Design Thinking in Education for Promoting Entrepreneurial Innovation

Abstract: Design thinking is a human-centered, solution-oriented approach to entrepreneurial innovation that aims at better realization of how a user will experience a proposed solution. Design thinking can help find solutions through empathy for understanding actual issues, creativity for innovation, prototyping, and testing with users to ensure that proposed services work (Stanford). The approach is successful both in making businesses successful through offerings that best meet client needs and in solving social issues in social entrepreneurship contexts by introducing solutions through creativity where none may appear to exist. These entrepreneurial skills are particularly relevant for today's young generation in the face of emerging societal challenges related to educational growth, design IT, skill, innovation and many more.

Keywords: DesignIT & Thinking, Entrepreneurial, Growth, Education.

INTRODUCTION AND DESIGN PROJECT RATIONALE:

Entrepreneurial skills are broadly considered as a unique competency which is implemented in every subject and educational level (ET2020). It fosters individuals to explore their talents, to introduce creative ideas, and to take action towards turning ideas into sustainable solutions which contribute to both business development and social prosperity. Everywhere needs young entrepreneurs, as there is evidence that European country lag behind others where entrepreneurship is more intrinsically a part of the culture (Shane, 2003). If Europe is to maintain a strong position in the international economy, entrepreneurs will be key to achieve this. This is because European society needs the next generation of workers not just to fill jobs, but also to create them.

Entrepreneurship education and training is termed as entrepreneurship education. Although entrepreneurship education is explicitly recognized in the central level educational steering documents of European countries, in reality there is considerable diversity in how it is being incorporated into national curricula. A cross curricular approach can be taken, it can be integrated into existing subjects or it can be introduced as a separate curriculum subject (in some cases optional and in some cases compulsory). Moreover, although most countries explicitly recognize entrepreneurship education at least to some degree in primary and secondary education, the overall pattern of provision changes significantly from one school level to another (European Commission, 2016).

If we consider as targeting 10-15 year old students, entrepreneurial education is integrated in school curriculum through different practical entrepreneurial experiences 2 across the Europe. It is important to note however, that the attitudes and skills linked to entrepreneurship (such as self confidence or creativity) are not encouraged or supported in most official European school curricula in any structured way (European Commission, 2016). Indeed, it could be argued that such attitudes and skills should be the main focus of entrepreneurial education in this age range. In this context, Design Thinking has proved to be well positioned to address this issue as it is understood as a complex thinking process of conceiving new realities (Val, et al., 2017). Entrepreneurial skills, such as, creativity, problem-solving, self-confidence and collaboration are deeply rooted in the Design Thinking discipline. With deeper insights into the dynamics and power of Design Thinking, school students can benefit from the integration of entrepreneurial skills in the curricula. For this reason, this paper presents our research on fostering entrepreneurial skills such as creativity, problem-solving, self-confidence and collaboration, through a Design Thinking approach.
This paper is structured as follows. First, we present a pedagogical methodology based on Design Thinking to foster entrepreneurship education and design thinking perspective as well. The second part provides a comprehensive framework and definition of the Educational Program. In the third part we set out the results from piloting the Program with motivation in terms of DesignIT.

The pedagogical methodology:

In the 21st century, education is moving from traditional teaching and learning models towards student-centered learning. With technological advancements, students have direct access to massive amounts of information (online social networks), while becoming content generators and publishers themselves. It is essential for educators to target beyond context learning, and develop pedagogically effective learning environments in order to enhance the quality of education and expose their students to a better understanding of the content. Design Thinking offers an interesting approach to address these new challenges in the classrooms of the future (Val, et al., 2017). The next generation of entrepreneurs will need to cope with increasingly complex scenarios, juggling the competing needs of stakeholders, and integrating different fields of knowledge to formulate solutions to problems. For this reason, Design Thinking has crossed over from the world of design into the business, leadership, management and entrepreneurship sectors (Davis, 2010, Dorst, 2011, Fraser, 2007, Glen et al., 2014, Hassi and Laakso, 2011; Royalty et al., 2015). Design Thinking can be described as the way designers approach a design problem (Cross, Dorst and Roozenburg, 1992; Eastman, McCracken and Newsletters, 2001). It takes a human centered approach; problems are visualized in a more holistic way and are tackled with an “open” problem solving process (Rittel and Weber 1973). In other words, "thinking outside the box".

