

HOW TO CO-DESIGN ACTIVITIES THAT FOSTER ENTREPRENEURIAL COMPETENCES WITH TEACHERS

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ABSTRACT

New entrepreneurial models and recent challenges call for a different workforce, characterized by entrepreneurship competences. Education plays a significant role in the development of these competences. Nevertheless, entrepreneurship education takes usually plays only at the tertiary level. We argue that entrepreneurship competences should be developed from the secondary education and by the teachers. The present study illustrates and assesses an action research about an experience of educational activities co-design together with teachers of any subjects. Methodologically speaking, we conducted four workshops by applying the EntreComp Framework and the backward design with the participants. Reflecting critically on the activity allowed the identification of an improved framework of collaboration between universities and secondary schools within an open innovation approach including also other actors in the education panorama. The framework consists in four steps (i.e. 1) assessing the current level of entrepreneurship competences of teachers and students; 2) co-design activity; 3) tutoring on the implementation; 4) longitudinal analysis). The goal of this collaboration is to improve the design of the curriculum in secondary schools, by developing technical skills, while stimulating entrepreneurship competences.

Keywords: *university-school collaboration; entrepreneurial competences; action research*

1. INTRODUCTION

The Council of the European Union in its recommendation on key competences for lifelong learning of 22 May 2018 underlines the need for Member States to nurture the entrepreneurship competence. This does not (only) mean that our schools need to teach pupils how to start a company. In fact, based on the Entrepreneurship Competence (EntreComp) Framework, fostering creativity and resilience among young people is increasingly necessary.

The need to develop entrepreneurship competences is highlighted by the recent trend of the gig economy and the raise of digital business models such as Uber or Airbnb, which are producing new forms of entrepreneurship. An Uber driver or an Airbnb host need to master entrepreneurship competences even if they do not own the company. Similarly, also employees are requested to act more proactively in innovation activities. Recent innovation approaches, such as the lean startup, innovation labs and corporate acceleration and incubation programs give space to employees to act as corporate entrepreneurs or intrapreneurs (Honig, 2001; Martiarena, 2013). Therefore, teaching entrepreneurship at universities is not anymore enough. As some countries established that entrepreneurship education must be present at the upper secondary level (Feyes et al., 2019), we argue that, also given the actual Covid-19 crisis, entrepreneurship competences should be trained and developed already at lower secondary education. This does not means to create a new subject called “entrepreneurship”. Rather, it implies that all teachers, irrespectively of the discipline taught, should rethink their curriculum in order to develop also entrepreneurship competences as well as the most technical and subject-related skills. One may argue that secondary schools teacher may not possess the

knowledge and the attitude toward entrepreneurship education. For this reason, we aim at contributing to the entrepreneurship education literature and policy by developing a new framework of collaboration between universities and secondary schools in order to co-design curricular activities that foster entrepreneurship competences. In fact, entrepreneurship scholars have the chance to help and transfer their knowledge, that could be matched with the expertise of the teacher and his or her technical knowledge of the subject taught.

The present early stage paper aims at presenting some initial results of an action research in the context of a course about entrepreneurship competences taught to teachers. The first edition of the course gave the chance to think critically about the approach tested. Consistently with the action research general goal of reflecting about how to improve educational practice (Koshy, 2009), we understood that a collaboration between university and secondary schools should be more systemic and not only limited to several workshops of educational activity co-design.

In the remainder of the article, we review the relevant literature, we present our experience of the course where we applied the EU EntreComp framework within a backward instructional design model, and we present our results, discussing how to enhance the collaboration between Universities and secondary schools in order to improve the curricula by bringing entrepreneurship research.

2. THEORETICAL BACKGROUND

In our study, we merge two literature streams, which combined may shed a new light on how to improve entrepreneurship education, both theoretically and in practice. We refer to entrepreneurship competences, and to open innovation. We found a connecting gap between these two themes, that we aim at addressing in our study.

2.1 ENTREPRENEURSHIP COMPETENCES

Entrepreneurship has become a multifaced and interdisciplinary topic for scholars. Some researchers are interested in the entrepreneurial process and relative challenges (Dimov and Pistrui, 2020; Venkataraman, 1997). Others focus on the role of the entrepreneur, its cognition and behavior (Caputo and Pellegrini, 2020; Mitchell et al., 2014). Moreover, scholars are increasingly considering entrepreneurship as an academic and a teaching subject (Henry et al., 2005; Neck et al., 2014; Rasmussen and Sørheim, 2006). Nevertheless, these approaches mainly consider entrepreneurship as the creation of a new organization. Contrariwise, the present study adopts the view of entrepreneurship as a mindset (Morris et al., 2013).

