of entrepreneurial competences in makerspaces as learning laboratories, as educational spaces that stimulate the use of ideas to develop initiative taking, growth mindset, ability to dare and act consistently, etc. (Geser et al, 2019).

Good practices in formal and non-formal learning spaces (e.g. after school, educational programmes developed by NGOs) will be identified and capitalised upon, so that learning spaces provided for in the Law of Education, such as community playgroups, community lifelong learning centres, etc., are designed as makerspaces, for children and young people of all ages.

Entrepreneurial skills from Entrecomp will be operationalised for pre-school/primary/junior high/junior high school level, as preferred, and pilot educational interventions can be designed to validate experientially, tailored to the chosen age level, how these skills can be developed more effectively, with possible transfer of empirically validated educational approaches from makerspaces to formal education.

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## Jointly supervised doctoral theses