The Educational Programme:

This section describes how we incorporated Design Thinking into an Educational Programme to promote entrepreneurial skills in young people. To this end, programme stages and related activities for application in the classroom were created. The programme begins with the setting of a problem or a challenge. The programme integrates explorative guiding questions, collaborative activities and a combination of digital and non-digital resources to articulate and implement solutions. Importantly, it also incorporates activities such as reflection, assessment, and documentation. The programme was designed in such a way that students could work at their own pace, be creative and responsible for their own learning. Students are encouraged to determine the direction of their research and come up with appropriate solutions for further communication to the community of interest. In this context, the educator plays the role of the facilitator, resource provider, project manager and mentor.

The Educational Programme is divided into the following 7 stages and the students are required to complete all of them:

1. Introduction / Motivation
2. Challenge Identification
3. Team Creation
4. Exploration
5. Ideation
6. Prototyping
7. Communication

The introduction and motivation stage:

(1) Creates an entrepreneurial context in which young students can visualize themselves as active actors for problem solving. The challenge or problem identification stage (2) is related to defining and understanding the problem students are encouraged to solve. Team creation activities (3) establish the basics of team dynamics, sense of belonging and collaboration within the team. For teamwork activities, a cooperative learning approach was implemented. The exploration stage (4) suggests different paths for further research and better understanding of the problem. Ideation (5) refers to seeking solutions that solve the problem and visualizing scenarios where these solutions are implemented. Prototyping (6) makes the selected solutions tangible, both through digital technologies and/or handcraft activities. Finally, the communication stage (7) presents both the problem and solutions and
the process followed to the different communities of interest involved.

Experimentation and results of the Educational Programme:
The Educational Programme described in the previous section was piloted in Cyprus, Denmark, France and Spain in Spring 2018, allowing a final evaluation of the impact of the programme. The experimentation campaign in real conditions allowed us to:

- Assess the relevance and appropriateness of the method and tools for both teachers and students;
- Measure the effectiveness of the Educational Programme on entrepreneurial skills;
- Evaluate the perception of entrepreneurship among participants.

Perception of the Educational Programme:
Overall, participating students and teachers agreed that the programme was easy to understand. The students highlighted the physical and digital prototyping phase and presenting their ideas as the most enjoyable stages. They liked the creative exercises such as designing their own logo, or the prototyping more than those that involved simply listening or writing. Creating something with their hands enabled them to make their ideas tangible, even if they had difficulties at the beginning of the activity. The students appreciated working in groups with predefined roles. In this sense, they thought the roles defined in the programme helped with internal organization, but they agreed in some cases it was difficult to maintain them. They admitted, however, having problems when organizing and managing the group and found the most difficult thing to be working with students who were not their friends. The students also emphasized the freedom they experienced during the experimentations. By participating in this project, they felt that they were being listened to and valued, both of which are directly linked with self-confidence. Some of them even said the experience had made them more autonomous, more mature and it has allowed them to evolve and to learn more about themselves. Like the students, the teachers were impressed with the engagement potential of prototyping and creative activities: “I liked the prototyping phase best. ”The superheroes. It’s a concept that I’ll use in my class. Interestingly, and in contrast to the students, the teachers identified the exploration and conceptualization stages and activities as the most difficult for the students. “The students were frustrated because they found it hard to concentrate on the phases and wanted to start problem-solving.”The students were a bit worn out by this activity.