In this field, Cubico et al. (2010) developed “the entrepreneurial aptitude test” to determine the profile of entrepreneurs. Moreover, the literature on entrepreneurial thinking and learning complement with other elements that are important in educational programs to develop better entrepreneurial minds (Cope, 2005; Corbett, 2007; Krueger, 2007; Peris-Ortiz et al., 2014; Politis, 2005). Whether the literature on entrepreneurship mindset reveals how important is the development of entrepreneurship competences for the growth and innovativeness of countries (Kuratko and Morris, 2019), there is still a general lack in understanding how to develop entrepreneurship competences at school, and more precisely in secondary education. Cubico and Favretto (2018) emphasize the value of education to develop such entrepreneurial competences. In Europe, there are already many practices aimed at developing entrepreneurship competences (European Commission, 2016). Nevertheless, there is a general need to systematize the efforts and make them consistent with the pedagogical goals of the single subject taught by the teacher. In fact, outsourcing entrepreneurship competence-developing activities to entrepreneurship scholars is not a very effective strategy. Pupils build a relationship with their teachers and this facilitates learning (Bressoux and Bianco, 2004).

Therefore, we adopted an approach of ‘teaching the teacher’, who will be then act as an enabler of entrepreneurship competences development with their students.

Gianesini et al. (2018) assess different entrepreneurial competences models. We employ the EU Entrepreneurship Competence (EntreComp) Framework. Figure 1 shows the components of the EntreComp Framework. The framework suggests that entrepreneurial competences involve the ability of transforming ideas and opportunities into action, mobilizing resources.

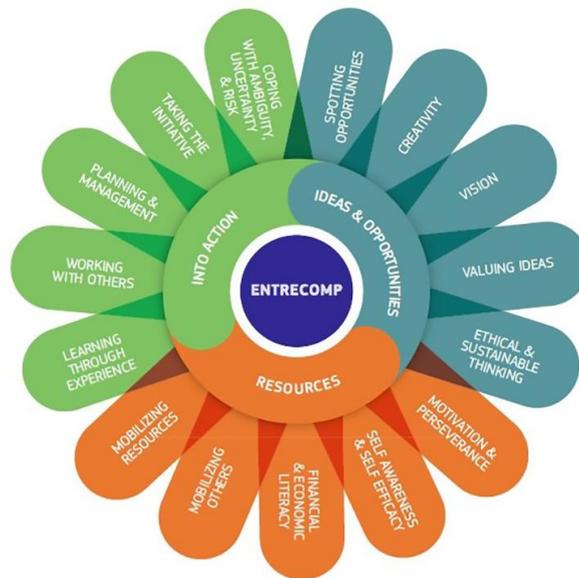


Figure 1. EntreComp Framework (European Commission, 2018)

2.2 OPEN INNOVATION

The collaboration between universities and secondary schools is not an entirely new topic. University faculty has a significant role in the educational reforms of secondary schools (Kersh and Masztal, 1998). Some initiatives of collaboration consisting in giving the chance to teachers of being visiting lecturer at the university has been particularly effective in achieving professional development (Perry et al., 1998). Nevertheless, scant attention has been given to the curriculum co-design opportunities of collaboration. Sanders and Stappers (2008) define co-design as a creative cooperation during design processes. The broader concept of co-creation is particularly relevant in the field of innovation management (Gemser and Perks, 2015; Romero and Molina, 2011) as well as marketing (Cova et al., 2011; Grönroos, 2011), but we found no literature about co-creation processes within universities and schools. In general, value co-creation sessions are seen as a win-win strategy for all parts (Martinez, 2014) and the poor attention given to co-creation in educational settings stimulated our reasoning.

Indeed, universities are an important actor in what Chesbrough (2003) coined as ‘open innovation paradigm’. Open innovation practice consists in knowledge exchange flows outside of the boundaries of the firm, such as customers, suppliers, academia, startups, and even competitors (Chesbrough, 2003). Putting this consideration into the education sector, we see that the same may apply within innovation activities of schools and universities. Usually, the design of new educational activities is a process that involves the members of the same community only. Many lecturers already have formal or informal exchanges with people outside their context, in order to broaden their sight. Nevertheless, a structured collaboration may be needed, in which each actor involved brings his or her own expertise and ideas, with the goal of generating higher value.

3. METHODOLOGY

The research question of the present study is ‘*how entrepreneurship scholars and secondary school teachers may effectively co-design educational activities that foster students’ entrepreneurship competences?*’. Given the novelty of the topic and the opportunity to work with secondary school teachers in a large applied research project between Switzerland and Italy, we adopted an action research methodology. As Greenwood and Levin (2006) describe, action research is a methodology where researchers aim at solving practical problems, while reflecting and studying a research topic with the goal to generate new knowledge. We organized a course addressed to secondary school teachers in three regions (i.e. two in Italy with respectively 60 and 20 participants, and one in Switzerland, with 5 participants). At the beginning of the project we dealt with the practical problem of determining how to help teachers to co-design educational activities that stimulate entrepreneurship competences development in their pupils. Based on the literature on open innovation and entrepreneurship competences we developed a course in workshop settings. In this section we aim at describing (1) what we did and how; (2) what concrete results we achieved; and (3) how we collected and assessed data on the experience.

3.1 THE APPROACH ADOPTED

The course entailed four lectures in a workshop setting. The first lecture consisted in an introduction on entrepreneurship and a role-play to experiment a possible activity. We provided an introduction on what does being an entrepreneur mean today. The main goal was to overcome preconceptions on entrepreneurship that teachers with a non-business background may have had. The role-play was about solving a practical problem of our region (i.e. how to reduce congestions through alternative mobility). We provided some cards with the needs of the companies, of the workers and of the society, some global trends, and existing solutions. Teachers played the role of their students and we acted as teachers, in order to experience a possible situation. The second lecture was about the choice of the core entrepreneurship competences to develop. To guide this activity we used the EntreComp Framework and we applied it as an example to a previous experience done in the context of an activity in the topic of reducing food waste. The third and fourth lectures involved the planning of the activities and some peer discussion. We facilitated the sessions and acted as mentors for the design of the activities.

Given that the goal of the course was to co-design with teachers of any subject, some teaching activities to develop entrepreneurship competences, we adopted the backward instructional design model (Wiggins and McTighe, 1998). The backward instructional design model is considered as a proper approach in competence-based education (Bitetti, 2019). The backward design starts with the identification of the core competences to develop far before the planning of the contents of the activity (Wiggins and McTighe, 1998).

3.2 THE OUTCOME OF THE APPROACH

In practice, the participants co-designed with us a potential activity to be implemented the next semester in their classes. Three exemplary projects are described next.

3.2.1 SOCIAL MEDIA TO DEEPEN THE KNOWLEDGE OF THE REGION

A geography lecturer with a passion on new technologies designed the activity. The idea was about the creation of a social media protected profile where the lecturer and the students had to publish contents linked to the knowledge of the local region and its characteristics. Pupils have the chance to experiment a safe usage of digital tools within the digital society, while at the same time being at the center of their learning. The structure of the activity included the active participation of pupils and a co-opetitive approach. In fact, the activity involved

gamification techniques (i.e. the use of typical concepts and methods of the gaming, fostering experiential learning and active involvement). The pupils, via the ideation and the design of challenges, quizzes, games, etc. had the chance to explore, know and deepen the land where they live, in terms of economic activities, socio-demographical, environmental and artistic factors.

3.2.2 CONVERSION OF AN UNEXPLOITED ROOM

Three mathematics teachers developed together a project that asked students to transform an unexploited room into something important for all pupils of the town. Pupils had first to explore and assess different exploitation options through surveys and interviews. Besides some mathematics, statistics, and geometry skills, students also developed several significant entrepreneurial competences about the customer-orientation. Pupils identified the so-called ‘customers’ jobs to be done (Christensen et al., 2016). Moreover, students had also to think about investments, operating costs and the governance of the room. An interesting element of the activity involved the fact that it runs over two different academic years. The first year was about the analysis of the room, while the second about the implementation and testing.

3.2.3 ROBOT MVP DEVELOPMENT AND MARKET APPLICATIONS

A robotics lecturer developed an activity in which students had to develop a prototype of a robot able to sort objects in different locations. Pupils did not only focus on technological aspects of the robot. They needed to study a business concept, by analyzing macro trends and defining the value proposition, the customer journey and the uniqueness of the product. These reflections conducted to the development of a Minimum Viable Product (MVP), to be tested with the target market in order to understand if a real interest exist and in which market.

3.3 DATA COLLECTION AND ANALYSIS

As it has been our first experience, before, during and after the course we engaged in a critical reflection about how to improve our educational practice. We followed the typical cycle of action research of planning, acting, observing and reflecting (Kemmis et al., 2013). In particular, collecting and assessing data in our diaries, through observation and interviews to participants, we reflected on how to improve our next edition. More precisely, we observed that the design of the educational activities were effective. Nevertheless, the ineffective implementation of the activity led us to our results about how to effectively co-design educational activities in a more systemic way.

4. RESULTS

The present action research reveals that the approach is effective but requires some revision. Entering the secondary school with the topic of entrepreneurship is difficult and characterized by some extent of preconception. However, by employing the backward design as a common language with teachers, we managed to foster awareness on the importance to develop entrepreneurship competence. The very same teachers understood they already implemented several entrepreneurship competences developing activities, although there was an absence of systemizing all the pieces together. Our approach allowed the teachers to develop systematized activities. Moreover, the same teachers managed to improve their entrepreneurial mindset. Nevertheless, our data analysis suggests that some improvements have to be made. First, we understood the necessity to continue with an active tutoring after the course to facilitate the implementation of the co-designed teaching activities. In particular, we only provided some technical support. We understood we should act as mentors during the implementation of the activity in the same way as coaches for entrepreneurs during the acceleration programs for

startups. Encouraging and helping teachers in difficult situations may be the right approach to keep the motivation high.

Second, we understood the necessity for monitoring students' and teachers' entrepreneurship competences. We did not perform a survey or other detection methods of pre-existing and post-treatment entrepreneurship competences. This kind of monitoring is helpful in assessing the approach used and finding issues that needs further improvement. Further collaboration with experts in the entrepreneurial competences' measurement is very likely to be implemented.

Despite results reveal how to improve the relationship with teachers, we also understood the necessity to intervene at the institutional level for achieving higher impact. This means that a most effective approach would require the development of an ecosystem of collaboration between university, teachers, their institute, and other institutional actors (e.g. the ministry of education).

5. DISCUSSION AND CONCLUSION

Assessing critically our results, we conclude that, in order to co-design educational activities that foster entrepreneurship competences in secondary schools with teachers, we need a systemic framework. At present, we only engaged in one step of a four-steps framework we aim at discussing as the key contribution of the present study.

The framework involves the following steps. First, entrepreneurship scholars need to assess the current level of entrepreneurship competences of teachers and students. A potential tool to assess these competences may be the entrepreneurial aptitude test (TAI) (Cubico et al., 2010), which has also the strength of the quantitative methods in order to make some inferences. In addition, the assessment of competences also requires more qualitative methodologies. In fact, judging participants during a realistic task is an ideal context to assess the development of competences (Tardif, 2006). Second, teachers and entrepreneurship scholars need to engage in co-design activity, as we did in our first edition. By using the EntreComp Framework as conceptual basis, and the backward design (Wiggins and McTighe, 1998) as the instructional design method, we find that interesting activities may be produced. Third, teachers should implement their activity with the tutoring of the entrepreneurship scholars. During the implementation of the activity, researchers may continuously provide the right framework to conduct the activity by ensuring that the goal to develop the selected entrepreneurship competences is still pursued. Fourth, university researchers, secondary schools teachers and directors, and institutional actors as the ministry of education should cooperate to develop an observatory to validate the outcome of the different activities. This means that longitudinal analysis may be performed and alimented with new data and experiences in order to validate the most effective activities.

To conclude, the value of our approach consists in the consistency of the teaching activities developed with the pedagogical goals of every subject. In fact, we do not substitute the teachers in the implementation of the activities. Rather, we facilitate a revision of their current educational practice and make them responsible for the development of entrepreneurship competences. In this way, pupils do not see the activity as a stand-alone moment. Students will develop subject-related competences while developing entrepreneurship competences with the very same teacher as usual. Therefore, we contribute to the literature of entrepreneurship competences and entrepreneurship teaching by highlighting the need of doing things differently, and not re-invent the wheel.

The main contribution of the present study is at the level of practical implications on the collaboration between universities and secondary schools. As universities are increasingly called for their 'third mission' about contributing to the socio-economic development of the territory (Colasanti et al., 2017), we see opportunities for the implementation of an open

innovation ecosystem, involving universities, teachers, schools, and institutional actors, with the aim of improving the (entrepreneurship) education of tomorrow. Moreover, in the long run, we could also imagine that entrepreneurship would be part of the curriculum of aspiring secondary schools teachers during their training. A sort of phase 0 of our framework.

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