Entrepreneurial Skills:
From a qualitative perspective, all the participants involved in the experimentations agreed the Educational Programme helped to develop or improve students’ entrepreneurial skills (creativity, problem-solving, self-confidence and collaboration). The students identified and described these four abilities when they were asked about what they had learnt from the programme. Teachers interviewed at the end of the pilot also agreed that the programme completely addressed this challenge.

DESIGNS IT AS HIGH LEVEL OBJECTIVES:
DesignIT aims at promoting competence at the entrepreneurial education of the tertiary level by presenting the techniques of the design thinking approach, which teach the students the principles of design thinking; namely, how to empathize with the target users, define problems efficiently, ideate the way that users will experience the suggested solution, recognize opportunities that enables innovation, and synthesize innovative solutions that meet the users’ requirements successfully. The suggested design thinking context offers multiple benefits for students: In relation to entrepreneurial education, the approach empowers

- Students to design products that effectively address a customer’s business requirements thus boosting the success potential of a new offer In the context of social entrepreneurship, the approach motivates
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SPJIMR, a top B-school in India

Furthermore, design thinking addresses the needs of educators, who seek to modernize their teaching practices. Design thinking can introduce innovation in the classroom, engage students, and lead to the achievement of educational objectives.

Design thinking in teaching and learning through ICT:

There is a wide range of difficulties that educators and students face in educational contexts that deploy ICT as a learning tool. Design thinking can help educators who deploy ICT to succeed in their educational initiatives. Through the design thinking lens, teaching with ICT can be viewed as deploying and evaluating a variety of solutions towards finding the most suitable one. The search for beneficial, ICT-powered learning offerings may engage not only educators but also other stakeholders. Design thinking can offer benefits in this process, as it promotes empathizing with students and educators, designing, and evaluating prototypes of learning processes until educational objectives are met.

CONCLUSIONS:

This paper displayed the DesignIT methodological learning framework which focuses on contributing to the development in education for promoting entrepreneurial innovation regarding student skills, related to the design thinking process and its implementation. The framework is based mostly on Problem-Based Learning approaches (PBL), but it is also affected from Case-Based-Learning (CBL), experiential, and active learning that is implemented through serious games. The aforementioned combination aims to expose students to the design thinking process in practice, resulting in building design thinking skills for students of the educational initiative. The proposed framework takes into consideration the actual needs of students and educators in the education sector in relation to building skills that are in-demand by the entrepreneurial and social-entrepreneurial sectors. This framework acts as the basis for the development of the DesignIT building design thinking tools.

LEARNING DESIGN APPROACHES FOR BUILDING DESIGN THINKING SKILLS:

This section provides an overview of learning approaches that are relevant to the development of design thinking skills. The section first discusses how design thinking is deployed in business in education. It then analysis problem-based, case based, and constructionist learning frameworks that will be integrated into the DesignIT learning methodologies, which are presented in the following section

Deploying design thinking in business and in education:

Design is applied in broad sectors, ranging from science to art and humanities. Design is a solution-based approach, which provides problem shaping, synthesis, and the development of appropriate solutions that fit in the world’s requirements.

Design thinking in business:

Design plays a key role in the entrepreneurial sector, either for developing innovative business solutions or for teaching industry professionals how to apply innovative methods in their practices. Tim Brown (CEO of IDEO), argues that design thinking leads to a competitive advantage, which enables professionals be “masters of the art”.

Design thinking in education:

Design thinking is deployed for re-engineering educational curricula to best address student needs. According to Razzouk (2012), there are three ways for design thinking to be implemented in education:

1) As a problem-solving method to help administrators deal with issues of the institutions;

2) To educators to build more creative lesson planning; and

3) To inspire students to build design thinking skills. The link between design thinking and education is analyzed in research. Some initiatives include:

- The REDLab group, from Stanford University's Graduate School of Education
- The Hasso Plattner design thinking Research Programs, a cooperative program between Stanford University and Hasso Plattner Institute from Potsdam, Germany
- SPJIMR, a top B-school in India

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skills, which corresponds to intellectual output to the DesignIT and entrepreneurial innovator.

REFERENCES:


