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Student Engagement in Entrepreneurship Education Programs: a
Comparison Between the Ca' Foscari Contamination Lab and the
Australian eChallenge

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Alla mia famiglia,
lontana e vicina,
per l'affetto e la testimonianza.

Abstract

Il coinvolgimento attivo degli studenti nelle istituzioni universitarie è stato oggetto negli ultimi anni di un'attenta ricerca per definire quali siano le forme più appropriate e più efficaci per metterlo in pratica. Tra le varie definizioni elaborate dagli studiosi, due sono gli attori principali coinvolti nel processo: gli studenti, che con ruolo attivo vengono coinvolti nelle attività educative, e le istituzioni, le quali attivano strumenti e risorse per coinvolgere gli studenti. Gran parte della letteratura si concentra sulla dimensione individuale di coinvolgimento dello studente, ed è in questa prospettiva che si può collocare anche questo elaborato. Il principale scopo del coinvolgimento è di migliorare l'apprendimento degli studenti e molti studiosi enfatizzano gli effetti positivi delle strategie di coinvolgimento sul piano individuale, sociale e professionale del soggetto. Sono state elaborate una lista di strategie che, qualora adottate, portano a migliorare il coinvolgimento degli studenti. Le cosiddette strategie ad alto impatto sono, ad esempio, i seminari, corsi intensivi di composizione, esperienze di volontariato e servizio alla comunità, tirocini formativi, esperienze di studio all'estero e progetti di ricerca. Generalmente questo tipo di esperienze richiede un alto grado di impegno e disponibilità di tempo, facilita l'apprendimento fuori dalle aule, spinge lo studente ad interfacciarsi molto con il corpo docente e con gli altri studenti, incoraggia la collaborazione con soggetti diversi.

Nel contesto europeo la letteratura non è così fiorente come negli Stati Uniti e in Australia, tuttavia l'Unione Europea ed anche il Consiglio d'Europa stanno lavorando per implementare le politiche di istruzione nei paesi membri con un occhio di riguardo ai progetti di coinvolgimento degli studenti, incoraggiando la mobilità all'estero, iniziative per migliorare le possibilità di trovare un'occupazione e le competenze richieste nel mondo del lavoro.

La letteratura nel campo non manca di mettere in luce i numerosi effetti positivi che il coinvolgimento ha sugli studenti. Nello specifico, uno dei principali obiettivi delle istituzioni

universitarie è di aiutare gli studenti a sviluppare abilità di pensiero critico. È stato dimostrato che attività extracurricolari ricondotte al campo del coinvolgimento universitario (attività sportive, attività organizzative, interazione con i docenti, interazione tra studenti, vivere nel campus universitario) hanno un impatto positivo sul pensiero critico. Allo stesso modo, un'altra analisi sull'impatto di attività extracurricolari riporta che la maggior parte degli studenti coinvolti in queste attività migliora le proprie abilità cognitive come il pensiero riflessivo e la capacità di esaminare le situazioni da diversi punti di vista. Le competenze pratiche (che includono abilità organizzative, come gestione del tempo, del denaro, della burocrazia) sono state menzionate in altre ricerche come fattori che sono migliorati a seguito di esperienze di coinvolgimento. Un altro fattore che risulta aumentare è la soddisfazione per la propria esperienza universitaria e la probabilità che gli studenti scelgano la stessa università se dovessero ricominciare un percorso di studio.

C'è stato recentemente un aumento nell'interesse verso la creazione di percorsi di educazione all'imprenditorialità a diversi livelli del sistema educativo. Per quanto riguarda il contesto dell'Unione Europea, il "senso di iniziativa e imprenditorialità", definito anche EntreComp, è stato definito come una delle competenze chiave da acquisire. L'imprenditorialità è definita come la trasformazione di opportunità e di idee in valore per gli altri, non solo in un contesto economico e professionale ma anche in una dimensione personale e sociale dell'individuo. In uno studio della Commissione Europea (Bacigalupo et al., 2016) sulla competenza imprenditoriale vengono elencate le componenti che la caratterizzano, come ad esempio creatività, motivazione, lavoro di squadra. I risultati auspicabili che questa competenza può portare sono numerosi, tra cui l'abilità di analizzare un contesto, di pensare strategicamente o di comportarsi eticamente.

L'educazione all'imprenditorialità aiuta gli individui a sviluppare competenze, comportamenti e attitudini per poter avviare una carriera da imprenditore. Gli obiettivi dell'educazione all'imprenditorialità sono di sviluppare le competenze imprenditoriali, così da

incoraggiare la creazione di piccole attività economiche e da aumentare il ruolo attivo dei giovani nella società e nell'economia. Per essere efficace, un programma di imprenditorialità deve avere obiettivi chiari, deve integrare aspetti pratici alla teoria, creare un network con il tessuto imprenditoriale e formare costantemente gli insegnanti. Questi programmi hanno molti effetti su coloro che vi partecipano: contribuiscono infatti allo sviluppo di un atteggiamento imprenditoriale, aumentano le possibilità che i partecipanti diventino imprenditori, hanno un effetto positivo sulle possibilità di assunzione dei partecipanti e hanno un impatto positivo sulla società e l'economia.

Vi è un dibattito acceso sulla natura, utilità e miglioramento dell'educazione all'imprenditorialità. Alcuni autori ritengono che l'insegnamento delle cosiddette competenze sia dannoso e temono che il valore dell'individuo venga sostituito dalle competenze che questo soggetto rappresenta. Altri invece ritengono che il modo in cui vengono impartiti questi programmi sia poco efficace. Infine altri ancora sollevano proposte di cambiamento per migliorare queste esperienze attraverso approcci educativi che incoraggino la creatività, il pensiero critico e che insegnino a partire da esperienze reali per avere un approccio più pratico e basato sulla realtà.

Il coinvolgimento degli studenti in questo tipo di esperienze è essenziale per raggiungere migliori risultati. Una volta stabiliti gli obiettivi del singolo programma, si possono scegliere i metodi di insegnamento più appropriati. In generale, i metodi esperienziali, interattivi e orientati all'azione pratica sono i più utilizzati nel campo per via della loro efficacia. Altri strumenti considerati di grande valore sono le tecniche di lavoro in gruppo e il coinvolgimento di soggetti esterni quali esperti e ospiti dal mondo imprenditoriale. Infine, la costante formazione degli insegnanti ed educatori è un aspetto fondamentale per un corretto insegnamento dei contenuti dei programmi di educazione all'imprenditorialità.

Il Ca' Foscari Contamination Lab (CFCLab) è un progetto collaborativo che mira a migliorare il coinvolgimento degli studenti e a implementare l'educazione all'imprenditorialità.

L'Unione Europea sostiene la creazione di questi progetti nei paesi membri con lo scopo di aumentare la presa di responsabilità dei giovani e le loro capacità imprenditoriali, non solo nella sfera professionale ma anche in quella personale e sociale. Attraverso un bando indetto dal MIUR, il ministero destina una certa quantità di fondi per promuovere la creazione dei Contamination Labs nelle università italiane. In questo contesto, l'università Ca' Foscari ha ottenuto nel 2017 i fondi per dare avvio a questa iniziativa che si è aperta nel 2018. Il CFCLab affonda le sue radici in altre esperienze simili che si sono svolte negli anni precedenti nell'ateneo, sia nell'ambito aziendale che a sfondo sociale. Il primo CLab dal titolo "Fashion, Tourism and Culture" è stato avviato a gennaio 2018 con lo scopo di risolvere delle sfide lanciate dalle aziende calzaturiere del distretto della Riviera del Brenta, in provincia di Venezia. Lo scopo del progetto è di aumentare la creatività dei partecipanti e di promuovere la creazione di idee innovative e sostenibili sia attraverso la creazione di imprese che nell'innovazione di organizzazioni già esistenti. Durante sei settimane i partecipanti utilizzano gli strumenti del Design Thinking guidati dallo staff per convertire le loro idee in progetti concreti. Gli studenti lavorano in gruppi multidisciplinari, i soggetti infatti provengono da diversi corsi di studio e sono in punti diversi del loro percorso universitario. Durante il progetto hanno la possibilità di sviluppare competenze trasversali, abilità di presentazione e di public speaking grazie ai numerosi interventi di esperti nel settore. Lo staff conferisce ai partecipanti una serie di strumenti e di metodologie per raggiungere gli obiettivi preposti, quali il già citato Design Thinking, Lean Startup, Agile Project Management, Business Model Canvas, Business Planning ed altri. L'impatto di questo progetto non è solo tangibile per coloro che vi partecipano ma anche per l'ateneo stesso e per il territorio. Per questa ragione, vengono coinvolti molti partners locali come incubatori, banche, camere di commercio, altre università e molte aziende.

L'apprendimento attivo e il coinvolgimento sono dei fattori chiave nei metodi di insegnamento utilizzati. I metodi utilizzati sono di varia natura, ad esempio il lavoro in gruppo ha un particolare effetto educativo e prevede che i membri dei gruppi lavorino a stretto contatto

per sei settimane affrontando insieme le sfide e gli incarichi che gli vengono affidati per creare il progetto finale. Il feedback che lo staff da ogni settimana ai gruppi è considerato essenziale nel processo di apprendimento, non inteso come un giudizio veloce ma come un dialogo nel quale i partecipanti vengono coinvolti, crescono e migliorano. Infine, l'apprendimento basato sulla risoluzione di problemi è un altro metodo molto utilizzato che consente una miglior comprensione dei processi ed è altamente coinvolgente.

Al fine di comprendere come migliorare l'esperienza cafoscarina è stato utile il suo confronto con un altro laboratorio di educazione all'imprenditorialità tenuto dall'università di Adelaide, in Australia, denominato eChallenge. Questo progetto è iniziato nel 2000 e, ormai giunto alla sua diciottesima edizione, ha creato attorno a sé un ricco network di partners e partecipanti. Lo scopo principale è quello di trasmettere ai gruppi coinvolti una mentalità imprenditoriale che possa essergli utile in qualsiasi ambito. EChallenge dura dieci settimane e si focalizza su tre principali aspetti: l'ideazione, i feedback da parte degli utenti e lo sviluppo di competenze di presentazione in pubblico.

EChallenge e il CFCLab presentano molte caratteristiche in comune ma anche aspetti che le rendono dissimili. Proprio questi ultimi aspetti sono utili per identificare possibili scenari di miglioramento del Contamination Lab. Nello specifico tra le migliorie da apportare c'è il maggior coinvolgimento di docenti e di esperti esterni all'università che contribuiscano al lavoro dei singoli gruppi attraverso incontri a tu per tu. È auspicabile anche l'introduzione di servizi di follow-up per i progetti meritevoli attraverso l'accesso ad incubatori e l'organizzazione di eventi per gli ex-partecipanti ai laboratori così da favorire il loro coinvolgimento in servizi utili al laboratorio. Un altro aspetto su cui si può prospettare un cambiamento è la possibilità per i partecipanti di accedere al laboratorio presentando una propria idea progettuale da sviluppare durante il percorso, senza che questa venga stabilita a priori dallo staff. In questo caso, la scelta sulla composizione dei gruppi sarebbe lasciata ai

partecipanti stessi. Queste ed altre idee di cambiamento potrebbero portare il Contamination Lab ad essere sempre più attrattivo per gli studenti e ad ampliare la sua proposta.

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Introduction

Dennis Shirley is a scholar of educational change who helps schools around the world to improve teaching and learning. He taught at the Venice International University (VIU) on the Island of San Servolo for a semester as a visiting scholar in 2016-2017. During a course called “Comparing East and West”, Dr. Shirley provided students with an overview of contemporary debates and controversies about the future of educational change in Asia (the “East”) and in Europe and North America (the “West”). Students developed their own independent opinions about the evolution of educational systems and reflected on their own educational experiences debating with their classmates from other countries and continents. The interest on education and student engagement that led to this thesis arose from Dr. Shirley course at VIU.

In the process of analysis of different educational systems, several questions emerged on what the highest results on international large-scale assessments of student learning in the Confucian heritage countries reflect. Several countries focus their educational systems on high results achievement, especially in mathematics, science and reading skills. Are these outcomes representative of a high level of education? The answer depends on what is the definition of education and what are the expected outcomes. Nevertheless, this question led to a deeper reflection on the purpose of education and on the need and desire to develop whole-person educational approaches that involve different dimensions of the student, such as personal and professional development, value creation, cultural background and skills development. This kind of process is not limited to knowledge acquisition, rather it is a way to discover one’s talents and strengths, and the way through which individuals find day by day their role in society. In this perspective, education is, therefore, conceived as a tool to face reality as a whole.

An experience in the US, at the Georgia State University, provided the opportunity to experiment new ways of teaching and learning, to test new approaches to education and to

explore a new dimension of the instructor-student relationship. A course focused on leadership and organizational behavior provided fascinating insights on the managerial and organizational challenges in contemporary public organizations, including educational institutions.

However, the experience that determined more specifically the topic of this work was the Ca' Foscari Contamination Lab, an active learning workshop of entrepreneurship education that aims at supporting young people in developing an entrepreneurial mindset and behavior. At a first sight, it may seem a workshop only meant to learn how to start and run a business. Nevertheless, an entrepreneurial mindset is a broader concept that may affect a person's professional, social and personal life. The European Commission (2012) defines entrepreneurship as «an individual's 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 objectives» (p. 7) This approach to entrepreneurship relates to the above-mentioned idea of whole person learning, since it aims to provide students with attitudes, skills and knowledge that will benefit them in whatever life experience they will undertake.

All these experiences are connected by a common element which is the interest in international relations-related issues developed thanks to the Master's Degree Program in Comparative International Relations at Ca' Foscari University. This program is characterized by a multidisciplinary dimension that aims to teach students knowledge and methods to read the evolution and challenges of transnational issues with a specific focus on comparison between North and South America, Asia and Europe. Educational policies are part of this framework in that their growth and development reflects the cultural, political and economic background of the country where they are implemented. This is evident for student engagement. Different countries have experimented diverse approaches to the issue, depending on their cultural background and on the goals they want to make student achieve through the learning process.

The purpose of this thesis is to understand the insights of student engagement in entrepreneurship education projects and introduce a comparative perspective to improve the Ca' Foscari experience. The case of the Ca' Foscari Contamination Lab will be considered and it will be compared to a similar experience in Adelaide, the Australian eChallenge.

The first chapter provides an analysis of the literature on student engagement, a topic that started receiving significant attention since the 1990s. After giving a definition of the term, different styles of engagement will be mentioned. The main purpose of engagement is to improve learning for students, who are also considered to be the main beneficiaries of engagement initiatives. As for the strategies that have a high impact on student engagement, they will be listed and explained. Since the majority of the literature comes from the US and Australia, a specific research of the European framework will be conducted to identify the practices in use. The European Union and the Council of Europe are the institutions that encourage the implementation of education policies and foster student engagement in the European area.

In the second chapter the specific desirable effects of student engagement will be investigated. A growing body of literature has identified several correlations between engagement and specific outcomes, such as critical thinking, practical competence and skills transferability, cognitive development, student satisfaction, and improved grades. This chapter will analyze in deep each one of these effects to understand how they are measured and what is their impact on students.

After two general chapters on student engagement, the thesis will narrow its focus to a more specific topic, namely entrepreneurship education, which includes a set of projects aimed at developing the entrepreneurial mindset of students through engaging methods. A 'sense of initiative and entrepreneurship', also known as EntreComp, is one of the key competences recognized by the European Union as the tool to transform opportunities and ideas into value for others. The objectives of entrepreneurship education are to develop the entrepreneurial

skills, to encourage the creation of small businesses and to improve young people's enterprising role in the society and the economy. In order to be effective, an entrepreneurship program must have clear objectives, integrate theoretical and practical aspects, create a network with the entrepreneurial environment, and provide a constant training for teachers. This chapter will also mention the current debate on the nature, usefulness and improvement of entrepreneurship education. Engagement is essential in the delivery of entrepreneurship education; for this reason, the interactive and engaging methods utilized in these projects will be mentioned.

As for the fourth chapter, it will describe the origins, purposes and characteristics of the Italian Contamination Labs, which are entrepreneurship education workshops. In particular, the teaching methods, features of the participants and of the organization of the Ca' Foscari Contamination Lab will be explained in detail, as well as its partnerships and impact. The chapter will also address active learning, engagement and interdisciplinarity, which are core characteristics of the CFCLab.

Finally, the fifth chapter provides a comparative analysis of the CFCLab with the Australian eChallenge, an entrepreneurship education program of the University of Adelaide. A qualitative interview has been conducted with the staff of the eChallenge to understand the features of the program. The main topics of the CFCLab and of the eChallenge have been divided in categories and then common traits and differences have been identified. After explaining the structure, outcomes and participants' characteristics of the eChallenge, the focus turns to a comparison of the Australian experience with the CFCLab, highlighting the differences and the features in common. These observations permit the identification of possibilities of improvement for the Venetian workshop that are listed and examined.

CHAPTER 1
Student Engagement in Higher Education

1.1 Student Engagement in Higher Education: a Literature Review

Since the mid-1990s the literature has begun devoting significant attention to ‘student engagement’ as a tool to enhance learning and teaching in higher education (Trowler, 2010). The reason for this interest can be attributed to the correlation between student involvement in educational activities and positive outcomes of student success and development (Kuh, 2008). The literature review on student engagement conducted by Trowler (2010) defines student engagement as follows:

«Student engagement is concerned with the interaction between the time, effort and other relevant resources invested by both students and their institutions intended to optimize the student experience and enhance the learning outcomes and development of students and the performance and reputation of the institution». (p. 3)

The historical roots of the term ‘student engagement’ can be found in a body of work related to student involvement, particularly widespread in North America and Australia where large-scale national surveys have been conducted involving the most prolific authors in the field (in particular, George Kuh and Hamish Coates).

In the process of understanding the meaning of the term ‘engagement’, some authors have considered its antithesis. In particular, Krause (2005) contrasted student engagement with «inertia, apathy, disillusionment or engagement in other pursuits» (p. 4). According to her, ‘inertia’ suggests the act of doing nothing, of not pursuing opportunities to engage with people, activities or opportunities in the learning community. On the other hand, she also states that, for some students, engagement with the university experience is like a conflict in which they feel the culture of the university as something foreign and at times alienating, defining a hostile form of engagement (Krause, 2005).

Nevertheless, engagement is more than involvement or participation. Fredricks, Blumenfeld & Paris (2004), identify three dimensions to student engagement:

1. Behavioral engagement, regarding attendance and involvement, and the absence of negative behavior.
2. Emotional engagement, regarding affective reactions such as interest, enjoyment or a sense of belonging.
3. Cognitive engagement, regarding the willing to go beyond the requirements and relish challenge.

Each of these dimensions can have both a positive and negative pole (Table 1) since one can engage positively along one or more dimensions while engaging negatively along one or more, or to engage positively or negatively along one or more while not engaging along another/others.

Table 1: Examples of positive and negative engagement (Trowler, 2010)

	Positive Engagement	Non-Engagement	Negative Engagement
Behavioral	Attends lectures, participates with enthusiasm	Skips lectures without excuse	Boycotts, pickets or disrupts lectures
Emotional	Interest	Boredom	Rejection
Cognitive	Meets or exceeds assignment requirements	Assignments late, rushed or absent	Redefines parameters for assignments

1.1.1 Definition of Student Engagement

Scholars have defined student engagement in different ways, some of them mention the effort of students that engage in educational activities, and some others that identify the role of institutions that should involve and empower students. Combining these two perspectives, Kuh (2009) has defined student engagement as «the time and effort students devote to activities that are empirically linked to desired outcomes of college *and* what institutions do to induce students

to participate in these activities» (p. 683). What this definition suggests is that the responsibility for student engagement is carried by both individual students and institutions.

Coates (2007) describes student engagement as a broad phenomenon intended to encompass academic as well as certain non-academic aspects of the student experience, comprising the following facets that form the basis of the National Survey of Student Engagement (NSSE):

- active and collaborative learning;
- participation in challenging academic activities;
- involvement in enriching educational experiences;
- feeling legitimated and supported by university learning communities.

Trowler (2010) identifies three distinct foci in the literature about student engagement:

1. Individual student learning. This dimension focuses on issues that regard the individual dimension of student engagement, such as student attention, interest, and involvement in learning.
2. Structure and process, which includes student representation, students' role in governance and student feedback processes.
3. Identity, regarding concerns about how to generate a sense of belonging, attachment to representation and how to engage specific groups of students.

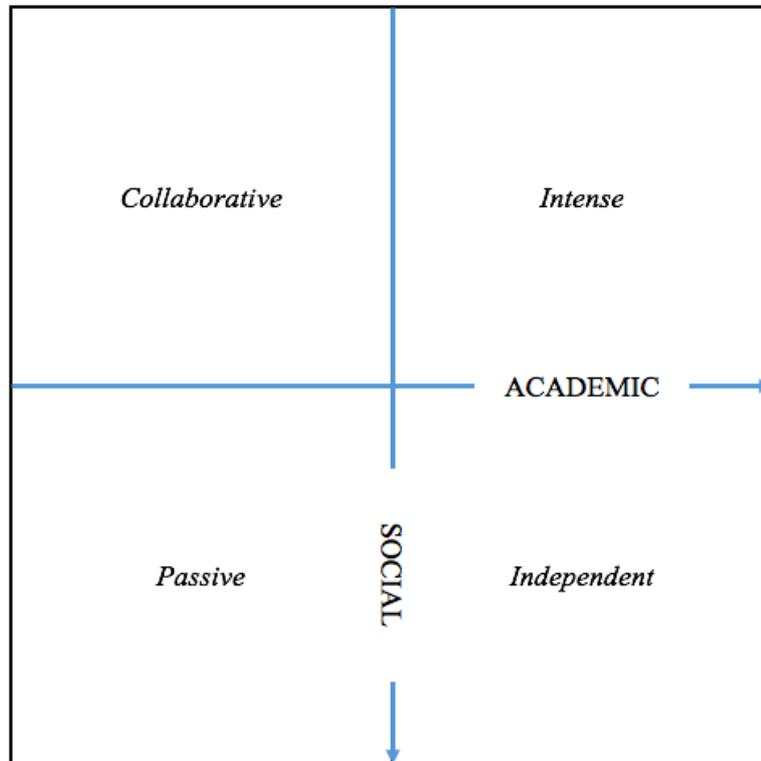
The current analysis will consider the first dimension, which also represents the overwhelming majority of literature surveyed.

1.1.2 Typologies of Engagement

As for student engagement styles, Coates (2007) presents a typological model of campus-based students engagement. The results highlight a distinction between the academic and social dimensions of engagement, which, in turn, marks out a structure that identifies four styles of student engagement. Results of the analysis suggest that student engagement can be

characterized as either intense, collaborative, independent or passive. This model is depicted in Figure 1.

Figure 1: Student engagement styles (Coates, 2007)



These four styles refer to transient states; they are not enduring traits that are sustained within individuals over time or across contexts (Coates, 2007).

According to Coates (2007), an intense style of engagement is characterized by a high level of involvement of the students in their university studies; they actively participate in activities around campus and see the teaching staff as approachable. Students reporting an independent form of engagement have a more academic and less socially-oriented approach to study. A collaborative style of engagement is characterized by a greater involvement in the social aspects of the university rather than in the cognitive forms of interaction. As for the students reporting a passive style of engagement, they rarely participate in the activities linked with productive learning (Coates, 2007).

On the other hand, seven institutional engagement types are depicted by Pike and Kuh (2005) from NSSE results:

1. *Diverse, but interpersonally fragmented.* Students at these colleges have numerous experiences with diversity and tend to use technology, but do not view the institution as supporting their academic or social needs nor are their peers viewed as supportive or encouraging. All in all, not a very easy place to live and learn it seems.
2. *Homogeneous and interpersonally cohesive.* Students at these colleges have relatively few experiences with diversity, but view the institution and their peers as supportive. These institutions are the mirror image of the first engagement type.
3. *Intellectually stimulating.* Students at these colleges are engaged in a variety of academic activities and have a great deal of interaction with faculty inside and outside the classroom. They also tend to engage in higher-order thinking and work with their peers on academic matters (i.e. collaborative learning).
4. *Interpersonally supportive.* Students attending these institutions report a high frequency of diversity experiences and view their peers and the campus as supportive of their efforts. Students also have a reasonable amount of contact with faculty members inside and outside the classroom.
5. *High-tech, low-touch.* Information technology rules at these universities to the point of muting other types of interactions. There is a sense of stark individualism as little collaboration occurs, academic challenge is low, and the interpersonal environment is not a distinguishing feature of the campus.
6. *Academically challenging and supportive.* Faculty set high expectations and emphasize higher-order thinking in traditional ways. Little active and collaborative learning is required. At the same time, students support one another and view the campus as

supportive. A generally friendly and congenial place to be an undergraduate interested in learning.

7. *Collaborative.* Peers rely on and are generally supportive of one another for learning, mediated somewhat by technology. Although there are few opportunities for experiences with diversity, students have a reasonable amount of contact with faculty, who along with other dimensions of the campus climate, are viewed as supportive.

1.1.3 Aims and Purposes of Engagement

Among the reasons to engage students, Trowler (2010) has identified in the literature seven main perspectives on the aims and purposes of engagement.

The majority of the literature is concerned with improving student learning. According to Coates (2005), learning is influenced by how individuals participate in educational activities; therefore, student engagement leads to high-quality learning.

The second purpose identified in the literature is to improve throughput rates and retention since student engagement is positively related to academic outcomes and persistence in college (Kuh, Cruce, Shoup, Kinzie & Gonyea, 2008).

As far as equality and social justice are concerned, student engagement is considered as a tool to help to level the diverse backgrounds the students come from and to ensure that all students (including those coming from situations of disadvantage) have an equal chance of success (Trowler, 2010).

The fourth reason to engage students is for curricular relevance, and the fifth purpose is for institutional benefit, which can be both reputational and financial (Trowler, 2010).

Since the level of engagement is an indicator to determine the quality of a university, the success at engaging students is utilized by some institutions as a marketing device (Trowler, 2010).

Finally, very few studies have been conducted to understand possible links between institutional expenditure and student engagement (Trowler, 2010).

1.1.4 Beneficiaries of Engagement

Students are considered to be the main beneficiaries of engagement, not only as individuals but also collectively through the participation in the university governance.

Moreover, information about student engagement can be a useful tool for managers since «by monitoring student engagement and outcomes, institutions can identify areas of good practice as well as those areas in need of improvement. Institutions can also allocate expensive teaching and support resources in a strategic fashion, and report the results of such actions in ways that demonstrate the efficacy of the feedback cycle» (p. 13) (Coates, 2010).

Another relevant beneficiary identified by Trowler (2010) is the engagement industry, made of either academics with expertise in the field or consultant that might be part of the university or provide counseling from outside, like in the case of this study.

As far as the higher education system is concerned, Trowler (2010) identifies it as another beneficiary since the focus on student engagement has made data available for measuring and monitoring and the use of this data has led to continuous improvement across the sector, as Krause (2005) illustrates:

«Engagement has become a pivotal focus of attention as institutions locate themselves in an increasingly marketised and competitive higher education environment. Meanwhile, the quality assurance mandate has drawn attention to the need for universities to demonstrate that they add value and enhance the quality of the student experience through monitoring and evaluation cycles of continuous improvement. The focus on engagement has also been provoked by growing awareness of a new Y Generation of university enrollees ... who enter higher education with a unique mindset and expectations which distinguish them from their baby-boomer and X Generation predecessors. Given this complex interplay of factors,

researchers, practitioners, administrators and policy makers have come to recognise the imperative to devise ways of better understanding, monitoring and promoting student engagement in their institutions» (p. 3-4)

Finally, as Trowler (2010) states, student engagement in university governance provides a benefit to the society as a whole, both exposing students to democratic practice and empowering them to participate as informed citizens.

1.1.5 Effects of Engagement

Engagement allows students to develop in different ways. According to Kuh (2008), the participation in high-impact educational practices listed in his study results in positive effects associated with learning and personal development outcomes, and in engaging in deep approaches to learning. Similarly, Kuh (2009) observes that

«engagement increases the odds that any student – educational and social background notwithstanding – will attain his or her educational and personal objectives, acquire the skills and competencies demanded by the challenges of the twenty-first century, and enjoy the intellectual and monetary advantages associated with the completion of the baccalaureate degree» (p. 698).

Other studies have observed the consistent relationship between student engagement and positive outcomes such as increased performance, persistence and satisfaction (Trowler, 2010). Moreover, Trowler (2010) identifies a few studies that have shown links between engagement and improvement in specific outcomes, including:

- general abilities and critical thinking
- practical competences and skills transferability
- cognitive development
- self-esteem, psychosocial development, productive racial and gender identity formation
- moral and ethical development

- student satisfaction
- accrual of social capital
- improved grades
- persistence

1.1.6 Critical Success Factors of Engagement

The literature on student engagement has identified a set of prerequisites that determine the success of student engagement initiatives at different levels.

As above mentioned, students have responsibilities for their own engagement. According to Coates (2005), they need to interact with the proposed activities in ways that will lead to productive learning, to challenge themselves, and interact with new ideas and practices.

On the other hand, the academic staff can contribute to the facilitation of engagement in important ways, such as encouraging interaction in class, encouraging students to study in groups, and using feedback to encourage engagement (Markwell, 2007).

As for institutions, if students are to take advantage of engagement opportunities, they are required to provide them with the appropriate resources and opportunities to promote interactions; which may involve activities, facilities, curricula and assessment (Coates, 2005).

National policy constitutes another critical factor of engagement since funding, assessment schemes and quality frameworks could have a significant role in encouraging student engagement initiatives at an institutional level (Trowler, 2010).

The contribution of all the mentioned players at different levels determines the success and quality of engagement strategies.

1.2 High-Impact Educational Practices—Strategies for Engagement

In the student engagement literature framework, research has begun to identify specific strategies that have a high impact on student engagement (Kuh, 2008). These strategies are related to a behavioral perspective on student engagement.

1.2.1 Behavioral Perspective

As Kahu (2013) suggests, four distinct approaches can be identified in the literature to understand student engagement:

- the behavioral perspective, which focuses on student behavior and institutional practice
- the psychological perspective, which views engagement as an internal individual psycho-social process
- the socio-cultural perspective, which considers the critical role of the socio-cultural context
- the holistic perspective, which takes a broader view, striving to draw the strands together

The most widely accepted view of engagement is identified with the behavioral approach and emphasizes student behavior and teaching practice (Kahu, 2013). The perspective used in this study will be the behavioral one, drawing from the research conducted by the National Survey of Students Engagement (NSSE) and its successor, the Australasian Survey of Student Engagement (AUSSE), which are the survey tools used to measure student engagement within this framework.

1.2.2 The Essential Student Learning Outcomes

Liberal Education and America's Promise (LEAP) is a national initiative launched by the Association of American Colleges and Universities (AAC&U) in 2005 to «align the goals for college learning with the needs of the new global century» (p. v) (Kuh, 2008). The LEAP's

initiative seeks to set a framework for excellence at all levels of education in accordance with the aims and outcomes of a liberal education (broad knowledge, intellectual and practical skills, personal and social responsibility, and integrative learning) (Kuh, 2008).

In a report on high-impact educational practices Kuh (2008) identifies a set of effective practices that are correlated with positive educational results for students. Investigating data collected through the NSSE, Kuh argues that these educational initiatives can be labeled ‘high-impact’ due to the substantial benefits they provide to students.

Part of the educational research tends to report college student success in terms of access, retention, graduation and grade point average. This approach, however, is only a partial indicator of student success. What determines college success is not only whether students have earned a degree, but also the achievement of the level of the preparation—in terms of knowledge, capabilities, and personal qualities—that will enable them to face personal, societal and professional contexts (Kuh, 2008). This is the framework in which Kuh addresses a new comprehensive view to judge student success.

Drawing on multiyear dialogues with faculty, employers and accreditors, LEAP has identified a set of essential student learning outcomes (see Table 2), built on the aims of a liberal education but also moving beyond them. According to Kuh, LEAP vision places a strong emphasis on a preparation for success from an economic, societal, civic, and personal point of view.

The question of Kuh (2008) regards how to help students achieve these learning outcomes. What he suggests is the implementation of curricular, cocurricular and pedagogical practices. However, this is only part of the solution. Kuh argues that the next step is to create clear connections between intended learning outcomes and specific high-impact practices to engage students, in order to construct more purposeful pathways for them (Kuh, 2008). Table 3 shows what are the suggested practices to foster specific learning outcomes.

Table 2: The Essential Learning Outcomes (Kuh, 2008)

<h2 style="color: #0070C0;">The Essential Learning Outcomes</h2>
<p>Beginning in school, and continuing at successively higher levels across their college studies, students should prepare for twenty-first-century challenges by gaining:</p>
<p>KNOWLEDGE OF HUMAN CULTURE AND THE PHYSICAL AND NATURAL WORLD</p> <ul style="list-style-type: none"> ➤ Through studies in the sciences and mathematics, social sciences, humanities, histories, languages, and the arts <p><i>Focused</i> by engagement with big questions, both contemporary and enduring</p>
<p>INTELLECTUAL AND PRACTICAL SKILLS, INCLUDING</p> <ul style="list-style-type: none"> ➤ Inquiry and analysis ➤ Critical and creative thinking ➤ Written and oral communication ➤ Quantitative literacy ➤ Information literacy ➤ Teamwork and problem-solving <p><i>Practiced</i> extensively, across the curriculum, in the context of progressively more challenging problems, projects and standards for performance</p>
<p>PERSONAL AND SOCIAL RESPONSIBILITY, INCLUDING</p> <ul style="list-style-type: none"> - Civic knowledge and engagement—local and global - Intercultural knowledge and competence - Ethical reasoning and action - Foundations and skills for lifelong learning <p><i>Anchored</i> through active involvement with diverse communities and real-world challenges</p>
<p>INTEGRATIVE AND APPLIED LEARNING, INCLUDING</p> <ul style="list-style-type: none"> ➤ Synthesis and advanced accomplishment across general and specialized studies <p><i>Demonstrated</i> through the application of knowledge, skills and responsibilities to new settings and complex problems</p> <p><i>Note: This listing was developed through a multiyear dialogue with hundreds of colleges and universities about needed goals for student learning; analysis of a long series of recommendations and reports from the business community; and analysis of the accreditation requirements for engineering, business, nursing, and teacher education. The findings are documented in previous publications of the Association of American Colleges and Universities: Greater Expectations: A New Vision for Learning as a Nation Goes to College (2002), Taking Responsibility for Quality of the Baccalaureate Degree (2004), and Liberal Education Outcomes: A Preliminary Report on Achievement in College (2005).</i></p>

Table 3: Achieving the Goals of Liberal Education (Kuh, 2008)

Achieving the Goals of Liberal Education: CONNECTING ESSENTIAL LEARNING OUTCOMES WITH HIGH-IMPACT PRACTICES
FOSTERING BROAD KNOWLEDGE OF HUMAN CULTURES AND THE NATURAL WORLD <ul style="list-style-type: none">➤ Common intellectual experiences (exploring “big questions” in history, cultures, science and society)➤ Undergraduate research➤ Learning communities (multiple courses linked to a “big question”)➤ Diversity, civic and global learning➤ Capstone courses
STRENGTHENING INTELLECTUAL AND PRACTICAL SKILLS <ul style="list-style-type: none">➤ First-year seminars and experiences➤ Writing-intensive courses (across the curriculum)➤ Skill-intensive courses (quantitative reasoning, oral communication, and information literacy across the curriculum)➤ Collaborative assignments and projects➤ Undergraduate research➤ Internships
DEEPENING PERSONAL AND SOCIAL RESPONSIBILITY <ul style="list-style-type: none">➤ Common intellectual experiences (exploring “big questions” in history, culture, science and society)➤ Diversity, civic and global learning➤ Ethics-intensive courses➤ Collaborative assignments and projects➤ Service and community-based learning
PRACTICING INTEGRATIVE AND APPLIED LEARNING <ul style="list-style-type: none">➤ Learning communities (multiple courses linked to a “big question”)➤ Undergraduate research➤ Service and community-based learning➤ Internships➤ Capstone projects and culminating experiences

1.2.3 High-Impact Educational Practices—An Overview

Kuh (2008) has identified a set of teaching and learning practices that have been tested and have been shown to provide positive outcomes for college students. The literature that has

established the value of active, engaged, and collaborative forms of learning for students is extensive. More than two decades of work on campus have translated these research findings into curriculum and pedagogy (Kuh, 2008).

Presented below are brief descriptions of high-impact practices that research shows increase student engagement (Kuh, 2008).

First-year seminars and experiences. Many schools now build into first-year curriculum seminars or other experiences that bring together small groups of students and faculty or staff on a regular basis. The first-year programs that are defined to be high-quality place a strong emphasis on critical inquiry, frequent writing, information literacy, collaborative learning, and other skills that develop students' intellectual and practical competencies. First-year seminars can also involve students with faculty members' own research.

Common intellectual experiences. A variety of modern forms of curriculum are now common, such as a set of required common courses or a vertically organized general education program that includes advanced integrative studies and/or required participation in a learning community. These programs often combine broad themes with a variety of curricular and cocurricular options for students.

Learning experiences. Learning communities seek to encourage the integration of learning across courses and to involve students with questions that matter beyond the classroom. Students work closely with one another and with their professors taking two or more linked courses. Many learning communities explore a common topic and/or common readings through the lenses of different disciplines.

Writing-intensive courses. These courses emphasize the importance of writing skills at all levels of instruction and across the curriculum. Students are required to produce various forms of writing for different audiences in different disciplines. The effectiveness of this repeated practice across the curriculum has led to parallel efforts in such areas as quantitative reasoning, oral communication, information literacy, and, on some campuses, ethical inquiry.

Collaborative assignments and projects. Collaborative learning gives students the possibility to learn to work and solve problems with the company of others and sharps their own understanding by listening seriously to others, especially those with different backgrounds and life experiences. Examples are study groups within a course, team-based assignments and writing, cooperative projects and research.

Undergraduate research. Research experiences in all disciplines are being promoted in several colleges and universities. Nevertheless, undergraduate research is prominently promoted in science disciplines. The National Science Foundation and the research community together with scientists are seeking to provide undergraduate students with experiences to connect systematic investigation and research with key concepts and questions. The aim is to involve students with actively contested questions, empirical observation, cutting-edge technologies, and the sense of excitement that comes from working to answer important questions.

Diversity/Global learning. These courses and programs help students explore cultures, life experiences, and worldviews different from their own. They may address U.S. diversity, world cultures, or both and often explore “differences” such as racial, ethnic, and gender inequality, or continuing struggles around the globe for human rights, freedom, and power. Frequently, intercultural studies are augmented by experiential learning in the community and/or by study abroad.

Service Learning, Community Based Learning. The instructional strategy of these programs is field-based experiential learning with community partners. They seek to give students direct experience with issues they are studying in the classroom and with ongoing efforts to analyze and solve problems in the community. These experiences give students the opportunity to both *apply* what they are learning in real-world settings and *reflect* in a classroom setting on their service experiences. A key aspect of these programs is the idea that giving something back to the community is an important college outcome, and that working with community partners is

good preparation for citizenship, work, and life.

Internships. Internships, as a form of experiential learning, provide students with direct experience in a work setting—usually related to their career interests—and give them the benefit of supervision and coaching from professionals in the field. If the internship is taken for course credit, students complete a project or paper that is approved by a faculty member.

Capstone Courses and Projects. These culminating experiences require students during their last year of college to create a project of some sort that integrates and applies what they've learned. The project might be a research paper, a performance, a portfolio of "best work," or an exhibit of artwork. Capstones are offered both in departmental programs and, increasingly, in general education as well.

The effectiveness of these practices is derived from a set of characteristics that Kuh (2008) describes as follows. First, they demand students to spend a considerable amount of time and effort in purposeful activities, which makes them more involved and committed to their program and college. They ensure a closer relationship and constant dialogue with the faculty members that promote the activity and with the other students who participate, also getting frequent feedback.

Second, the interaction with faculty and peers is about substantive matters and typically lasts over an extended period of time. This face-to-face interaction fosters student learning of how a faculty member thinks and conducts investigation, and sets the stage for developing meaningful relationships both with faculty or staff members and peers.

Third, these experiences give students the possibility to experience diversity in the interaction with people who are different from themselves. This is a relevant characteristic not only in experiences abroad but also in the other practices since students are in contact with circumstances and people that might come from different backgrounds and have different opinions.

Fourth, regardless the type of activity, students get frequent formal and informal feedback about their performance. NSSE 2007 results show that students who receive feedback working on a research project with a faculty member are more likely to report that their relationships with faculty are friendly or supportive.

Fifth, these experiences provide opportunities to integrate, synthesize and apply the knowledge they learn in class to different settings, on and off campus.

Finally, doing one or more of these activities deepens learning and self-awareness; it, therefore, helps students understand themselves in relation to others and the world.

According to Kuh (2008), the way to enhance student engagement and success is to make it possible for every student to participate in at least two high-impact activities during his or her undergraduate program. Ideally, the curriculum would be structured in a way that one high-impact activity is available to every student every year.

1.2.4 National Survey of Student Engagement

The High-Impact Practices are used by NSSE as one of the indicators that measure the level of student engagement in colleges and universities.

The National Survey of Student Engagement (NSSE) is a survey mechanism that documents dimensions of quality in undergraduate education at colleges and universities in Canada and the United States. It provides information and assistance to these institutions to improve student learning. More than 1,600 four-year colleges and universities in the US and Canada have participated in NSSE since its launch in 2000, with 650 US and 72 Canadian institutions participating in 2017 (NSSE, 2017). The Center for Postsecondary Research at Indiana University's School of Education administers NSSE, in partnership with the Indiana University Center for Survey Research.

NSSE annually collects information at colleges and universities through a student survey,

The College Student Report. The aim of the survey is to analyze the extent to which students engage in educational practices associated with high levels of learning and development. The results provide an estimate of how students spend their time in college and what they gain (NSSE, n.d.a).

The NSSE survey items reflect behaviors by students and institutions that are associated with desired outcomes of college. The survey, launched in 2000 and updated in 2013, assesses student engagement in educational practices associated with high levels of learning and development. The questionnaire collects information in five categories: (1) participation in dozens of educationally purposeful activities, (2) institutional requirements and the challenging nature of coursework, (3) perceptions of the college environment, (4) estimates of educational and personal growth since starting college, and (5) background and demographic information (NSSE, n.d.b). Survey results point to areas where universities and colleges are performing well and aspects of the undergraduate experience that could be improved by institutions through changes in policies and practices.

NSSE provides institutions with a variety of reports that compare their students' responses with those of students at self-selected groups of comparison institutions. The key facets of student engagement are summarized by ten Engagement Indicators, six High-Impact Practices, and all individual survey questions. Every year NSSE also publishes its Annual Results, reporting topical research and trends (NSSE, n.d.a).

Since the nature of student engagement is multi-dimensional, NSSE developed ten Engagement Indicators that are organized within four engagement themes (Table 4). Each indicator provides information about distinct aspects of student engagement by summarizing student responses to a set of related survey questions.

Table 4: Engagement Indicators and Aspects of Student Engagement (NSSE, 2017)

Theme	Engagement Indicators
Academic Challenge	High-Order Learning Reflective and Integrative Learning Learning Strategies Quantitative Reasoning
Learning with Peers	Collaborative Learning Discussions with Divers Others
Experiences with Faculty	Student-Faculty Interaction Effective Teaching Practices
Campus Environment	Quality of Interactions Supportive Environment

Additionally, NSSE provides results on six High-Impact Practices, named for their positive associations with student learning and retention. They represent educational experiences that typically demand considerable time and effort, promote learning outside the classroom, require meaningful interactions with faculty members and other students, encourage collaboration with diverse others, and provide constant and substantive feedback (NSSE, 2017). NSSE reports student participation in the following six High-Impact Practices:

- Learning Community (taking two or more classes together)
- Service-learning (community-based project)
- Research with Faculty
- Internship or Field experience
- Study Abroad
- Culminating Senior Experience (capstone course, thesis, etc.)

1.2.5 Limits

As stated by Kahu (2013), NSSE and AUSSE are increasingly becoming the definition of student engagement, assuming the measure has high validity. Nevertheless, some scholars disagree with the assumption that NSSE items and scales are a reliable tool. There is debate

over the structure of the instrument, suggesting the domain definition is too broad and many items lack theoretical justification (Kahu, 2013).

Kahu (2013) identifies key limitations also in the reliance on surveys for measurement. Since teaching and learning vary across disciplines, a single survey instrument is considered insufficient to measure student engagement (Nelson Laird et al., 2008). A second limitation of using a survey instrument is that it misses the complexity of engagement which is both dynamic and situational, while a survey only depicts a momentary condition (Kahu, 2013). Similarly, Bergan, Klemencic & Primožic (2015) point at this approach's inability to capture student engagement as multidimensional, dynamic and developmental. According to them, the institutionalist and behaviouralist literature tends to oversimplify a highly dynamic process of student engagement that is influenced not only by institutions but also by a multiplicity of different factors, including the socio-economic and cultural background of students (Bergan et al., 2015). Furthermore, surveys do not consider the participant voice, who is not given the opportunity to express a perspective that does not fit the predetermined questions (Bryson, Cooper & Hardy, 2010).

Kahu (2013) argues that the behavioral approach only focuses on elements the institutions can control and therefore excludes other explanatory variables such as student motivation, expectations, and emotions. The definition of student engagement within the behavioral perspective is limited and unclear due to its development as a tool for institutional improvement and comparison (Kahu, 2013). The student feelings' dimension of learning is not measured, missing valuable information that would give a richer understanding of the student experience (Kahu, 2013).

According to Kahn (2014), NSSE framework is a good conceptualization of the phenomenon; nevertheless, it downplays the students' own role in shaping their own engagement. What is the role of students in the way they approach their studies? He agrees with Kahu's view about the lack of emphasis of student feelings around engagement practices. As

Kahn argues, there is, therefore, the need to consider the application of further theoretical perspective in understanding student engagement in higher education from the student's point of view.

1.3 European Framework

The body of literature described in this section is mainly produced in North America and Australia. Nevertheless, the purpose of this study is the analysis of a European (Italian) initiative. It is, therefore, useful to understand what is the framework of student engagement in the European context, to which the current study is related.

Little research has been conducted in Europe on the topic. To date, only a few studies have begun to examine issues related to student engagement; without, however, an exclusive focus on it and without theorization of the term 'student engagement'. The literature relevant to the conduction of this study is attributed to a few international organizations—namely the European Union and the Council of Europe, two actors that play a significant role in influencing the higher education policies at the single countries' national level.

1.3.1 The European Union

The education policy at the EU level is part of the so-called 'supporting competences', meaning that the EU can only intervene to support, coordinate or complement the action of EU countries (Article 6 of the TFEU). EU countries are, therefore, responsible for their own education and training systems; however, the EU helps them set joint goals and share good practices.

1.3.2 The Bologna Process and the European Higher Education Area

The Bologna Process is a set of meetings and agreements between European countries that focuses on higher education and especially on the introduction of the three-cycle system

(bachelor/master/doctorate), on the strengthening of quality assurance and on the recognition of qualifications and periods of study abroad. Despite its birth as an effort of the European Union, the process has been opened to other countries in the European continent.

The initiative has created the European Higher Education Area, built as a result of the will of 48 European countries with the purpose of implementing reforms in higher education. The main goal of this process is to increase staff and students' mobility and to facilitate employability. Among the High-Impact Practices identified by Kuh (2008), many of those are also promoted and implemented by the EU—namely experiences abroad and internships. Nevertheless, they are not fostered under the term 'student engagement'.

As for student mobility, the program fostered by the EU is Erasmus +, a plan to support education, training, youth and sport in Europe. In a study on the effects of mobility on the skills and employability of students and the internationalization of higher education institutions, the European Commission (2014) highlights the positive outcomes of this experience. This Erasmus Impact Study analyses the effects of student mobility on individual skills enhancement and employability. Evidence from the investigation suggests that employability and competences of students greatly benefit from mobility: more than 50% of Erasmus students increased the employability skills and more than 90% improved their soft skills, such as adaptability and communication skills. In addition, communication skills, critical thinking, teamwork skills, openness, creativity and language skills (among others) were felt to have improved significantly after exchanges (European Commission, 2014). As far as career is concerned, the Impact study indicates that the unemployment rate of mobile students was 23% lower than for non-mobile students and that mobility benefits job placement and fosters entrepreneurship initiatives (European Commission, 2014).

Among the aims of Erasmus + there is the will to contribute to the Europe 2020 strategy as well as the aims of ET2020, the EU's strategic framework for education and training.

The second main goal of the Bologna Process is to facilitate employability. The European Commission works closely with policy-makers to support the development of higher education policies in EU countries in line with the Education and Training 2020 strategy (ET 2020). The strategy set four common objectives in 2009, to address challenges in education and training systems by 2020 (Council of the EU, 2009):

- Making lifelong learning and mobility a reality
- Improving the quality and efficiency of education and training
- Promoting equity, social cohesion, and active citizenship
- Enhancing creativity and innovation, including entrepreneurship, at all levels of education and training

In 2014, the Commission and EU countries assessed progress made since the 2012 Joint Report and proposed six new priorities for 2016-2020. The Joint Report from the Commission and Member States was adopted at the November 2015 Education Council, setting as a new priority, among others, «relevant and high-quality knowledge, skills and competences developed throughout lifelong learning, focusing on learning outcomes for employability, innovation, active citizenship and well-being» (p. 26) (Council of the EU, 2015). The development of skills and competences is, therefore, a key goal of the strategy. The report argues that the level of basic knowledge and skills in Europe is low, and that a set of transversal skills are necessary to enhance employability, innovation and active citizenship. The EU proposes the creation of links between higher education institutions, and the local environment and regions, improving transition to employment. Student engagement is also conceived in the need of higher education to prepare students for active citizenship based on an open attitude and critical thinking, as well as in the support of personal development, while playing its full role in transmitting and producing knowledge (Council of the EU, 2015). A high-quality learning requires a more active use of innovative pedagogies, and the use of ICT and tools for

developing digital competences, that, through participatory and project-based methods, can contribute in a concrete manner to inclusive and engaged learning (Council of the EU, 2015).

1.3.3 The Council of Europe

The work of the Council of Europe in the field of higher education focuses on the recognition of qualifications, public responsibility for higher education and research, higher education governance and other issues relevant for the growth of the European Higher Education Area.

The Higher Education Series is a set of books that focuses on the development and future of higher education in Europe, with a special concern on the social and political dimension. The topics covered by these books reflect the interest of the Council of Europe in the values of democracy, human rights and the rule of law, and its belief that higher education plays a key role in developing the democratic culture of the future.

In the 20th volume of the Series, Bergan et al. (2015) analyze student engagement in Europe from a social point of view. In particular, they demonstrate the importance of student engagement for the development and maintenance of the democratic culture. As described in the first part of this chapter, the most prolific literature on student engagement has been devoted to the ways student can learn better, deeper and more by being actively engaged. This book, on the other hand, covers less explored areas of student engagement: «in society through political participation and civic involvement; in higher education policy processes and policy-making structures; and within the student unions as the foremost organised and institutionalised form of student engagement» (p. 7) (Bergan et al., 2015). Student engagement is, therefore, perceived by Bergan et al. as «the preparation of students for life as active citizens in democratic societies» (p. 7). They highlight the importance of students' participation especially in the learning process, in the life of their higher education institutions and of their community and society; and in higher education governance. Studentship is seen as a condition that is highly conducive

to engagement; in other words, students seek to exert influence on their education institutions, their future life and their social surroundings (Bergan et al., 2015).

1.4 Chapter Summary

The bulk of the literature on student engagement is concentrated in Australia and the United States and has started receiving significant attention since the 1990s, due to its correlation with positive outcomes and student success.

The definitions of the term given by scholars identify two main actors involved: on one hand, the students, who engages in educational activities; on the other hand, the institutions that should involve and empower students. The overwhelming majority of literature focuses on individual student learning, that regards the individual dimension of student engagement, which is also the focus of the current study.

The styles of engagement are differentiated, both on the side of the students and from the institutional point of view. The literature suggests that student engagement can be characterized as either intense, collaborative, independent or passive. As for institutions, on the other hand, their effort to engage students ranges from those that tend to use technology and promote experiences of diversity, to others that focus on the creation of a supportive environment for students.

The main purpose of engagement is to improve learning for students, who are also considered to be the main beneficiaries of engagement initiatives. Much of the literature emphasizes the positive outcomes of engagement strategies to the student's individual, social and professional dimension.

Data from several studies suggest that there is a set of strategies that have a high impact on student engagement. Those strategies are in accordance with the essential learning outcomes built on the aims of a liberal education. The high-impact practices have been identified as the tool to help students achieve these outcomes. The studies presented indicate the following high-impact strategies: first-year seminars and experiences, common intellectual experiences, learning experiences, writing-intensive courses, collaborative assignments and projects, undergraduate research, diversity/global learning, service learning, internships, and capstone

courses and projects. These strategies typically demand considerable time and effort, facilitate learning outside the classroom, require meaningful interactions with faculty and other students, encourage collaboration with diverse others, and provide frequent and substantive feedback.

The High-Impact Practices are one of the indicators used by NSSE (the National Survey of Student Engagement), which is a survey mechanism that documents dimensions of quality in undergraduate education at colleges and universities in Canada and the United States. Despite its wide recognition, several authors have questioned its validity and reliability.

There is little literature on student engagement in the European framework; nevertheless, two international institutions are working to implement education policies in the European countries with a focus on student engagement practices. The European Union encourages student mobility and other initiatives to facilitate employability as tools to acquire the basic and transversal skills needed to find a job. On the other hand, the Council of Europe emphasizes the social and political dimensions of student engagement, considered as a tool to preserve and develop the democratic culture.

CHAPTER 2

Effects of Student Engagement

To date, several studies have confirmed the effectiveness of student engagement methods. Chapter 1 listed the aims and purposes identified in the literature by Trowler (2010); however, this chapter will focus on the actual observed effects rather than the intended outcomes.

Table 5 summarizes the positive effects identified by Kuh (2008) that are associated with participation in six of the high-impact activities mentioned in the first chapter in terms of first-year and senior student self-reported gains in three clusters of learning and personal development outcomes, and in engaging in deep approaches to learning.

Table 5: Relationships between Selected High-Impact Activities, Deep Learning, and Self-Reported Gains (Kuh, 2008)

	Deep Learning	Gains General	Gains Personal	Gains Practical
<i>First-Year</i>				
Learning Communities	+++	++	++	++
Service Learning	+++	++	+++	++
<i>Senior</i>				
Study Abroad	++	+	++	
Student-Faculty Research	+++	++	++	++
Service Learning	++	+++	+++	++
Senior Culminating Experience	++	++	+++	++

+ p < .001, ++ p < .001 & Unstd B > .10, +++ p < .001 & Unstd B > .30

Kuh explains how student engagement experiences deepen learning and awareness, and help students develop the ability to analyze reality. As a result, students acquire tools to better understand themselves and the larger world, and to contribute to the betterment of the human condition.

Kuh assumes that opportunities for active, collaborative learning increase the odds that students will be prepared to connect with others (Kuh, 2008). Social constructivism conceives of learning as peoples' effort to make sense of the world around them and knowledge as socially constructed through negotiation and agreement among knowledgeable peers (Cross, 1999).

Cross highlights the importance of some engagement activities that place students in social interactive environments to help them construct their knowledge.

The forms of learning that provide social connection gains are especially collaborative learning and learning communities (Cross, 1999). Not only they lead to social connections but also promote self-efficacy in that students can observe other students successful learning and this encourages them to spend more quality time on assignments, therefore increasing motivation (Stage, Muller, Kinzie & Simmons, 1998). Collaborative learning is being introduced in a variety of institutions and includes active interaction, collaboration, and discussion with others in order to solve tasks and problems. Learning communities are a curricular form of collaborative learning where different courses are linked together around common topics and include a close interaction between peers and between students and faculty members.

Specific outcomes have been listed by Trowler (2010) in a literature review on student engagement, some of them are relevant for this analysis and worth further consideration and explanation, including:

- general abilities and critical thinking (Gellin 2003; Kuh 2003; Pike, Kuh & Gonyea 2003)
- cognitive development (Kuh 1993, 1995; Pascarella & Terenzini 2005);
- practical competence and skills transferability (Kuh 1993, 1995; Cross, 1999);
- student satisfaction (Cross, 1999; Indiana University Center for Postsecondary Research, 2002; Nelson Laird et al., 2008);
- improved grades (Nelson Laird, Shoup, Kuh & Schwarz, 2008; Indiana University Center for Postsecondary Research 2002).

This chapter will analyze more deeply the above-mentioned outcomes and some of the methods utilized to measure them.

2.1 General Abilities and Critical Thinking

College students learn more when they are involved in educationally purposeful activities as these initiatives are related to learning and personal development in different aspects (Kuh, 2003). Moreover, in a study conducted by Pike, Kuh & Gonyea (2003) the authors have shown that «academic and social involvements were directly related to integration, and thereby were indirectly related to gains in learning and intellectual development» (p. 253).

One of the primary goals of colleges and university is to help students develop the skill to think critically (Astin, 1991). As Gellin (2003) states, the integration of this ability into higher education curricula has followed a slow evolution, gaining importance from the 1960s, when education policies began to define critical thinking as a major educational goal and higher education institutions started to include it into their curriculum. Despite this growth in the importance attributed to this ability, Gellin highlights a lack of understanding of this construct. Moreover, he mentions that the majority of studies conducted on critical thinking attributes its acquisition to curricular effects. Limited research has reported how cocurricular activities (such as athletics, Greek life, clubs and organizations, faculty interaction, peer interaction, living on campus, and employment) affect critical thinking ability until the 1990s when a growing body of literature began to investigate the effects of cocurricular student involvement on critical thinking. However, the findings reported in the literature have been contradictory. For this reason, Gellin attempted to better understand these research discrepancies conducting a meta-analysis on the involvement and critical thinking studies.

The study selection followed four criteria—namely the publication date (from 1991 through December 2000); the presence of findings from among seven student involvement independent variables (athletics, Greek life, clubs and organizations, faculty interaction, peer interaction, living on campus, and employment); the presence of a measured construct called *critical thinking* as the dependent variable; and the inclusion of the necessary statistical data to calculate an effect size (Gellin, 2003).

The results of this study outlined a significant effect gain in critical thinking for undergraduate students involved in activities outside the classroom when compared to students who were not involved in cocurricular activities. Furthermore, Gellin gives possible explanations of this gain by considering different factors. First, the social environment that students encounter creates opportunities for interaction with peers and faculty members, that, in turn, expose them to diverse points of view that may encourage students to reevaluate their opinion of the world. Second, students who are involved in out of class activities may renew their appreciation of curricular activities and increase their focus on classroom learning, therefore gaining in critical thinking (Gellin, 2003).

2.2 Cognitive Development

Several scholars have linked many positive outcomes of attending college to out-of-class activities and experiences (Kuh, 2008; Gellin, 2003; Pascarella & Terenzini, 2005). Through the use of interviews, Kuh (1993) attempted to discover the impact of out-of-class experiences on outcomes of college attendants considered important by students. The two general approaches utilized to study what happens to students in college are developmental and college impact (Pascarella & Terenzini, 1991). According to Kuh (1993), developmental approaches are influenced by psychological theory and he considers intrapersonal dynamics to be more important for development than the environment; on the other hand, the college impact approach (utilized by Kuh in this study) emphasizes interaction between students and the institutions' environments (broadly conceived).

To determine the impact in Kuh (1993)'s analysis, seniors were interviewed from 12 institutions in the United States through semistructured interviews. After transcribing all the interviews an inductive phase followed, in which the outcomes associated by students with out-of-class experiences were collected in a taxonomy of 13 outcome categories. In the same phase, the transcripts were coded and assigned outcome category numbers next to relevant passages.

The second phase of data analysis was deductive and used quantitative data to identify patterns in the data that had empirical and conceptual integrity, using the factor solution, t-tests and analysis of variance (ANOVA) to determine if the outcomes differed by certain student background characteristics and institutional size, control (public or private), and mission (Kuh, 1993).

The categories of learning and personal development are described in Table 6.

Table 6: Taxonomy of Outcomes Reported by Seniors (Kuh, 1993)

1. Self-awareness (includes self-examination, spirituality)
2. Autonomy and self-directedness (includes decision making, taking initiative and responsibility for one's own affair and learning, movement from dependent to independent thinking)
3. Confidence and self-worth (includes esteem, self-respect)
4. Altruism (includes interest in the welfare of others, awareness of and empathy and respect for needs of others, tolerance and acceptance of people from racial, ethnic, cultural, and religious backgrounds different from one's own)
5. Reflective thought (includes critical thinking, ability to synthesize information and experiences, seeing connections between thinking and experiences, seeing different points of view, examining one's own thinking)
6. Social competence (includes capacity for intimacy, working with others, teamwork, leadership, dealing with others, assertiveness, flexibility, public speaking, communication, patience)
7. Practical competence (includes organizational skills such as time management, budgeting, dealing with systems and bureaucracies)
8. Knowledge acquisition (includes academic and course-related learning, content mastery)
9. Academic skills (includes learning how to study, to write, to conduct independent research)
10. Application of knowledge (includes relating theory to practice and using skills learned in the classroom, laboratory, library and so on in other areas of life, such as using political science theory and research methods when working in a law office)
11. Esthetic appreciation (includes appreciation for cultural matters as in the arts, literature, theatre, esthetic qualities of nature)
12. Vocational competence (includes acquiring attitudes, behaviors and skills related to post-college employment)
13. Sense of purpose (includes clarifying life goals and the work one will do after college, sometimes discovering what one is <i>not</i> well suited to do)

14. "Other" (includes such concepts as movement from conservative to liberal attitudes or vice versa, change in physical features, growing apart from a spouse, and so on)
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Note. N = 149

The factor analysis conducted by Kuh reduced the outcomes to five outcome domains: Personal Competence (self-awareness + autonomy + confidence + social competence + sense of purpose); Cognitive Complexity (reflective judgement + application of knowledge); Knowledge and Academic Skills (knowledge + academic skills); Practical Competence (practical competence + vocational competence); and Altruism and Estheticism (altruism + estheticism). The two domains relevant to this chapter are Cognitive Complexity (which includes cognitive development and skills transferability) and Practical Competence (Kuh, 1993).

Cognitive complexity domain includes reflective thought (e.g. critical thinking, ability to examine different points of view) and knowledge application (ability to relate theory to practice and to use information presented in one class to other classes or to other areas of life). The students interviewed by Kuh reported being more open-minded, desiring continuous intellectual stimulation and with a critical approach to reality. Reflective thought was mentioned at least once by 72% of students; on the other hand, knowledge application by only 25%. Kuh assumes that faculty should encourage knowledge application, for example structuring assignments that require students to explain how they use class material in other areas of their lives (Kuh, 1993).

2.3 Practical Competence and Skills Transferability

In the analysis conducted by Kuh (1993) on college outcomes above explained, practical competence domain represents an enhanced ability to manage one's personal affairs (e.g. time management, balancing a checkbook), to be economically self-sufficient and to contribute to society through involvement in community affairs. Students report the acquisition of

independence skills, network-creation abilities, organizational skills; moreover, some of them spoke of how they learned to manage time and responsibility positions. Practical competence was mentioned at least once by 62% of students; however, vocational competence only 16% (Kuh, 1993).

Similarly, in another study conducted by Kuh (1995), the author attempts to identify the out-of-class experiences that seniors associate with their learning and personal development. Practical competence gains (e.g. decision making and time management) were especially linked with specific leadership responsibilities and work. On the other hand, cognitive complexity outcomes were distributed across interactions with peers, academic activities, other activities and institutional ethos.

Likewise, Cross (1999) highlights the importance of experiential learning to improve performance and to provide knowledge that can be used. There are different pedagogical methods utilized by teachers to enhance practical skills and make connections between knowledge and experience—namely problem-based learning, service community, case studies, internships and the like. The abilities gained through these experiences meet the demand of employers for workers who can think, analyze problems, experiment alternatives and evaluate the outcomes. In an ongoing debate on the relevance of college learning to practice, Cross suggests that teacher «should function as coaches, helping students to reflect on what they are doing» (p. 23) (Cross, 1999).

2.4 Student Satisfaction with College

In a study on deep learning, Nelson Laird et al. (2008) examine the effect of discipline on student and faculty member's approach to deep learning as well as on the relationship between deep approaches to learning and college outcomes. The behaviors and activities students utilize in their studies are approaches to learning. In a general tendency to consider learning as the mere reproducing of knowledge to please teachers and pass the exams, it has been suggested

by a growing body of literature that educationally effective learning environments promote deep approaches to learning that are considered to lead to more meaningful learning (Nelson Laird et al., 2008). Deep-level processing emphasizes both the acquisition of information and the understanding of the underlying meaning of it; moreover, deep learning leads to personal reflection and to the application of knowledge in real-world situations. Deep approaches to learning are closely related to student engagement given their emphasis on active, student-centered approaches. Cross (1999) mentions the importance of learners' process of construction of their own understanding «through the mental activity of making connections in their own schemata. We cannot, as teachers, transfer our knowledge ready-made to them» (p. 10). The problem with surface learning, Cross assumes, is that information will be quickly forgotten in that it is not rooted; on the other hand, deep learning promotes active learning methods, interaction with peers and encouragement of student interest in the subject (Cross, 1999).

Using data from the 2005 administrations of NSSE and FSSE (Faculty Survey of Student Engagement) of students and faculty members from different disciplinary areas, Nelson Laird et al. explore disciplinary differences in the effects of deep approaches to learning on student self-selected gains in personal and intellectual development, satisfaction with college and grades. Satisfaction with college experience is represented by students' rating of their educational experience at an institution and the likelihood that they would choose the same institutions if they were to start college again (Nelson Laird et al. 2008).

Results from the analysis show that more frequent deep approaches to learning have positive effects on satisfaction with college. The results also indicate that across all disciplinary areas, students who are encouraged to invest more energy in taking responsibility for their learning report more gaining from college experience. Consistent with the idea that deep learning is more personally rewarding than surface learning, seniors who use deep approaches to learning report a higher level of satisfaction with their college experience (Nelson Laird et al. 2008).

Similarly, Cross (1999) suggests that students who have frequent contacts with peers are more satisfied with their educational experience, perceive gains in learning compared to students who are not engaged in interactions with peers and college activities, and are less likely to drop out.

Considering a different point of view, the NSSE 2002 Annual Report, examines student engagement in correlation with race and ethnicity and suggests that Latinos/as and Whites are the two groups most satisfied with their college experience, while African-Americans and Asian Pacific Americans report greater gains in personal growth (Indiana Center for Postsecondary Research, 2002).

2.5 Improved Grades

Among the results of the research conducted by Nelson Laird et al. (2008) there is also the improvement of grades. However, the relationship between students' grades and deep approaches to learning scales is relatively weak. The authors consider this low correlation in part a function of the compressed variability of grades as most students reported average grades of B or better. Moreover, they think that grades may be more indicators of surface approaches instead of deep. Nelson Laird et al. suggest that using grading strategies that require students to engage in deep approaches could result in improved student outcomes, including gains in satisfaction and intellectual development.

In general, the Indiana Center for Postsecondary Research (2002) Annual Report has argued that engagement and grades are closely related in that «GPA is positively related to all five benchmark scores and nearly all of the effective education practices represented on the NSSE survey» (p. 6). The report shows that GPA is linked to time spent preparing for class, coming to class prepared, participation in class, tutoring, receiving feedback from faculty members, high-quality relationship with faculty and other factors. The direction of the relationship between grades and engagement is not evident in that both seniors and first-year students report

this improvement; therefore, it is not clear whether engagement results in higher grades or higher grades promote more engagement (Indiana Center for Postsecondary Research, 2002).

Karini, Kuh & Klein (2006) investigated the linkages between student engagement and student learning and, more specifically, the extent to which student engagement is related to experimental and traditional measures of academic performance. The analysis found positive correlations between student engagement and GPA, corroborating that engagement initiatives are positively linked to desirable learning outcomes such as grades and also critical thinking (Karini et al., 2006).

2.6 Chapter Summary

To date, a growing body of literature has established the value of student engagement initiatives for students. Trowler (2010) identified in the literature correlations between engagement and specific desirable outcomes, including general abilities and critical thinking; practical competence and skills transferability; cognitive development; student satisfaction; and improved grades.

One of the primary goals of colleges and university is to help students develop the skill to think critically and the integration of this ability into higher education curricula has followed a slow evolution. It has been demonstrated that cocurricular activities (such as athletics, Greek life, clubs and organizations, faculty interaction, peer interaction, living on campus, and employment) have a positive impact on critical thinking.

As for the cognitive abilities, an analysis on the impact of out-of-class activities on college students' outcomes reports that the majority of those interviewed that are involved in such experiences enhance reflective thought (e.g. critical thinking, ability to examine different points of view). On the other hand, only a few reports gains in knowledge application.

Practical competence includes organizational skills such as time management, budgeting, dealing with systems and bureaucracies and it was mentioned to be a gain by 62% of the students interviewed in a research by Kuh (1993). The abilities gained through these experiences meet the demand of employers for workers who can think, analyze problems, experiment alternatives and evaluate the outcomes.

Satisfaction with college experience is represented by Nelson Laird et al. (2008) by students' rating of their educational experience at an institution and the likelihood that they would choose the same institutions if they were to start college again. Deep approaches to learning and peer interactions have been demonstrated to have positive effects on satisfaction with college.

The relationship between students' improvement of GPA and deep approaches to learning scales is relatively weak, probably because of the compressed variability of grades. However, some authors argue that GPA is positively related to student engagement activities.

CHAPTER 3

Entrepreneurship Education and Student Engagement

There is a growing interest in the process of entrepreneurship education at different levels in society, both at a global governance level, and at national as well as education institutions level. At the center of this growing awareness there is recognition of the role attributed to entrepreneurship as a tool that can contribute to economic, societal and individual development. In a need to stimulate the entrepreneurial skills of individuals, education has an important role to play to develop an entrepreneurial mindset for young people. The European Commission (2012) defines Entrepreneurship as «an individual's 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 objectives» (p. 7). Its objectives include to enable young people to be more creative and self-confident and to improve their attractiveness for employers, to encourage innovative business start-ups, and to improve their role in society and the economy. There has been a mistaken tendency to define entrepreneurship education, argues the Commission, as the learning of how to start and run a business; on the contrary, it «seeks to prepare people to be responsible, enterprising individuals who have the attitudes, skills and knowledge necessary to achieve the goals they set for themselves to live a fulfilled life» (p. 8).

3.1 The Entrepreneurship Competence Framework

The importance of entrepreneurship education has been recognized by the European Union at least since the 2006 recommendation on Key Competences for Lifelong Learning where the Parliament and the Council identified 'a sense of initiative and entrepreneurship' as one of the 8 key competences for all citizens (European Parliament & the Council, 2006). «Sense of initiative and entrepreneurship can be broadly defined as the capacity to turn ideas into action, ideas that generate value for someone other than oneself. 'Sense of initiative and entrepreneurship' is a transversal key competence, which every citizen needs for personal fulfilment and development, active citizenship, social inclusion and employment in the knowledge society.» (p. 7) (Bacigalupo, Kampylis, Punie & Van den Brande, 2016).

Today, the entrepreneurial learning community refers to ‘sense of initiative and entrepreneurship’ as ‘EntreComp’. In a situation of proliferation of approaches to entrepreneurial learning, the need for harmonization led in 2016 to the attempt at defining and illustrating entrepreneurship as a key competence within a comprehensive reference framework that can and needs to be adapted to the specific context of use. The purpose of Bacigalupo et al. (2016) in the EntreComp study is to link the world of education and work, providing a better understanding and promotion of entrepreneurship competence in Europe. In particular, it aims at identifying the key components of EntreComp to create a conceptual model for the players in the entrepreneurship learning world and developing a list of desirable learning outcomes of EntreComp (Bacigalupo et al., 2016).

3.1.1 Components of Entrepreneurship Competence

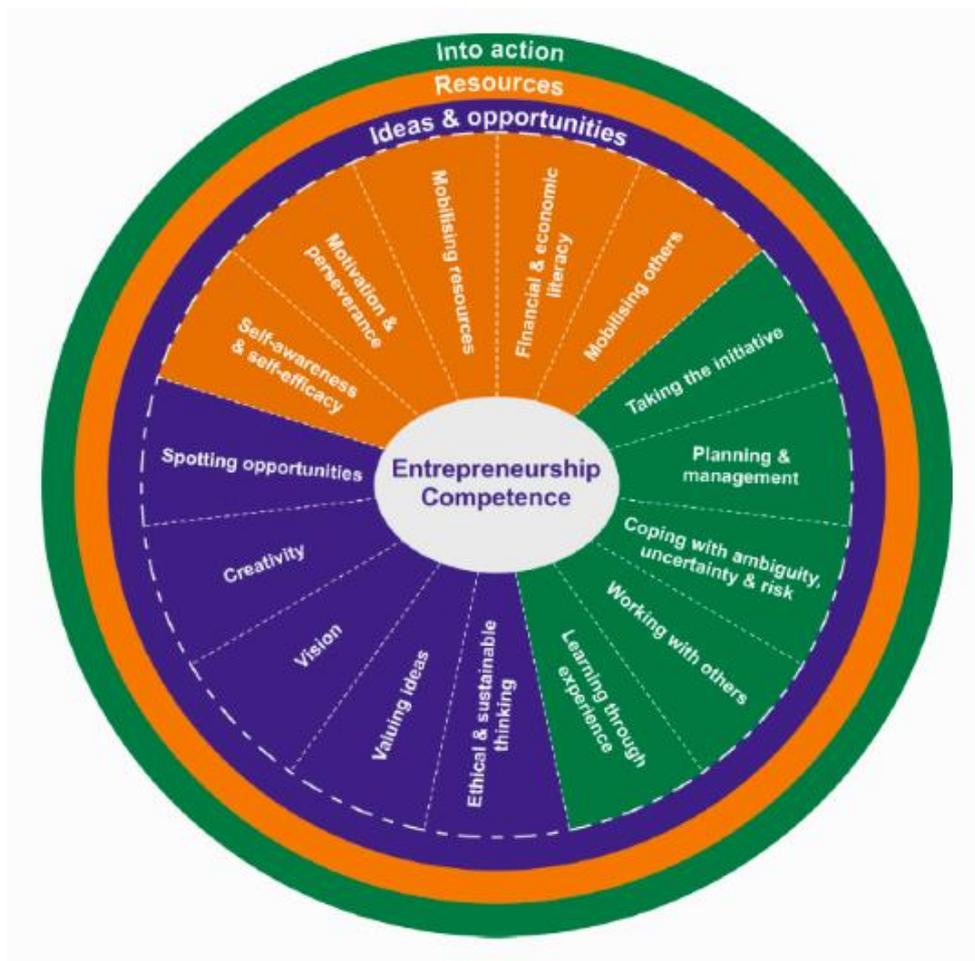
The conceptualization of the term entrepreneurship competence is the first step to create a framework to help citizens to actively participate in their society, manage their own lives and create valuable initiatives. The Danish Foundation of Entrepreneurship gives the following definition of entrepreneurship:

«Entrepreneurship is when you act upon opportunities and ideas and transform them into value for others. The value that is created can be financial, cultural, or social» (p. 11) (FFW-YE, 2012)

This broad understanding of entrepreneurship focuses on value creation in different contexts, highlighting its potential for application to all spheres of life, both through contribution to the personal and professional development and to the broader context of the job market, including the creation of ventures with commercial, social or cultural aims (Bacigalupo et al., 2016).

Entrepreneurship Competence is made up of 3 competence areas and 15 competences as illustrated in the figure below.

Figure 2: Areas and competences of the EntreComp conceptual model (Bacigalupo et al., 2016)



The representation of the competences as slices of a pie chart underlines that the reader is welcome to create new links among areas and competences to best adapt the elements to the single cases.

The 3 competence areas—namely ‘Ideas and opportunities’, ‘Resources’ and ‘Into Action’ reflect the definition of entrepreneurship as «the ability to transform ideas and opportunities into action by mobilizing resources» (p. 10) (Bacigalupo et al., 2016). The 15 competences associated with the 3 areas are tightly intertwined and represent the building blocks of entrepreneurship as a competence.

Bacigalupo et al. have listed the competences in Table 7, which are accompanied by a hint to put the competence into practice and a descriptor. The table provides an overview of the

EntreComp conceptual model. The order of presentation does not represent a hierarchy of importance and it does not aim to be exhaustive, in that it is conceived by the authors as a starting point for the interpretation of the entrepreneurship competence that will over time be improved and refined.

Table 7: EntreComp conceptual model (Bacigalupo et al., 2016)

Areas	Competences	Hints	Descriptors
	1.1 Spotting opportunities	Use your imagination and abilities to identify opportunities for creating value	<ul style="list-style-type: none"> • Identify and seize opportunities to create value by exploring the social, cultural and economic landscape • Identify needs and challenges that need to be met • Establish new connections and bring together scattered elements of the landscape to create opportunities to create value
	1.2 Creativity	Develop creative and purposeful ideas	<ol style="list-style-type: none"> 8. Develop several ideas and opportunities to create value, including better solutions to existing and new challenges 9. Explore and experiment with innovative approaches 10. Combine knowledge and resources to achieve valuable effects
	1.3 Vision	Work towards your vision of the future	<ol style="list-style-type: none"> 11. Imagine the future 12. Develop a vision to turn ideas into action 13. Visualise future scenarios to help guide effort and action
	1.4 Valuing ideas	Make the most of ideas and opportunities	<ol style="list-style-type: none"> 14. Judge what value is in social, cultural and economic terms 15. Recognise the potential an idea has for creating value and identify suitable ways of making the most out of it
	1.5 Ethical and sustainable thinking	Assess the consequences and impact of ideas, opportunities and action	<ol style="list-style-type: none"> 16. Assess the consequences of ideas that bring value and the effect of entrepreneurial action on the target community, the market, society and the environment 17. Reflect on how sustainable long-term social, cultural and economic

			goals are, and the course of action chosen
			18. Act responsibly
	2.1 Self-awareness and self- efficacy	Believe in yourself and keep developing	19. Reflect on your needs, aspirations and wants in the short, medium and long term 20. Identify and assess your individual and group strengths and weaknesses 21. Believe in your ability to influence the course of events, despite uncertainty, setbacks and temporary failures
	2.2 Motivation and perseverance	Stay focused and don't give up	<ul style="list-style-type: none"> • Be determined to turn ideas into action and satisfy your need to achieve • Be prepared to be patient and keep trying to achieve your long-term individual or group aims • Be resilient under pressure, adversity and temporary failure
	2.3 Mobilizing resources	Gather and manage the resources you need	<ul style="list-style-type: none"> • Get and manage the material, non-material and digital resources needed to turn ideas into action • Make the most of limited resources • Get and manage the competences needed at any stage, including technical, legal, tax and digital competences
	2.4 Financial and economic literacy	Develop financial and economic know how	22. Estimate the cost of turning an idea into a value- creating activity 23. Plan, put in place and evaluate financial decisions over time 24. Manage financing to make sure my value-creating activity can last over the long term
	2.5 Mobilizing others	Inspire, enthuse and get others on board	<ul style="list-style-type: none"> • Inspire and enthuse relevant stakeholders • Get the support needed to achieve valuable outcomes • Demonstrate effective communication, persuasion, negotiation and leadership
	3.1 Taking the initiative	Go for it	<ul style="list-style-type: none"> • Initiate processes that create value • Take up challenges • Act and work independently to achieve goals, stick to intentions and carry out planned tasks

	3.2 Planning and management	Prioritize, organize and follow-up	<ul style="list-style-type: none"> • Set long-, medium- and short-term goals • Define priorities and action plans • Adapt to unforeseen changes
	3.3 Coping with uncertainty, ambiguity and risk	Make decisions dealing with uncertainty, ambiguity and risk	<p>25. Make decisions when the result of that decision is uncertain, when the information available is partial or ambiguous, or when there is a risk of unintended outcomes</p> <p>26. Within the value-creating process, include structured ways of testing ideas and prototypes from the early stages, to reduce risks of failing</p> <p>27. Handle fast-moving situations promptly and flexibly</p>
	3.4 Working with others	Team up, collaborate and network	<ul style="list-style-type: none"> • Work together and co-operate with others to develop ideas and turn them into action <p>28. Network</p> <p>29. Solve conflicts and face up to competition positively when necessary</p>
	3.5 Learning through experience	Learn by doing	<p>30. Use any initiative for value creation as a learning opportunity</p> <p>31. Learn with others, including peers and mentors</p> <p>32. Reflect and learn from both success and failure (your own and other people's)</p>

3.1.2 Progression Model

The entrepreneurial competences can improve and achieve greater impact through value creation. This process is part of a progression model described by Bacigalupo et al. (2016) who describe it as made up of two aspects:

1. Developing increasing autonomy and responsibility in acting upon ideas and opportunities to create value;
2. Developing the capacity to generate value from simple and predictable contexts up to complex, constantly changing environments.

The progression consists of four main levels, depicted in Table 8—namely Foundation, Intermediate, Advanced, and Expert, that are then split into two sub-levels. «At Foundation

level, entrepreneurial value is created with external support. At Intermediate level, entrepreneurial value is created with increasing autonomy. At Advanced level, responsibility to transform ideas into action is developed. At Expert level, the value created has considerable impact in its reference domain» (p. 14) (Bacigalupo et al., 2016). This model, the authors specify, does not refer to specific settings in that it is transversal to formal, non-formal and informal learning contexts.

3.1.3 Learning Outcomes

The learning outcomes identified in the EntreComp framework can be used for curricula design and entrepreneurship projects design. The list includes 442 learning outcomes, each related to specific competence areas, competences and steps of the progression model. Some examples of learning outcomes regard the ability to analyze the context, the skill to think strategically, or the ability to behave ethically. The purpose of these outcomes is to provide a basis for a future improvement and development of them according to the specific context in which they are to be applied.

Table 8: EntreComp Progression model (Bacigalupo et al., 2016)

Foundation		Intermediate		Advanced		Expert	
Relying on support⁶ from others		Building independence		Taking responsibility		Driving transformation, innovation and growth	
Under direct supervision.	With reduced support from others, some autonomy and together with my peers.	On my own and together with my peers.	Taking and sharing some responsibilities.	With some guidance and together with others.	Taking responsibility for making decisions and working with others.	Taking responsibility for contributing to complex developments in a specific field.	Contributing substantially to the development of a specific field.
Discover	Explore	Experiment	Dare	Improve	Reinforce	Expand	Transform
Level 1 focuses mainly on discovering your qualities, potential, interests and wishes. It also focuses on recognising different types of problems and needs that can be solved creatively, and on developing individual skills and attitudes.	Level 2 focuses on exploring different approaches to problems, concentrating on diversity and developing social skills and attitudes.	Level 3 focuses on critical thinking and on experimenting with creating value, for instance through practical entrepreneurial experiences.	Level 4 focuses on turning ideas into action in 'real life' and on taking responsibility for this.	Level 5 focuses on improving your skills for turning ideas into action, taking increasing responsibility for creating value, and developing knowledge about entrepreneurship.	Level 6 focuses on working with others, using the knowledge you have to generate value, dealing with increasingly complex challenges.	Level 7 focuses on the competences needed to deal with complex challenges, handling a constantly changing environment where the degree of uncertainty is high.	Level 8 focuses on emerging challenges by developing new knowledge, through research and development and innovation capabilities to achieve excellence and transform the ways things are done.

3.2 Entrepreneurship Education in the EU

3.2.1 Characteristics of Programs and Activities in Entrepreneurship Education

A number of actors are taking part in the global effort to provide students with entrepreneurship education at an international, national and local level. That is because in many states it has become an important part of both industrial policy and of education policy (Hytti & O’Gorman, 2004). In the EU view, entrepreneurship education should not be confused with general business and economic studies in that it aims at promoting creativity, innovation and self-employment, not only in the context of start-ups and venture creation but also in helping young people in whatever they undertake.

Despite the 2006 recommendation of the European Parliament and the Council to include the entrepreneurship competence across all the stages of education, only a few EU countries have integrated it into courses and curricula. Higher Education students in all fields of study would benefit from gaining an entrepreneurial mindset, knowledge, and abilities.

In a report on the current situation of Entrepreneurship Education in the EU countries, the EU Commission shows that the majority of entrepreneurship courses are offered in business and economic studies and that they are not sufficiently integrated into the curriculum of non-business fields of study (European Commission, 2012).

3.2.2 Definition

Although a common definition of entrepreneurship education has not been yet agreed upon in the literature, a number of actors are contributing to its development. A broad definition of entrepreneurship proposed by the European Commission introduces the value of its education and teaching in all the circumstances of personal, professional and social life:

«Entrepreneurship refers to an individual’s 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 objectives. This supports everyone in day-to-day life at home and in

society, makes employees more aware of the context of their work and better able to seize opportunities, and provides a foundation for entrepreneurs establishing a social or commercial activity» (p.17) (Commission of the European Communities, 2005).

The Commission, therefore, defines entrepreneurship education as the education that «prepares people to be responsible and enterprising individuals. It helps people develop the skills, knowledge, and attitudes necessary to achieve the goals they set out for themselves» (Entrepreneurship education, 2018) confirming its broad application to all spheres of life.

As for other views, the World Bank defines entrepreneurship education training as the «academic education or formal training interventions that share the broad objective of providing individuals with the entrepreneurial mindsets and skills to support participation and performance in a range of entrepreneurial activities» (p. 21) (Valerio, Parton & Robb, 2014). More generally, entrepreneurship education refers to the development of behaviors, attitudes, and skills that an individual can apply in his/her career as an entrepreneur (Wilson, 2008).

3.2.3 Programs and Activities

The EU suggests to provide a progression in the exposure of students to entrepreneurship education from early stages of university life and to Arts and Humanities students as it is for Business/Social Science and Science/Engineering students, building inter-disciplinary approaches. These approaches should be diversified to address the diverse needs that students have at different moments in their university life. A range of courses, rather than a particular model of delivery, would benefit both new undergraduates and graduates in their different exigencies (European Commission, 2008).

In an on-going debate on whether entrepreneurship education should be different in business and non-business studies, some argue that students in non-business studies do not usually have a proper knowledge of business issues. Non-business students, claims the EU Commission (2008), frequently have very strong product ideas; however, they lack proper

knowledge in the areas of commercialization and marketing. Tailored lectures are, therefore, desirable in order to make young entrepreneurs avoid major mistakes, such as developing the product first and only then looking at the market potential. On the other hand, business students already have business competences. The entrepreneurship teaching will, hence, be focused on entrepreneurial and enterprises experiences (European Commission, 2008).

In particular, depending on the target of students, the entrepreneurship courses or experiences can place more emphasis on one aspect or another. For instance, as the Commission suggests (2008), entrepreneurship teaching within humanities will focus on self-management and on social entrepreneurship, whereas for the creative arts and design it will focus on preparing graduates to work as freelancers or self-employed people, or creating small enterprises and ventures. Within science and technology studies, entrepreneurship education is particularly concerned with exploiting intellectual property, creating spin-off companies and venturing. Finally, in business and economic studies the focus will be on start-up and venture creation (European Commission, 2008).

The objectives of entrepreneurship education identified by the Commission (2012) are:

- The enhancement of the entrepreneurship mindset to improve young people's creativity, self-confidence and attractiveness for employers
- To encourage innovative start-ups
- To improve young people's role in the society and the economy

Similarly, Hytti and O'Gorman (2004), state that there are three sets of aims that is possible to achieve in entrepreneurship education programs—namely to develop a broad understanding of entrepreneurship, to prepare students to create small businesses, and to help students to become more enterprising in their lives. The skills that should derive from such programs and courses aim to make students «more creative/innovative; highly motivated; pro-active; self-aware; self-confident; willing to challenge; better communicators; decision-makers; leaders; negotiators; networkers; problem solvers; team players; systematic thinkers; less dependent; less risk

averse; able to live with uncertainty; capable of recognizing opportunities» (p. 26) (European Commission, 2008).

3.2.4 Features for Effectiveness

In conclusion, the Commission identified a set of key features for effectiveness and success in implementing these programs, as general indicators for good practice, proposed in Table 9.

Table 9: Good practice criteria in delivering entrepreneurship education (European Commission, 2008)

1	The purpose of the course/programme is precisely defined, being linked to the delivery of the expected outcome (definition of objectives, and capacity to measure outcomes related to those objectives).
2	There is a balance between the theoretical and practical aspects. Teaching makes use of interactive and pragmatic methods; active self-learning; action-oriented pedagogy; group work; learning through projects; student-centred methods; learning by direct experience; methods for self-development and self-assessment. Delivery is through mechanisms that maintain the motivation of students at a high level.
3	Activities and events are organised to improve students' ability to work in a group and build a team spirit, and to develop networks and spot opportunities.
4	Different guest lecturers are involved (e.g. experts on patent law, company financing, etc). A close relationship is in place with the local entrepreneurial environment, and educators are part of relevant networks (formal and informal). There is a collaborative approach with real business practice and industry.
5	Young entrepreneurs (for instance, alumni who have started a company) and experienced business people are involved in courses and activities, and contribute to their design. Practical experience, by means of students cooperating with enterprises and working on concrete enterprise projects, is embedded in the programme.
6	Courses and activities are part of a wider entrepreneurial programme, with support mechanisms for students' start-ups in place and actively utilised.

7	Exchanges of ideas and experience between teachers and students from different countries are sought and promoted, to encourage mutual learning and to give an international perspective to programmes, courses and activities.
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By the same token, Hytti and O’Gorman (2004), provide suggestions for best practice in entrepreneurship education, related to three core issues. First, about the aims and objectives of enterprise programs, the promoters must have clear aims. Moreover, they suggest to integrate enterprise education into other subjects and to combine skills and knowledge. Second, action learning is desirable so that students will take the primary role in the process. They will be engaged by receiving frequent coaching, mentoring and feedback. Third, they suggest a constant training of educators in entrepreneurship education teaching methods.

3.2.5 Effects and Impact of Entrepreneurship Programs in Higher Education

In a need to stimulate the entrepreneurial mindset of young people across the European Union to foster innovation and venture creation, education plays a crucial role for the development of entrepreneurship-related skills. Entrepreneurship initiatives are growing in Europe; nevertheless, several obstacles hinder their implementation such as shortage of human resources and funding. There is a relatively small body of literature that is concerned with the analysis of the impact of Entrepreneurship Education on students in higher education institutions.

In an attempt to make Member States more conscious about the benefits of entrepreneurial skills not only in the field of venture creation but also in the acquisition of competences applicable to all walks of life, the European Commission conducted a research in 2012 to measure the impact of participation in entrepreneurship education in higher education institutions. The study focused on 4 dimensions that will be explained below in further detail:

- Impact on the entrepreneurship key competence

- Impact on the intentions toward entrepreneurship
- Impact on the individual's employability
- Impact on the society and the economy

The research shows that entrepreneurship education has a positive impact on the entrepreneurship key competence of individuals. It contributes to the enhancement of the entrepreneurial attitude, especially the sense of initiative, the risk propensity and the need for achievement. As far as entrepreneurial skills are concerned, which are the skills needed to turn ideas into action, the participants rate themselves to be more creative, more capable of motivating others, they have better networking and analytical skills. Participants in entrepreneurship programs assess their understanding and knowledge of entrepreneurship greater than non-participants.

Entrepreneurship programs have a positive impact on the intention of individuals to become entrepreneurs. The majority of the alumni that participated in entrepreneurship initiatives prefer to be self-employed, mainly because of personal independence, the freedom of choosing time and place of work and the realization of a business opportunity.

Individual employability is also positively affected by entrepreneurship education in that alumni tend to find employment immediately after graduation and have fewer periods of unemployment. Moreover, entrepreneurship competence leads to more innovative behavior and to acquire positions in which more creativity is expected. On the other hand, there is no significant impact on job satisfaction and on the international mindset of alumni.

As for the impact on society, initiatives to start a non-commercial activity are positively influenced by entrepreneurship education; furthermore “approximately one third of the entrepreneurship and JADE alumni who are in paid employment or who are without a professional activity, have tried to accomplish a transition towards self-employment” (p. 15) (European Commission, 2012). Entrepreneurship education seems to have a positive effect on

the economy and especially on becoming an entrepreneur. Finally, entrepreneurial competence leads to more innovative enterprises.

3.3 Debate on entrepreneurship education

3.3.1 Should it Be Taught?

Whether Entrepreneurship education should be taught in schools and higher education institutions is part of a complex debate, structured on different levels.

First, there are those who think that the competences identified by the European Union in 2006 as the key competences for lifelong learning (which include “sense of initiative and entrepreneurship”) do not represent the perfect matching between education and the world of work. According to them, the risk of this framework is that disciplinary and inter-disciplinary skills are subordinated to soft and pragmatic skills; moreover, cultural, intellectual and moral education will be substituted by a model of education only oriented to find a job (Angelucci, 2018). Some Italian experts complain about the lack of debate and scientific research on the decision of the Italian ministry of education to introduce competence teaching in the education system without critical premises. All this competence framework is oriented towards the world of work that is considered as the actor that shapes and defines the individual that works, instead of being the individual that shapes the working system. Claudio Gentili (2013) claims that in the need to adapt traditional education models to the requirements of production, a contrast has emerged between the theoretical and traditional knowledge taught in school, and practical knowledge, leading to the opposition between the pedagogy of competences and the pedagogy of disciplines. Angelucci disagrees with Gentili, highlighting that if this enthusiasm in the application of competence-based education will continue, soft skills will become the only indicator to determine the value of an individual, therefore removing the value of culture and university titles. She thinks that transversal skills, rather than disciplinary and inter-disciplinary skills, are not focused on the content anymore, which means that there is no attention on how

what is taught interacts in shaping a subject that lives in a relational context; the only focus will be on work (Angelucci, 2018). The risk in a society shaped by competences is that the marketplace is what generates value, whereas all the disciplines (economy, sociology, philosophy, pedagogy) are subordinated to it creating individuals adapted to its needs. Giorgio Israel (2011) states that the need for a competence evaluation method valid for all the member states of the EU tends to the homogenization of cultures and leads to an anti-cultural approach in which there is no space left for literature, history, philosophy and conceptual science, in that all the space is left to technical and operational competences.

3.3.2 Does it Work?

On the other hand, other scholars debate on whether entrepreneurship education works or not. According to Yang (2016), «the more we teach entrepreneurship, the fewer young people actually start businesses. This has profound implications». Yang claims that entrepreneurship education should be more action-oriented, educate students to accept the failures that they will probably encounter in their first experiences as entrepreneurs, and make student acquire a certain level of conviction, confidence, will, and courage that they will need to start a business.

Lautenschläger & Haase (2011) outline a number of arguments against teaching business creation at universities. First, its wide and undefined nature, also highlighted by Angelucci (2018), implies a lack of uniformity in objectives, pedagogies, and content. Moreover, Lautenschläger & Hasse refer to the debate on whether entrepreneurship is an innate ability. The European Commission considers entrepreneurship a competence that can be learned by developing an entrepreneurial mindset and skills (European Commission, 2018). On the other hand, other scholars consider that certain traits considered favorable to entrepreneurship are inherent and that they can be taught only to predisposed individuals. Thomson (2004) thinks that entrepreneurship education cannot compensate for missing characteristics: if an individual has not talent and temperament he or she will not become a successful entrepreneur.

Another frequently debated aspect is the teachability of entrepreneurship. Several scholars assume that a number of issues about business creation can easily be taught; however, the teaching of the ingredients that distinguish entrepreneurs such as developing entrepreneurial attitudes, skills and behavior remains scarce (Lautenschlager & Haase, 2011).

As far as measurement of entrepreneurship competence is concerned, a huge variety of measures exists, which creates a debate over the most appropriate method. A critical remark addressed by Latempa (2018) to the Italian EntreComp framework is the mention of a measurement system of entrepreneurship competence that is unclear and not explained.

An interesting insight by the Global Entrepreneurship Monitor reveals that the self-employment and start-up rates in developing countries exceed the levels of industrialized countries that invest more in entrepreneurship education. Lautenschläger and Haase (2011) identify a lack of entrepreneurship education efforts in primary and secondary education. However, this is not the case of the European Union, where the EU Commission is encouraging the member states to introduce entrepreneurship education into the curricula throughout all the levels of education.

3.3.3 How Should It Be Changed?

The framework identified by Lautenschläger and Haase (2011), and Yang (2016) depicts entrepreneurship education as ineffective.

The strategy Yang (2016) suggests to make entrepreneurship education effective is an apprenticeship that matches top performers with early-stage companies for two years. This approach aims at creating real experiences for students to deal with real problems and real investors. In a reflection on what should be done to improve entrepreneurship education effectiveness, Lautenschläger and Haase (2011) propose, among other ideas, to concentrate on the development of creativity as well as open and critical thinking. They state that «positively thinking, inventively acting, and creative decision-making are the basic components to become

an entrepreneurial individual» (p 155). In addition, problem recognition and solving are desirable. According to them, the teaching methods utilized also need a change, with a special focus on active learning approaches providing students with an experimental and experiential environment.

3.4 Entrepreneurship education and student engagement

Given the complexity of the entrepreneurial process, students in this field need to develop a wide range of practical and conceptual skills to deal with it (Gibb, 2002). According to Coates (2005), learning is influenced by how individuals participate in educational activities; therefore, students can reach high-quality learning through engagement. Nevertheless, there is little agreement on what are the most engaging teaching method to deliver entrepreneurship education to students and stimulate future learning.

Determining the teaching method depends first on the objectives of the activity (Balan & Metcalfe, 2012). There is a different set of objectives in the literature. The European Commission proposes three purposes for entrepreneurship education: to enhance the entrepreneurship mindset and improve young people's creativity, self-confidence, and attractiveness for employers; to encourage innovative start-ups; and to improve young people's role in the society and the economy (European Commission, 2012). This view is partially supported by a study on the objectives and methods of enterprise education programs in four European countries, which identifies three objectives: developing a broad understanding of entrepreneurship; creating skills to start a business; and helping students to be more enterprising in their lives (Hitty & O'Gorman, 2004). After determining the objectives of the course or initiative, the teacher will be able to decide what teaching methods to employ in order to engage students. Many authors seem to agree on the importance of experiential activities, learning by doing and interactive methods to engage students. Given the complexity of entrepreneurship, Gibb (2002) assumes that it is desirable to implement teaching methods based on practice to

engage students and help them to develop entrepreneurial skills. Traditional lectures are scarcely utilized, leaving space to student-inclusive and action-oriented teaching methods. Team-working is a widely utilized method, together with workshops and case studies. Interdisciplinarity is also a key element in that many initiatives tend to not only involve students from different fields of study but also engage them in activities that cross boundaries between disciplines. Inviting guest speakers is also frequent, especially entrepreneurs and experts in the field.

The literature does not offer clear guidelines for selecting teaching methods to foster student engagement in entrepreneurship education. Nevertheless, Balan and Metcalfe (2012) propose an approach to identify effective teaching methods to achieve engagement for any particular class of entrepreneurship students, assessing several teaching methods through the AUSSE (Australasian Survey of Student Engagement). The methods that contributed the most to overall student engagement are “the small business awards” (a voluntary work in teams to help a manager in developing an application for a small business award program), “team-based learning” (a strategy for collaborative learning) and “the poster plan” (a presentation of a project report made by a team through a poster rather than a traditional paper) (Balan & Metcalfe, 2012).

The European Commission (2008) asked some experts what teaching tools they find more appropriate in delivering entrepreneurship courses. The results indicate a preference for the use of group techniques and case studies, together with business planning workshops, inviting guest speakers and business simulations. Lectures were hardly mentioned as effective tools, concluding that traditional methods do not constitute appropriate approaches to the development of entrepreneurial skills, whereas there is a need for more interactive tools.

The training of teachers is a critical element for the effective delivery of entrepreneurship education (Hytti & O’ Gorman, 2004). Faculty members play an important role in creating a favorable climate for engagement and learning. Research has demonstrated the positive

relationship between faculty teaching practices and student engagement, learning, and persistence. According to Kember (1997), there are two main conceptual categories related to teacher's conception of teaching: teacher-centered/content-orientated and student-centered/learning-orientated. In order to develop a student-centered approach, teachers require support at a conceptual level to understand the epistemological basis of this approach; on the other hand, on a more pragmatic level, they need guidance in devising appropriate strategies for the specific context within which they work (Sadler, 2012).

Educators should be trained in the use of experience-based teaching methods and, if they are professors, they should have both experience in academia and in the business sector. However, entrepreneurship educators are not only professors but they could also be experts in the field, consultants or entrepreneurs. In all these cases, a training in the most appropriate action-based teaching methods is desirable. In the majority of the entrepreneurship initiatives the necessity to include practical business people in the staff is overcome by hiring external staff with business knowledge and creating experiences in collaboration with start-ups, ventures and the wider world of business.

3.5 Chapter Summary

In a growing awareness about the importance of entrepreneurship education, many actors are implementing its teaching at different education levels. A ‘sense of initiative and entrepreneurship’, also known as EntreComp, is one of the key competences recognized by the European Union. Entrepreneurship is conceived as the transformation of opportunities and ideas into value for others, not only in a professional and business context but also in the personal and social dimension of the individual. Bacigalupo et al. (2016) provide a better understanding of entrepreneurship competence in Europe explaining the key components of EntreComp and developing a list of desirable learning outcomes. Some of the competences are creativity, motivation and working with others. The desired outcomes are 442 and include the ability to analyze the context, the skill to think strategically, or the ability to behave ethically.

Entrepreneurship education provides individuals with skills, behaviors, and attitudes to perform in the entrepreneurship career. Business and non-business students should receive a different entrepreneurship training due to the differences in knowledge. The objectives of entrepreneurship education are to develop the entrepreneurial skills, to encourage the creation of small businesses and to improve young people’s enterprising role in the society and the economy. In order to be effective, an entrepreneurship program must have clear objectives, integrate theoretical and practical aspects, create a network with the entrepreneurial environment, and provide a constant training for teachers.

Entrepreneurship education programs have several effects on the participants. It contributes to the enhancement of the entrepreneurial attitude, it improves the intention of individuals to become entrepreneurs, it positively affects employability and has an impact on society and the economy.

Several scholars debate on the nature, usefulness, and improvement of entrepreneurship education. Some authors consider the competence teaching framework as harmful and are fear the substitution of the value of the individual with the skills he or she represents. Others argue

that in the way it is taught it is ineffective. Finally, some scholars propose ways to change it through approaches that foster creativity, critical thinking and that create real experiences to deal with real problems.

The more students are engaged in entrepreneurship education, the more they will learn. The objective of a program or initiative will determine the best teaching methods to employ. Experiential, interactive and action-oriented methods seem to be widely utilized in this field for their effectiveness. Group techniques are also considered valuable as well as the involvement of external expert and guest speakers from the business environment. The training of teachers and educators is a critical element for the effective delivery of the content of entrepreneurship education.

CHAPTER 4

The Ca' Foscari Contamination Lab

Among the High-Impact Practices suggested by Kuh (2008), the author includes ‘collaborative assignments and projects’ that aim at giving the student the opportunity to work and solve problems in the company of others and improving understanding and listening skills through the relationship with others from different backgrounds and life experiences.

The project proposed at the Ca’ Foscari University of Venice named ‘Contamination Lab’ (CLab) can be comprehended in the framework of collaborative assignments and projects that aim at enhancing student engagement. Some of the CLab’s characteristics coincide with the dimensions described by Coates (2007) in his definition of student engagement, especially in active and collaborative learning, participation in challenging academic activities, and involving in enriching academic experiences.

The purpose of this chapter is to analyze the Contamination Lab considering its origins and legal framework at a national level and then explain the characteristics of the Ca’ Foscari CLab (CFCLab), its functioning and the methods in use.

4.1 Origins, legal and institutional framework of the Contamination Lab at a national level

4.1.1 European Commission: Entrepreneurship Education

According to the European Commission (n.d.), Europe needs more entrepreneurs creating jobs. It is, therefore, necessary to support entrepreneurship education in all EU countries and stress its importance from primary school to university and beyond. Entrepreneurship is a skill that can be learned to make people responsible and enterprising individuals. The EU Commission defines entrepreneurship as a competence that is likely to help students start their own company with ambitious projects (European Commission, n.d.). Including creativity, innovation, risk-taking and the ability to plan and manage projects, entrepreneurship is an individual’s ability to turn ideas into action.

A report on the effects and impact of entrepreneurship programs in higher education of the European Commission has demonstrated that entrepreneurship education makes a difference: alumni that went through entrepreneurial activities present a more entrepreneurial mindset, find a job earlier after finishing their studies, can innovate more in a firm and have a positive impact on economy and society (European Commission, 2012).

The Contamination Lab's goals are in line with the concept of Entrepreneurship Education promoted by the European Commission, especially in the idea of creating opportunities for students in which they can learn and develop skills to turn creative ideas into action (Miur, 2016).

4.1.2 The Italian Ministry of Education, Universities and Research (MIUR)

In accordance with the concept of Entrepreneurship Education fostered by the European Commission, the Italian Ministry of Education, Universities and Research (MIUR), and the Ministry of Economic Development published the first guidelines for the creation of the Contamination Labs in the “Decreto Direttoriale” no. 436 of March 3rd 2013. In this notice, the Ministry allocated EUR 1 million to the creation of the first four CLabs in the Italian regions Calabria, Campania, Puglia, and Sicily.

The project was then extended to all Italian regions through the “Decreto Direttoriale” no. 3158 of November 29th 2016 that also included the guidelines for the universities that wanted to apply to the project and obtain government funds.

4.2 General Characteristics

The guidelines contained in the “Decreto Direttoriale” no. 3158 aim to highlight the traits and methodological tools of the Contamination Labs that the universities must follow in order to apply for the national funds. Hereafter are presented the characteristics established by the MIUR.

4.2.1 Vision

The CLab aims to enhance the development of entrepreneurial and social skills to foster the creation of innovative projects. Contamination Labs are experiences in which students from different fields of study meet and share knowledge. They promote sustainability, entrepreneurship and innovation through cutting-edge learning methods to reduce the gap between the academic world and innovation.

The project gives students the opportunity to connect with a multidisciplinary and challenging environment, in accordance with the guidelines of the Entrepreneurship Education interpretation promoted by the European Commission. The term ‘contamination’, far from its negative meaning of pollution and infection, aims to highlight the power of interaction, exchange and mutual enrichment that this experience can create. This contamination happens at different levels:

- Between students from different universities and fields of study who meet on a regular basis to develop entrepreneurial skills;
- Between students and academic staff from other fields of study, so that to enrich all the university;
- With non-academic actors—namely companies, startups, investors, institutions etc.;
- With European and international actors, building partnerships to share practices and set the stage for future mobility initiatives that will strengthen universities’ internationalization.

4.2.2 Mission

The mission of the Contamination Lab is to offer experiences of extracurricular learning through innovative teaching methods. The mission entails three main goals:

- Foster participants’ academic competencies
- Promote collaboration, team-working, and soft skills

- Support students' business ideas

Students need to be engaged and encouraged to develop and propose new activities to strengthen the development process of future projects; the goal is to integrate these activities into the following CLabs' curriculum. Additionally, it would be desirable to provide students with ECTS for their participation in the Lab. The project manager will be responsible for monitoring the project, whose impact should be measurable in accordance with the expectations established at the beginning with an external "Special Advisor".

4.2.3 Participants

Participants are students from different fields of study and at different levels in their career (undergraduate, postgraduate, Ph.D., recent graduates). The 'contamination' process above mentioned is possible only if participants come from different disciplines so that to foster a sharing process. The duration of the project is proposed to be a semester.

As for the selection process, it should evaluate the personal motivation to participate and the presence of specific skills. In particular, positive experiences and competencies as team-working skills, participation in extra-curricular activities, passions, foreign languages, and international experiences are positively evaluated.

4.2.4 Partnerships

The formal and informal interactions between the actors involved in the CLab need to be designed.

- Between students from different fields of study and universities, the interaction should happen through the creation of interdisciplinary projects
- Between students and academic staff, the interaction should be designed through a peer to peer approach, organizing initiatives that are both part and external to the CLab.

- There should be interaction with the previous Italian CLabs that can assist the new Labs in the organization process.
- Interaction with startups and innovative enterprises (venture capitalists, business angels, researchers, associations, spin-off, co-working spaces etc.) is desirable. Additionally, these local or national enterprises could be involved in the design process.
- There should be the creation of a network with local partners, in order to have a mutual enrichment, both for the CLab and for the local area.
- Interaction with secondary education is meant to make high-school students approach to university and to the entrepreneurship dimension.
- Finally, interaction with Europe and the rest of the world is desirable to create a network with other universities in other countries that have similar projects and to create partnerships and agreements with them.

4.2.5 Coordination and Governance

Each CLab is managed by two persons. The CLab Chief is part of the academic staff and the institutional representative with wide decisional skills. He or she receives the mandate from the president of the university. The CLab Project Manager, on the other hand, has management experience in the fields of innovation and entrepreneurship, and is the main coordinator of activities.

4.2.6 Assessment and Impact Evaluation

Data collected in the CLab aims at evaluating the goals achievement, the impact on and the network with local subjects, the interdisciplinarity of the activities, entrepreneurship, learning outcomes, the contamination process and the internationalization of the project. All these indicators should be evaluated both in the short and the long term. The CLab national Network

has the task of harmonizing the evaluation strategies in order to align the assessment methods and compare the results.

4.2.7 The Italian CLab Network

The Italian CLab Network aims to connect the CLabs so that they have a tool for mutual exchange of good practices, information, and material. The Network works at nine different levels: a digital platform to facilitate interaction and share useful information; a video-conferencing system between the CLabs; a ‘tool-box’ for the use of innovative teaching methods; the sharing of the governance practice; the sharing of best practices; the creation of a brand identity (the Contamination Labs) to communicate the experience; the creation of a platform for sharing monitoring and assessment; the attraction of investment; a support to the universities that would like to activate a CLab in the future.

4.3 Contamination Lab at Ca’ Foscari University

In the “Decreto Direttoriale” no. 1513 of June 15th 2017, the MIUR published the list of the universities that received the funds for the implementation of Contamination Labs, including the Ca’ Foscari University of Venice as the third-place winner in the ranking list.

4.3.1 Origins

The CLab at Ca’ Foscari traces its roots back to other three initiatives: the Urban Innovation Bootcamp, the Experior Project, and the Active Learning Lab.

The Urban Innovation Bootcamp is a six to eight-week active learning workshop that started in 2015 at the Treviso campus of Ca’ Foscari University. A group of undergraduate and graduate students under 30 work to address social issues and accelerate innovative ideas for the city of Treviso (in the Veneto region). Some of the issues regard «urban mobility, smart services, urban regeneration, social inclusion and sustainable tourism» (p.349) (Corò &

Scroccaro, 2016). The initiative was born from the need to focus on the social dimension to invest in the local area and address the needs of the community through innovation. In this context, the University is conceived as the tool to reach several objectives: to improve the students learning process through active learning and through the approach to real problems; to foster the entrepreneurial culture among young people; to make students develop creativity and passion towards social and community issues.

The participants are selected from different fields of study, in order to improve multidisciplinary and provide more innovative and disruptive ideas given the different points of view involved. During the weeks of the project, the students, divided into groups, are led to develop and accelerate ideas to solve social and urban challenges. A group of mentors, tutors, teachers, guest speakers and facilitators guide them in the process using different methods: Design Thinking, Lean Startup, Business Model Canvas and Social Return on Investment.

The Experiore project is an initiative of the Department of Management of the Ca' Foscari University that aims at matching ventures needs with students' ideas, to make them experiment in a real setting what they learn in class every day. It creates possibilities for companies to ask students to solve problems with innovative approaches, as well as it provides students with a network that will help them in finding apprenticeships and job opportunities. The fields in which the participants work are revenue, strategy and innovation, accounting, and finance and marketing. The project was born in 2015 and the different editions have addressed a wide range of issues, e.g. tourism in Venice, international labor law, food retail, sports brands.

The Active Learning Lab (ALL) is a six-week innovative workshop in which 40 selected students work to address the challenges proposed by partner companies. They have a structure comparable to the Urban Innovation Bootcamps; however, the ALLs, rather than being focused on a social dimension, are closer to the Experiore aims in that they work to address business challenges. The participants, divided into groups of four or five people, are graduate students in different fields of study of the Ca' Foscari University. The companies propose problems and

challenges they want to solve and the participants work during the six weeks to develop their ideas guided by professors, mentors, business experts, and institutions. Design Thinking, Lean Startup, and Business Model Canvas are also the core methods of the ALL. After five weeks of working on the implementation of their ideas, the students participate in a pitch in front of a commission presenting their solutions.

4.3.2 The Ca' Foscari Contamination Lab

The first Contamination Lab took place in February and March 2018 with the title “Fashion, Tourism and Culture” organized by Ca' Foscari University in collaboration with Ca' Foscari Foundation. The Ca' Foscari Contamination Lab (CFCLab) is a workshop of entrepreneurship education and mentoring that aims at supporting young people in developing an entrepreneurial mindset and behavior.

4.3.2.1 Purpose and Aim

The CFCLab aims to enhance participants' creativity and promote the creation of innovative and sustainable ideas through both venture creation and innovation in existing organizations. The main purpose is to develop an entrepreneurial mindset that will enable them to overcome challenges in any organization.

Participants learn how to develop their innovative ideas, take entrepreneurial initiative and use design tools and thinking. A practical environment is provided to accelerate maturation and growth, identify customer needs, and design new products or services that meet those needs. They engage in entrepreneurship activities, learn from real case studies, understand the value of experiential learning, understand how to work as a team, benefit from the networking and idea-sharing.

The program duration is about two months (in which six weeks are the effective workshop), including the project development phase and following soft-skills classes, public speaking and mentoring sessions, and, finally, the prize-awarding ceremony.

The participation is free and the eligibility of those involved is based on the resume/LinkedIn page and presentation video/cover letter that young people send when applying to the CLab. High-school, undergraduate, graduate students and recent graduates are eligible to apply. The participation of individuals from different fields of study is encouraged to foster interdisciplinarity and the exchange of ideas. No previous industry or entrepreneurship experience is required.

The intersection between teaching and innovation is one of the main characteristics of the CFCLab. This implies that university is the place where the learning process happens through a constant approach with real case studies and the methods proposed aim to foster the collaboration between students, faculty staff, and ventures in order to create innovative solutions. The CLab addresses a specific topic that is connected to the area surrounding the Ca' Foscari University, e.g. Digital Transformation, Innovation for made and designed in Italy, Sustainability, Creative Industries, Social Innovation.

The activities are:

- a. Entrepreneurship and innovation workshops in which groups of students and graduates work together to accelerate ideas and generate solutions to solve the challenges of each edition.
- b. Soft skills workshops in collaboration with the Ca' Foscari Competency Center provide participants with the opportunity to develop their soft skills in order to improve their performance and employability. Expert staff from the center trains students and graduates in a process of awareness of their strengths and areas of improvement.
- c. Meetings with experts (once per week) in the fields of innovation, marketing, investment, and ventures.

- d. Follow-up for personal and professional development, which in the first edition consisted of a practical workshop on public speaking with an expert trainer. This experience provided the participants with basic skills to learn how to pitch to present their final projects.

4.3.2.2 Structure and Content

Figure 3: Phases of the Ca' Foscari Contamination Lab (Boschiglia, 2018)



First week—Immersion

During the first week, participants are introduced to the tools and methods they will use during the workshop. Through brief lectures, case studies and team-working activities, the different phases of Design Thinking and Business Model Canvas are explained and they get to know each other. Some representatives from the organizations involved illustrate the design challenge and the problems they want the teams to solve. On Saturday, the whole day is spent on accelerating ideas in teams to develop a solution to a given problem. This one-day non-stop format improves unity into the group and makes participants experience how Design Thinking works.

Starting from the second week, every Monday the teams receive the tools and the guidelines on how to work during that week. On Tuesday, Wednesday and Thursday they autonomously

work on the task from home and every Friday they meet again at the CLab space to receive feedback and have a meeting with experts on different topics.

Second week—Exploring

In the second week, participants, divided in teams, begin working on the main design challenge of the workshop, which in the first edition concerned the footwear industrial district of the Riviera del Brenta, an area in the surroundings of mainland Venice. This area is characterized by a rich historical and industrial heritage and the teams were challenged to design new solutions to promote made in Italy shoes, tourism in Riviera del Brenta and the footwear school of the district. During the first phase of Design Thinking, the teams work on the analysis of the historical background of the context, collect case studies that addressed similar challenges and study the competitors in the field.

Third week—Definition

After acquiring a general background during phase one, in the third week the teams plan either qualitative interviews or online surveys to understand the relationship between the stakeholders involved in the process and the organization or company they work for. According to the specific issue of the design challenge each group wants to address, they will define different questions and reach out to a different target. Fictional characters (called ‘personas’) are created based upon the research to represent the different stakeholders’ types that might use the service or product designed. This method helps to recognize different people’s needs and expectations.

Figure 4: An example of personas (Valdez, 2015)



During the same week, the participants visit one or more companies involved in the project.

Fourth week—Ideation

Different types of brainstorming are proposed for participants to create a flux of ideas without limits. From the output of the process, the teams then collect the ideas and make their proposal to the design challenge. The project presented must include the strengths, the stakeholders involved, the values and the economic sustainability of the proposal.

Figure 6: An example of prototypes (Boschiggia, 2018)



Sixth week—Delivery

The teams work on their presentation on Google Slides with the help of experts in the field that provide feedback and advice to deliver a good quality visual explanation of their project. Other experts will also train students to acquire public speaking and presentation skills. At the end of the workshop, the students present their solution in front of a commission of academic staff and organizations' representatives who will determine the best project.

During the last few weeks of the CLab some members of the teams who desire it can benefit from a soft-skill course in collaboration with the Ca' Foscari Competency Center.

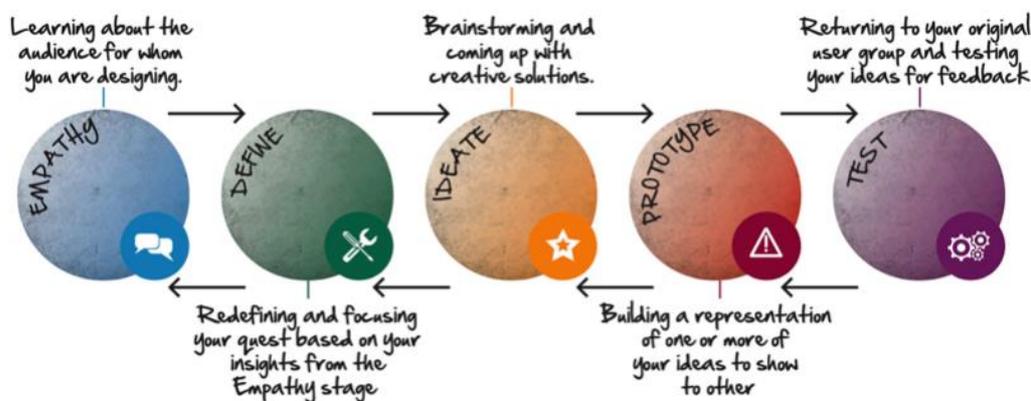
4.3.2.3 Methodologies

Design Thinking. «Design thinking is a human-centered approach to innovation that draws from the designer's toolkit to integrate the needs of people, the possibilities of technology, and the requirements for business success» Tim Brown, CEO of IDEO

This approach, therefore, brings together human desirability with what is feasible from a technological point of view and economically viable. Design Thinking is applicable for people who are not designers and it provides a way to integrate rationality with intuition and emotion.

After identifying a problem or opportunity that needs a solution, ideas are generated and tested, and subsequently led to people's lives. This method is used in different organizations such as D-School at Stanford, the Institute of Design at Potsdam University and IDEO, a global design company.

Figure 7: Phases of Design Thinking (What is design thinking?, n.d.)



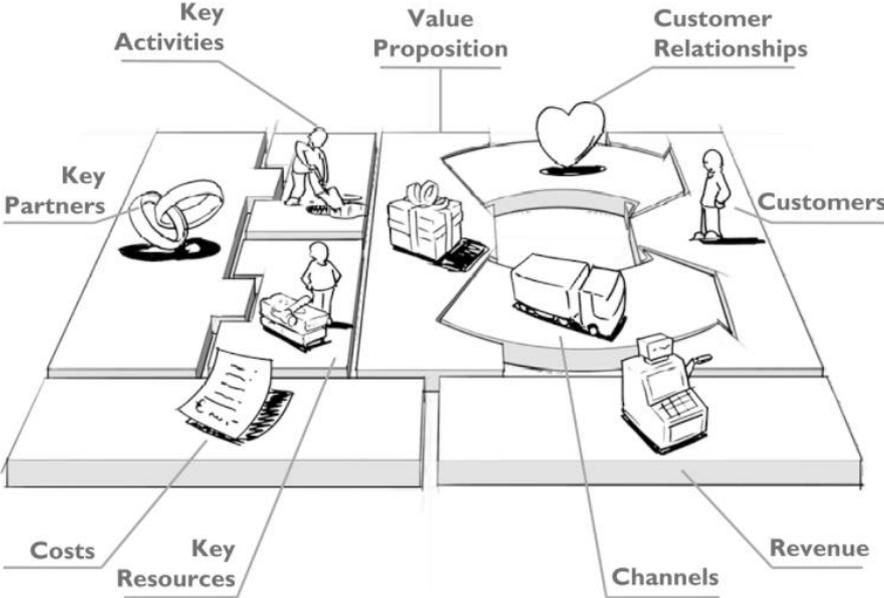
Lean Startup. Lean Startup is a methodology for developing startups and products which assumes that complexity in organizations can be reduced through shortening product development. The creation of an innovative hypothesis that is cheaply and rapidly tested provide a way to work smarter and faster.

Agile project management. It is a methodology that provides participants with planning and management tools that can be used in situations of uncertainty and pressure. It uses short development cycles to focus on continuous improvement in the development of a product or service.

Business Model Canvas. It is a strategic management template for developing a business model. Through a visual chart, nine business model building blocks describe a value proposition. The blocks are: the customer segments for which you are creating value, the

products and services that create value for each segment, the channels to reach customers and deliver value, the type of relationships you establish with your customers, the revenue streams you generate, the key resources and key activities you require to create value, the key partners who can help you leverage your business model and the cost structure. These items are not simply enumerated; rather, they are structured on a model to help invent, discuss, design new business models. Through Business Model Canvas it is possible to map out an entire business model in one image.

Figure 8: Business Model Canvas (Grieco, 2016)



Communication skills. They are fundamental skills that participants need to present their projects and ideas in front of a commission at the end of the workshop. Pitching is a crucial ability to acquire clients, partners and angels to invest. For this reason, a highly qualified staff trains participants to acquire the most effective techniques to communicate and present in front of an audience.

Business planning. During the workshop, the teams will be trained on how to write up a business plan to approach angels and partners. The partners involved in this methodology are banks (e.g. Intesa San Paolo) and the Chamber of Commerce of Venice and Rovigo.

Transversal and soft skills. These competencies are not related to a specific job but can be beneficial for every professional position. The Ca' Foscari Competency Centre is an internationally recognized research, training and consulting center created in 2012. It organizes courses to promote the development of behavioral competencies such as initiative, adaptability, leadership, and self-awareness. Through an exciting process, the participants to the CLab understand their strengths and areas of improvement, in order to be able to set their career and personal goals. The activities promoted aim at improving people's employability and performance through the development of their competences.

4.3.2.4 Interdisciplinarity

Interdisciplinarity is one of the core characteristics of the CFCLab in its approach to the economic, socio-environmental and technological dimension. In every team, there are participants from different fields of study to integrate humanistic studies with economic, management, scientific and technological knowledge. The topics of the different workshops concern different areas, including sustainability, digital transformation, creative industries and social innovation, all issues that are multidisciplinary by definition.

This is evident in the decision of Ca' Foscari to open the application to the CLab also to other higher education institution, such as IUAV (for architecture, design and art students) and DVRI, the Venice district for research and innovation. Furthermore, the CLab will collaborate with the Venice Science Gallery. The numerous perspectives acquired by those different backgrounds are beneficial to the interdisciplinarity of the CLab.

Peer learning processes are fostered in the interdisciplinary groups and a team of academic staff, mentors and facilitators will represent the complexity of all the topics and innovation areas chosen.

As far as the weekly conferences are concerned, several speakers, testimonial, and expert share their experience and knowledge with participants discussing a wide range of topics. Entrepreneurs, managers, artists, writers, musicians, with no disciplinary restrictions, are involved to provide the teams with a multifaceted perspective of different approaches through which technological, economic, social and environmental problems can be tackled.

4.3.2.5 Partnerships and impact on the area

Among the purposes of the CFCLab there is the desire to contribute to the development of innovation and entrepreneurship of the North-East area of Italy. To achieve these goals, several partners are involved in the process.

H-Farm and Vega Incube provide opportunities for acceleration and incubation. Moreover, Human Foundation, that promotes innovative solutions to growing social needs, contributes with the encouragement of a culture of social innovation, evaluation and impact investment. This foundation provides specialized competencies also in social entrepreneurship and in the evaluation of the social impact of the projects. As far as Intesa San Paolo bank and the Chamber of Commerce are concerned, their role is crucial in sharing economic and financial knowledge as well as the ability to access the resources needed by the newborn startups that might arise from the CLab. Furthermore, they are the meeting point between innovative startups and ventures, contributing to the competitive growth of the North-East Italian industry. The partnership with the Ca' Foscari FabLab and Fabcube creates a relationship with also the wider network of the Fablabs in the Veneto region, improving the young people's attention to Industry 4.0 and manufacture. The CFCLab is also willing to create a network with the other Italian CLabs. This is exemplified by the agreement with the CLab of the University of Trento to

activate a collaboration in terms of events, workshops, and sharing of ideas. Through a partnership with Innovation Future School, high schools will be involved as well as foreign universities from the Ca' Foscari network.

4.4 Delivery and Active Learning Methods

AzzurrDigitale and Amploom are responsible for the learning process of the CLab. Azzurro Digitale is a startup founded in Padua in 2011 that offers consulting services in the field of digital transformation to venture, organizations and institutions. They identify the innovation needs of the organization and then lead it to the process of digital transformation. During the CLab, a representative from Azzurro Digitale, a product and visual designer, teaches participants the steps of Design Thinking and guides them throughout the phases providing mentoring and feedback. In the same way, a service designer from Amploom collaborates in managing the CLab and in the lecturing process. Amploom is an agency that empowers organizations through Design Thinking to accelerate their innovation process. These two experts utilize different teaching methods during the workshop to deliver the tools to the teams and guide them to innovate and create their projects.

4.4.1 Team-based Learning

Team-based learning is «a collection of practices that support one another for powerful instructional effect» (p. 7) (Michaelson & Sweet, 2008). In team-based learning activities, participants have the opportunity to solve problems. According to Michaelson and Sweet (2008), there are four essential elements to successfully implement team-based learning. Groups must be properly formed and managed. During the first week of the CLab, the staff organizes a different set of activities trying diverse possible matching between participants, to guarantee they are balanced, multidisciplinary and that their personalities and behaviors will fit together. A facilitator is assigned to each group as a guide that has the task to facilitate the

process of team-working. In addition, the teams must be accountable for the quality of their work, not only to the instructor but also to the teammates. The deadline set by the staff every week of the CLab has the twofold effect of coherently organizing the activities according to the goals of the workshop and of holding the participants responsible for their own weekly working. Moreover, group assignments must promote both learning and team development. The workshop provides, throughout the weeks, different assignments that strengthen the group such as challenges (e.g. social media challenges), field visits to the companies involved in the projects and activities (e.g. brainstorming). However, learning is provided through the classes held every Monday to explain participants the functioning of Design Thinking and through other activities that implement knowledge on other topics such as Business Model Canvas and power-point skills. Frequent feedback is another condition for high-quality team-based learning. Every Friday, after the teams have worked for one week on a task, the staff provides a feedback to them in order to revise their project, give advice on how to improve and reward them.

4.4.2 Feedback

A significant amount of literature considers feedback as essential to the process of learning. However, many students are disengaged from the feedback process and the potential for it to enhance student learning is underestimated. What Price, Handley & Millar (2011) suggest is to focus «on the process of engagement rather than the technicalities of feedback» (p. 880). Feedback should not only aim to correct work or diagnose problems; rather, it should be used to address future development

This model of feedback is considered essential during the different phases of the CFCLab. As already mentioned, every Friday the staff provides feedback to every team following a schedule that permits every group to receive a considerable amount of time to talk and reflect on how their project is going. After revising the tasks of the week, the instructor provides his

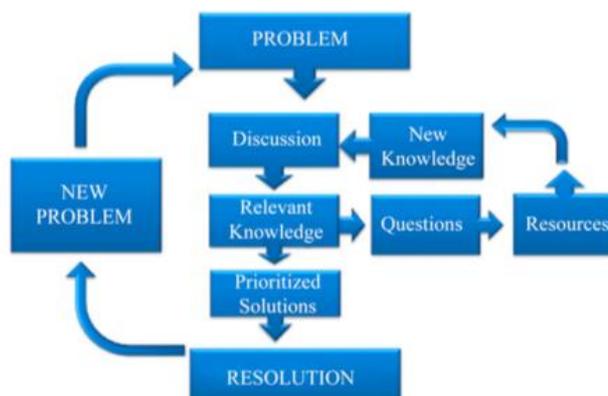
or her opinion on how the team has worked and if the goals have been accomplished. However, rather than being only a quick judgment, the mentor leaves enough time to discuss and understand the choices of the members and provides insights and suggestions on how to improve their performance and generate new ideas. Dialogue is encouraged and the team members are engaged in the process since they are considered as active interlocutors.

4.4.3 Problem-based Learning

«Problem-based learning (PBL) is a pedagogy specifically created for the integration of content knowledge and skill development» (p. 174) (Ungaretti, Thompson, Miller & Peterson, 2015). Evidence shows that PBL is a relevant tool to engage students; moreover, it supports the improvement of learning outcomes, student satisfaction, and student engagement (Dean & Jolly, 2012; Hallinger and Lu, 2011; Godfrey, Illes & Berry, 2005).

As exemplified by Barrows (1996), PBL approaches begin with a problem to guide the learning, are learner-centered, view the instructor as a facilitator, utilize collaborative small groups, and employ self-directed learning and reflection to acquire new knowledge.

Figure 9: Example of the Problem-Based Learning process (Barrows, 1996)



Some characteristics are part of the CLab activities. The first week, the staff presents the design challenge to participants as a problem to be solved throughout the workshop with the

tools of Design Thinking. All the members of the groups are always at the center of the learning process: every activity is oriented to make them acquire knowledge and practical skills. Moreover, they work in multidisciplinary small teams who are guided both by the main instructors and also by a group of so-called facilitators, who are young people employed and trained by the University to assist the groups in reaching their goals and facilitate the team-working.

4.4 Chapter Summary

The Ca' Foscari Contamination Lab is a collaborative project that aims to enhance student engagement and foster entrepreneurship education. The European Union supports the creation of entrepreneurship education projects throughout the EU countries in order to make young people responsible and enterprising individuals, not only in the professional sphere but also in the personal and social life.

The Italian Ministry of Education, University and Research (MIUR) destined funds to promote the creation of Contamination Labs in higher education institutions in Italy. Ca' Foscari University obtained the funds to start a CLab in 2017. This project has its roots in other experiences of entrepreneurship education and collaborative learning, both working for enterprises and for social purposes.

The first Contamination Lab at Ca' Foscari took place in 2018 with the title "Fashion, Tourism and Culture". The purpose of the CLab was to address a set of challenges presented by the enterprises of the footwear district of the Riviera del Brenta (in the Venice province). The CFCLab aims to enhance participants' creativity and promote the creation of innovative and sustainable ideas through both venture creation and innovation in existing organizations. The main purpose is to develop an entrepreneurial mindset that will enable them to overcome challenges in any organization.

During a project development phase of six weeks, participants use the tools of Design Thinking provided by the staff to convert their ideas into a concrete project. They work in teams that are multidisciplinary: the group members come from different fields of study, institutions and have different levels of education. In addition, they have the opportunity to develop important soft skills, and presentation and public speaking competencies through the help of experts in those fields. The staff provides different tools to participants, that work with various methodologies, such as Design Thinking, Lean Startup, Agile Project Management, Business Model Canvas, Business Planning and other.

The Contamination Lab has a wide and important impact not only on those who participate but also on the University itself and on the area around Venice where it takes place. For this reason, many local partners are involved, such as incubators, banks, the Chamber of Commerce, other universities and many ventures.

Active learning and participants' engagement are fostered through different teaching methods. External agencies are involved in the process of the content delivery with experts in Design Thinking, Service Design and project management. Team-based learning has a powerful instructional effect and it is fostered during the CLab: team members of each group work closely for six weeks facing challenges and tasks to deliver their final project. Feedback is considered as essential to the process of learning and is provided by the staff every week, not as a quick judgement but as a dialogue to foster participants' engagement and growth. Finally, problem-based learning is also relevant to improve learning outcomes and student engagement and it is fostered in the CLab as a tool to solve the problems presented by the enterprises involved in the workshop, utilizing the steps of the Design Thinking process.

CHAPTER 5

A Comparison between the Ca' Foscari Contamination

Lab and the Australian eChallenge

5.1 The Australian eChallenge

A comparative perspective of different entrepreneurship education experiences is a tool to provide a critical analysis of the CFCLab. The eChallenge training initiative held at the University of Adelaide in Australia has been identified and the faculty in charge was interviewed.

The Australian eChallenge is an entrepreneurship program that provides participants with interaction opportunities, tools and mentorship to introduce them to the entrepreneurial world. Students are encouraged to pursue their own ideas and transform them into viable solutions and business, also winning cash and prizes.

5.1.1 Program Characteristics

The Australian eChallenge started eighteen years ago, in 2000. The first program was organized with an arrangement with one company, HP. The focus was on developing some innovative ideas specifically for this company. At that time, it was a small program that was then expanded in a range of other courses and started to gain importance for the University. In the next years, the program became a course at the University of Adelaide and it was open to students who are enrolled in the university. However, it is also open to the public and anyone from the community can participate in the course.

The main goal of the program is to develop an entrepreneurial mindset. However, different participants have different approaches to it. Some of them who enroll as an elective course for credits expect to develop entrepreneurial skills; on the other hand, members of the community might want to develop a method to turn an idea into a business. The staff does not expect all participants to become entrepreneurs at the end of the program; on the contrary, they want them to learn a method.

The students who participate do not have to pay; on the other hand, for individuals from the community there is a cost to register of \$500 or \$250 for concession card holders. There are companies that sponsor a prize or offer services e.g. consultancies for participants.

The increasing number of participants is an indicator of the improvement of the eChallenge. Moreover, data from all students is collected and enrolled students fill in a feedback on the course and lectures which reveals a high approval rating.

The model at the basis of the program recognizes entrepreneurship as a process that occurs in conditions of uncertainty. Participants are encouraged throughout the first weeks to talk to costumers. Rather than focusing on a business plan process, the eChallenge identifies the interaction with the world as a core value of the program, especially in the aspects of receiving feedback and changing ideas based on what occurs.

The main lecturer of the program is a researcher in entrepreneurship and innovation, in technological innovation and theories of evolution related to innovation. Moreover, every week real world experts that have particular expertise in a domain are invited to give a class to participants. The experts might also be part of the university, e.g. professors of marketing. The goal is to make students interact with the real world of entrepreneurs and start-ups in Adelaide, in order to create a network that might be useful to them as soon as they finish university.

After a few weeks into the program, each team is assigned a mentor that might be a practitioner, expert, entrepreneur, investor or a person that works for the government. This mentor will work with the assigned team on an individual basis arrangement. Due to the eighteen-year experience, the network of mentors has grown and has reached in 2017 the participation of 100 mentors.

The duration of the program is ten weeks from July to November. The lectures are delivered on campus; however, there is also an extensive online environment that students can draw resources from. Even though there is not a specific eChallenge area, teams meet around the

campus at the library, computer rooms and social spaces; except for the Tuesday-night lecture which is set in a specific place for all the teams.

As for the thematic content areas, the first stage during the first weeks focuses on idea generation, team formation and entrepreneurial mindset. During this stage participants are required to focus on problems of the real world as a way to generate ideas and to design new innovative solutions to these problems. The next step requires to engage to the world in order to generate feedback from users. Participants interview people and submit surveys of those interviews. During the third stage, they describe what they have done and present their ideas to investors in a final pitch at the end of the program. They receive proper tools to learn how to pitch, through training on the structure, on how to engage, on the topic and other related issues. To summarize the areas, after ideation in the first weeks, the other two stages focus on feedback and presentation skills.

In a typical weekly schedule, Tuesday night is devoted to a guest lecture on a particular theme and the following days the teams work on tasks related to the assignments. The assignments are structured to be guides for the process and ask students to work on particular tasks, for example going out to talk to costumers, identifying the competitors, generating ideas, defining a list of problems, looking at solutions through technology. They are not expected to submit their output every week since they constantly interact with their mentors that provide feedback.

Student engagement is a core part of the program. It is not based on a theoretical learning of topics; but rather on the students' own motivation to solve problems and build skills every week.

The eChallenge includes a set of follow-up services at the end of the program. Students are made aware that there is an opportunity to further develop their ideas considering the program as a pre-accelerator course. A lot of accelerator options around Adelaide are provided for those who are interested. The network with them is constantly improved and they are also invited to

participate in events as alumni. Furthermore, one of the prizes is a ThinkLab Business Incubator residency and with those students the staff maintains contact and tracks them for the next few months. A consultancy service is also provided.

5.1.2 Participants

In the 2018 eChallenge 230 people participated. About three quarters of the participants are undergraduate and postgraduate students from across the university. Different faculties participate, from computer science to arts, from engineering to economics and medicine. A considerable quantity of them come from engineering and computer science; however, a mix of people from different faculties in the teams is encouraged. The more diverse teams frequently represent the toughest groups; nevertheless, the conflict helps the generation of higher quality ideas. One third of participants are people from the community. High schools are also involved in the process with separate lessons and an extra tutorial.

The groups are not created by the staff. Participants interact during the first weeks and the third week they set in teams after talking to each other and connecting. For example, people studying computer programming might look for marketing students because they lack marketing skills.

There is not a specific measurement of the improvement of the skills of the participants; however, during the course, the staff monitors how they are working and evaluate their final pitch. The creation of a venture or a business at the end of the program is not considered as a reliable indicator of the success of individuals, considering that this is not the main goal of the program.

5.1.3 Outcomes Domain

The most important mindset the staff tries to instill in participants is the idea of going out and engage with the world, as the best way to receive feedback is to talk to people and listen to

their ideas and opinions. Creativity, design thinking and teamwork are also considered important mindsets to acquire. Design thinking is one of the methodological tools utilized, especially in the early stages during the problem analysis. Business Model Canvas is also an element of the early stages, useful to summarize the business ideas. Ideas from Lean Startup are utilized as well. The union of several methods and tools creates and eChallenge own template for participants.

5.2 Comparison between the Ca' Foscari Contamination Lab and the Australian eChallenge

The Australian eChallenge has the characteristics to be included in the group of 'collaborative assignments and projects' identified by Kuh (2008) among the High-Impact Practices, especially because it aims to provide participants with an opportunity to work and solve problems in the company of others and it fosters understanding and listening skills through the relationship with others from different faculties and backgrounds. As the CFCLab, the eChallenge characteristics coincide with the dimensions described by Coates (2007) in the definition of student engagement; in particular, in the presence of active and collaborative learning, in the participation in challenging academic activities, and in the involvement in enriching academic experiences.

5.2.1 Structure, Content and Partnership

The Australian program did not start from previous similar experiences, but rather it was born in 2000 to address the needs of a company; moreover, it is not supported by governmental founding like the CFCLab. Due to its beginning 18 years before the CLab, the eChallenge has a longer experience and a more extended network of participants and external experts involved.

Far from establishing a unique theme which all the groups should work on to find solutions and ideas, the eChallenge gives teams the opportunity to develop their own business proposal.

Nevertheless, except for the final prizes which are awarded to the best ideas, sponsors have enabled the University of Adelaide to create a series of categories for the teams to compete in to win even more prizes. These categories include Tech, Tech Wool Innovation, Wool Innovation, Climate Response, Social Enterprise, Cybersecurity and Medical Innovation.

The purpose of the two experiences mainly coincides in that both aim to provide the tools, interaction opportunities and mentorship needed to develop an entrepreneurial mindset that will enable to overcome challenges in any organization. Creation, development and assessment of ideas are the core of the programs and a practical environment is provided to accelerate growth, identify customers' needs and obtain feedback, and design new products or services that meet those needs. Teamwork is considered the most efficient way to pursue the goals of the projects and networking and idea sharing are encouraged.

The eChallenge lasts 4 weeks more than the CLab, giving more time to teams to develop their ideas and structure them in a final business proposal. About 230 participants were involved in the 2018 edition of the eChallenge, both students (three quarters) and individuals from the community (one quarter). The number of individuals participating in the CFCLab is smaller; about 70 people took part in the first edition, of which the majority are students and a few of them recent graduates. Participation in the eChallenge is free only for students enrolled at the University of Adelaide; on the other hand, individuals from the community will have to pay a \$500 fee to participate. Participation of individuals from all faculties, levels of degree, fields of study and work is encouraged in both the initiatives in order to support interaction, exchange of ideas and to foster interdisciplinarity.

As far as the structure and content of the programs is concerned, they follow different methods. On one hand, the CFCLab is structured on a revisited approach to Design Thinking. Six phases are identified – namely Immersion, Exploring, Definition, Ideation, Solution and Delivery, through which teams are guided by the staff to deliver their final idea during the pitch. On the other hand, the eChallenge is divided in three main stages. During the first one, the focus

is on idea generation and team creation. In the second phase teams work on the feedback process, and in the third stage they acquire presentation skills and prepare for the final pitch. A significant difference is the fact that the CLab teams are already established before the beginning of the program. On the contrary, the eChallenge staff does not interfere in the teams' creation and provides participants with an environment for interaction and discussion that leads to an organic meeting and creation of teams after few weeks from the beginning.

The methods utilized are different. In the CFCLab, as already mentioned, Design Thinking is the most important approach; on the other hand, the eChallenge does not follow a specific method throughout the program. Design Thinking is one of the elements, together with Lean Startup, Business Model Canvas and other approaches. All these tools together have created a new approach that has been consolidated through the years.

In both programs interdisciplinarity is encouraged not only through the participation of individuals from different backgrounds and faculties, but it is also one of the core characteristics in other aspects of the two programs. The teams work on different topics and areas and the workshops held by faculty staff and external experts provide insights in a various range of disciplines. The outcomes of the groups at the end of the six or ten weeks represent how the interdisciplinarity has influenced their choices, ideas, and, finally, their decisions. Interdisciplinarity is important to provide a wide range of final business proposals, but also to be a tool and an opportunity for participants to challenge their ideas, learn new ways to approach problems, enrich their learning experience through the comparison, debate and discussion with mindsets, situations, people that otherwise they are unlikely to meet.

The partnership with external actors and companies is a core characteristic of both the eChallenge and the CLab. However, probably due to the longer experience, the eChallenge has created a wider and stronger network that enhances the quality of the program. Several experts are involved in the process of lecturing and the mentors are individuals from the community that work for companies, for the government and for startups. Moreover, incubators are

involved as key partners to provide opportunities for acceleration and incubation of the deserving projects. The importance of involving external actors lies in the interdisciplinarity it provides and in the richness created by the contact with entrepreneurs, practitioners, industry leaders and investors.

5.2.2 Delivery and Active Learning Methods

The main lecturer of the eChallenge is a figure internal to the University; on the other hand, the staff responsible for the learning process of the CLab comes from external companies. Besides the main contents of the programs, in both projects external experts are invited to hold lectures on specific themes.

Both the programs value the powerful instructional effect of team-based learning. Despite a different method to match people in groups, they try to manage them in ways that facilitate discussion, dialogue, comprehension and listening. Either with a mentor (for the eChallenge) or with a facilitator (for the CLab), groups are guided and supported. Feedback is provided by mentors, facilitators and staff. It is considered by a significant amount of literature as essential to the process of learning and the eChallenge particularly emphasizes this aspect. The type of feedback the staff wants the groups to receive is not only from members of the eChallenge, but it is especially from the users and customers of the product or service they want to prototype. The staff believes that the best way to create a good product or service is to engage with the world and the people, and receive their feedback. In a different way, the idea of feedback fostered by the CLab is a weekly revision of the groups assignments with the staff to reflect on how the project is going and on how ideas can be improved.

Evidence shows that problem-based learning is a relevant tool to engage students, improve learning outcomes and student satisfaction. In the process of developing an entrepreneurial mindset, both the programs try to guide the groups starting from problems to be solved, either chosen from the staff or found by the groups as important. The instructor is a key figure in this

process that put the learner at the center and facilitates the learning and working process. Small groups work through a collaborative style that provides, thanks to mentors and facilitators, the environment for self-reflection that facilitate the acquisition of new knowledge.

5.3 Ideas for Improving the Ca' Foscari Contamination Lab

5.3.1 Vision, Mission and Participants

The guidelines of the “Decreto Direttoriale” no. 3158 regarding the Italian Contamination Labs and the Australian eChallenge provide a framework to evaluate the Ca' Foscari Contamination Lab and the possibilities for improvement.

The term ‘contamination’, far from its negative meaning of pollution and infection, aims to highlight the power of interaction, exchange and mutual enrichment that this experience can create. This contamination should happen at different levels and what lacks in the CFCLab is the presence of academic staff. Professors are rarely involved in lecturing and mentoring while their role could be crucial to improve the quality of learning. Their expertise in different fields like marketing, human resources, finance—and in general on the topics that might arise during the workshop—might provide a helpful tool to the teams. The eChallenge staff invites professors and lecturers during the Tuesday-night lectures to give students new tools and perspectives.

In the Ministry guidelines, European and international actors are mentioned as key partners to involve in order to set the stage for future mobility initiatives. In Europe and worldwide there are many other entrepreneurship education initiatives that could represent inspiration for improvement. Ca' Foscari University is already in contact with those programs and the first collaboration in the CLab framework was the prize of the first edition. The winning team went to Amsterdam to visit the Amsterdam University of Applied Science, the Amsterdam Venture Studios, the 10k Incubator and BOOT.

Since one of the main goals of the CLab is to engage and encourage participants and propose new ideas and activities, a future development might be to make participants work on projects they create, without a general topic already established by the staff. Either making participants enroll in already set groups applying with an idea or making them participate as individuals for the first few weeks and then create the teams (like in the eChallenge) are two viable options. In this way, participants would be able not only to gain a method to solve problems, but rather they would work on projects they create from zero and the engagement level could increase.

5.3.2 Structure, Follow-up and Assessment

The eChallenge duration is a semester (ten weeks), which is also the proposal of the MIUR in the CLab guidelines. Six weeks is a time that permits to work on a project and present a solution; however, in order to be more complete and to examine in depth more aspects, more time is needed. In some stages the groups do not devote enough time to work on the assignments. For example, the stage in which the teams interview users and get feedback is stressed by the eChallenge as a fundamental step. On the other hand, the CLab dedicates to this activity only one week (the third one) which is not enough to receive sufficient feedback from the target interviewed. The possibility to extend the duration of the program should be considered.

The introduction of a cash prize founded by sponsors and by the university itself is desirable in order to increase the level of competition and encourage teams to work harder and commit to the purpose. A strategy to involve companies at a deeper level could be to create a series of categories for the teams to compete in to win even more prizes, as the eChallenge does. Interaction with startups, spin-offs and co-working spaces should be enhanced. Contact with this kind of environment would permit the interaction of participants with people that are working on their personal projects at a professional level and that could share useful experience and expertise in their field. Moreover, startups, spin-offs and co-working spaces are usually run

by young people that could provide new insights on young entrepreneurship to those participants that are interested in this career. These young entrepreneurs could also be involved as mentors for the groups.

In general, a wider involvement of external experts, professors, entrepreneurs and practitioners to work with the groups on an individual basis would be useful to evaluate with specific aspects of the project the team is developing and it might represent a priceless value to improve the quality of their work.

Follow-up services are a very important part of an entrepreneurship program. The eChallenge experience includes for some groups the access to incubators in the Adelaide areas, including the ThinkLab, the incubator of the University of Adelaide, where they provide teams with tools, resources and network required to collaborate, disrupt and innovate. It is worth mentioning that if a group has developed its own project based on personal ideas and not based on an already established design challenge, it will be more likely that they want to access an incubator and continue with the entrepreneurial journey. The network of mentors is also enriched by the alumni of the eChallenge. The engagement of alumni in events, activities, conferences and lectures might be a smart way to involve them in the design of future CLabs and in the mentoring activity.

As far as the assessment process is concerned, the CLab manager is responsible for monitoring the project, whose impact should be measurable in accordance with the expectations established at the beginning with an external “Special Advisor”. This process was missing in the first edition; nevertheless, monitoring the results of the CLab would be a useful tool to identify the areas that work and those that need adjustment. After establishing the goals of the project, the “Special Advisor” should define some measurable indicators of those goals and a measuring process to assess them. Moreover, the introduction of a feedback survey sent to participants at the end of the workshop could provide insights and suggestions on areas that need improvement.

Finally, another desirable facility provided to the teams would be a dedicated space where the teams can meet and work during the workshop. This space should be furnished with all the facilities the groups need (Wi-Fi, tables, whiteboards, material to prototype, couches) and be a space that inspires innovation, idea creation and collaboration.

5.4 Chapter Summary

The Australian eChallenge is an entrepreneurship program that provides participants with interaction opportunities, tools and mentorship to introduce them to the entrepreneurial world. Students are encouraged to pursue their own ideas and transform them into viable solutions and business, also winning cash and prizes.

The program started in 2000 as a small workshop that has expanded throughout the years and it is open to both students and individuals from the community. The main goal of the program is to develop an entrepreneurial mindset that permits the creation of value in all life dimensions: personal, social and professional.

The positive feedback and the increasing number of participants reveal the constant improvement of the eChallenge. The model at the basis of the program recognizes entrepreneurship as a process that occurs in conditions of uncertainty; for this reason, participants are encouraged to engage with potential users and customers to receive feedback and change their ideas according to it.

Both staff from the University of Adelaide and external experts and practitioners contribute to the lectures and to the mentoring, in order to provide contact with a wide network. The duration of the program is ten weeks, from July to November. The program is divided into three main parts. After ideation in the first weeks, the other two stages focus on feedback and presentation skills. In a typical weekly schedule Tuesday night is dedicated to a guest lecture on a particular theme and the following days the teams work on tasks related to the assignments. Follow-up services are provided to teams in terms of incubators, consultancy service and events for alumni. 230 people participated in the 2018 eChallenge, of which three quarters were students from different faculties and one quarter individuals from the community.

The Australian eChallenge and the Ca' Foscari Contamination Lab share a wide set of characteristics. The purpose of the experience is to provide participants with the tools, interaction opportunities and mentorship to develop an entrepreneurial mindset.

Interdisciplinarity is encouraged through the participation of individuals from different backgrounds that constitute the teams and through the involvement of external experts. The partnership with external actors and companies is important to connect participants with the business world. The content of the course is delivered by both external individuals and staff from the University. Both the programs value the powerful instructional effect of team-based learning, problem-based learning and feedback.

On the other hand, differences lie in the years of experience, in the team creation methods, in the duration, structure and teaching methods of the programs.

The comparison with the Australian eChallenge and with the MIUR guidelines provides a framework to evaluate the CFCLab and its possibilities for improvement. More involvement of academic staff is desirable to enrich the experience. The contact with international actors, startups, spin-offs and co-working spaces could provide new insights on entrepreneurship and on different ways to run entrepreneurship initiatives. The possibility for participants to decide the projects they want to work on without an already established framework could benefit engagement and commitment, together with the chance to organize the teams based on their preference. The extension of the duration of the CLab would foster the quality of the final proposals and a cash prize might encourage teams to work harder. Follow-up services are desirable to engage alumni and to provide opportunities for further development of the projects. Finally, assessment and monitoring could provide suggestions on areas that need improvement.

Conclusion

This thesis, after a deep analysis of the literature on student engagement and entrepreneurship education, presents a comparative perspective of two similar experiences that aims to provide suggestions for the improvement of the Ca' Foscari Contamination Lab.

Since no official study has been conducted on the effects of the Contamination Lab on students, it is hard to tell if this engaging experience has positive outcomes on participants. Nevertheless, Kuh (2009) assumes that “engagement increases the odds that any student – educational and social background notwithstanding – will attain his or her educational and personal objectives, acquire the skills and competencies demanded by the challenges of the twenty- first century, and enjoy the intellectual and monetary advantages associated with the completion of the baccalaureate degree” (p. 698). The importance of these kinds of initiatives is therefore crucial; however, it is desirable to consider the measurement of the effects in the future.

The Contamination Lab is only at its first edition, meaning that there is still space for improvement and development. Since the main beneficiaries of engagement initiatives are students, the focus to improve these experiences should be specifically on participants. There are different ways to involve them in a process of development.

A feedback survey at the end of the workshop is one of the most immediate tools to be used to ask them their opinion and impressions about the CLab. Moreover, after a definition of the main goals the program wants to achieve, a set of questions should measure whether they are met or not.

Furthermore, involvement of ex-participants in the CLab's design could provide interest insights and ideas. Their opinion and suggestions might be helpful since they have already experienced the workshop and have a different vision from the staff that organizes it. Moreover,

after this experience and after graduation some of them might find jobs in fields and companies the CLab might want to create a network with. Finally, their participation as mentors or lecturers should be considered.

The European Union assumes that in order to be effective, an entrepreneurship program must have clear objectives, integrate theoretical and practical aspects, create a network with the entrepreneurial environment, and provide a constant training for teachers. The network issue represents an area the CLab should focus on.

The interaction with startups, spin-offs, incubators, companies and, in general, experts and practitioners constitute a great contribution to the creation of value for the workshop, both for the knowledge and expertise they can provide and also for the hypothetical sponsorship they might grant.

The amount of information on the CLab was wider than the data on the eChallenge. The study has proposed but not fully explored a comparative analysis. It should have been conducted with more expertise, considering coding and a more structured conceptualization, classification and categorization of data.

For future research on the topic it will be important to consider the comparison of the CFCLab with other national and international experiences of entrepreneurship education, through a more structured analysis of data.

Further research might consider the outcomes of student engagement identified by the literature (and listed in chapter 2) and verify if those effects are part of the CFCLab, considering also suggestions to reach them.

Finally, the European Commission's DG Education and Culture in partnership with the OECD Local Economic and Employment Development Programme (LEED) have created a free self-assessment tool for higher education institutions. Future research could use this tool to assess the Ca' Foscari Contamination Lab entrepreneurial and innovative nature based on its entrepreneurial activities, including leadership, staffing and links with business. The tool

provides extensive training and support material to support workshops and further development. This self-assessment could contribute to the improvement of the workshop.

Appendix

Interview 1 – Tina and Matt

1 - What is the origin of the eChallenge? Where did it start from?

Tina: It's been running for eighteen years, it's the eighteenth birthday. It started with an arrangement with just one company. And it was specifically from them, for HP, focusing on developing some innovations just for them. And then the next few years the program became a course at the University of Adelaide. So it's primarily for students who are enrolled in the university but it is also open to the public, so anyone from the community can do the course.

Matt: it was quite a small center when it first started and then the program was expanded in a range of other courses and recognized as important.

Tina: we run it once a year but we do other programs around it as well. Shorter courses or specialized courses about entrepreneurial capacities. So we started off it with just one company but now it is opened to the public and anyone can do it. So we went from maybe 50 students to several hundred students this year.

2 - How many companies are involved right now?

Tina: well it's not specifically for any company now, anyone can come and do it so it's open to the public and it's mainly individuals who come and want to develop an idea.

3 - What is the program's main goal?

Tina: it is to develop an entrepreneurial mindset but it's different things to different people. So the students who enroll as an elective for credits will be looking for entrepreneurial skills if they're not entrepreneurs. We have a lot of people who are doing engineering or computer science who want to build entrepreneurial skills. Members of the community come along because they've got an idea and they want to develop a method of developing that idea into a business. So it depends how you approach the course and who is doing it.

Matt: we don't expect all teams to have a successful business at the end and it's more about an entry for people who are considering entrepreneurship, to learn a method. There are ventures that come through but that is not the expectation.

4 - How is it financed?

Tina: if students apply for a course they do it as a course, otherwise if someone wants to do it from the community they just pay for it. There is sponsorship as well, there are companies that sponsor a prize or offer services and things like consultancies for our students. And it's funded by the university as well.

5 - Is there governmental funding?

Tina: There's not very much funding around.

6 - Is there a method through which you determine the progress of the program? Do you measure in some way how is it improving throughout the years?

Tina: The numbers, we try also to maintain contact with a lot of students so we have an active Alumni group as well. So we keep track of people that way, we ask them to come along and speak to students or they might be mentors or guest speakers as well.

7 - is there a feedback process at the end?

Tina: yeah for sure, we collect data from all students and then enrolled students will have to fill in a feedback on the course and the lectures as well. Our reputation as well and as Matt says our numbers continue to increase, and that's a small measure for us for its success.

8 - Is it designed on a specific theoretical model?

Matt: it's mainly the process of recognizing that entrepreneurship is a process that occurs in the conditions of uncertainty. They're encouraged throughout the first weeks to go out and talk to customers and we have three modules in a process where that's kind of the effort. So it's less about a business plan process and more about interacting with the world. To get feedback and to change ideas as much as have them based on what actually occurs. That's pretty well recognized in a lot of literature. Lean startup which is a pretty standing text about processes

and how to focus on them. But then each individual session has its own goals and its own focus as well. But it's important for them to progress towards a prototype and to do that through real feedback with people but then there are particular focus for each week.

9 - Who does deliver the content of the program?

Tina: it's mainly Matt. We do have academic staff to teach but we also think it is important to bring along experts, external people, entrepreneurs obviously and other experts in that area. To keep the real work, information and feedback and experience to the students.

10 - What does Matt do?

Matt: I'm a lecturer and researcher in entrepreneurship and innovation, in technological innovation and theories of evolution related to innovation. each week there's real world experts that have particular expertise in a domain and that could be from the university, there's staff coming throughout the course. For example, we had a professor in marketing coming or it can be real world practitioners, who have particular expertise. For example, last night we had an accounting coming and talk about how to do financial forecast particularly for start-ups and starting to get revenues. So that students can interact with the real world of entrepreneurs and start-ups in Adelaide so that once they finish they're familiar with their array or have some relationship with the external world.

11 - Are there mentors or facilitators for the groups?

Tina: After a few weeks into the program each team is given a mentor and that might be again taken from the community, who are practitioners, who are experts, who might be in the government, who are external to the university. And that mentor will work with that team one on one on an individual basis arrangement.

Matt: that's where the strength of the eighteen-year experience stands out that there's a network of mentors who are involved each year and we send out request for new people for them to attend the events. To meet entrepreneurs who have experience and are running companies, and some of them are investors as well and invest in the projects.

Tina: That's also a measure of our reputation. We had at least 100 mentors last year that participated in some way, we have quite a large pool of mentors to draw from and people are adding all the time as well.

12 - What is the duration of the program?

Tina: it is a semester which here is ten weeks plus assessment. So it's like from July to November.

13 - Where is it delivered?

Tina: we deliver the lecturing on campus but there's also an extensive online environment that students can draw resources from as well. So we have a face to face lecture and then follow up also from online interaction as well.

14 - Where do the groups work?

Matt: there's a think lab downstairs which is an incubator but there's no real specific eChallenge area. Teams meet around the campus in the library, computer rooms, social spaces. But on Tuesday night we have the actual lecture where they all kind of come together.

15 - What are the thematic content areas?

Matt: the first stage focuses on idea generation, which is the first few weeks as well as team formation and so it is about focusing on problems of the real world as a way to generate ideas as well as looking for new innovative solutions to these problems. So that's kind of the first few weeks along with some work on team formation and looking for teammates and even entrepreneurial mindset we covered it in that section this year.

And then from there the focus turns to actually going out to engage to the world and get feedback. So it's about understanding the market with a bottom up approach identifying a hundred to a thousand users to a particular program and then from that to go out and get feedback from those users. So we've got an assignment x this Friday where they have to interview which is a combination of the second stage where they have to go out to interview people that are going to be using that product and submit surveys of those interviews.

And then the third stage is about kind of description of what they've done as well as presentation of their ideas to investors. So we talk about the final pitch which is the course culminating where they stand up in front of judges and present their ideas as a standing kind of entrepreneurial pitch. And we're preparing them for that in the final weeks. We talk about the structure, we talk about how to engage, we talk about what they should present and so on.

Tina: it is a very practical program so the students are expected to do a lot, produce a lot, as well as the theory. They don't have assignments or readings from textbooks.

Matt: the clusters will be ideation in the first few weeks and then feedback and then presentation skills in the end.

16 - How's a typical weekly schedule?

Matt: so we have workshop on Tuesday night as a guest lecture on a particular theme and as well as one of the academics introducing that theme. And then the teams will be set in tasks which are related to the assignments. At the early stages of the course we have two days for assignments and most of the work of the course is related to those assignments. So it's assignments been structured to be very much guides for the process. So the teams will be working on those particular ideas during the week which were ask them to do some particular things like going out to talk to costumers or identifying the competitors or it could be idea generation in the early stage or it could be coming out with a list of problems from their own lives or the things they want to pursue or looking at solutions that will be what technology they know or what technology could be used to solve the problems. each week there's a kind of task related to the process.

17 - Do they have to present what they've done during the week at the end of the week?

Matt: no, there's particular submission at certain times. What happens in the workshop is quite interactive in the sense that we're talking about their ideas a lot and talking informally with all the teams but it's not that they present each week. There are a few key deadline throughout the course that they present.

18 - Can they informally talk to their mentor whenever they want?

Matt: definitely, and that's what happens

Tina: it's not like a regular course, it's quite different.

19 - Is student engagement part of the goals of your program?

Matt: pretty much the whole thing is student engagement. It just wouldn't work if it was based on readings. The expectation is that it is driven by their own motivation to solve the problems. And they're building those skills every week.

20 - Is there a kind of follow-up at the end of the program?

Tina: yes there is. Students are made aware that there is an opportunity to move faster since we consider this a pre-accelerator course. So they're informed about a lot of accelerator options around Adelaide and one of them is the think lab. And they are invited to participate in events as Alumnis so we keep them informed about what's going on with the eChallenge and we continue to network with them as well. And the other thing to know I think is that it's also a competition so we do follow up with students in terms of one of the prizes is a think lab residency so we maintain contact with that students and track them for the next few months. But all those students have benefit from consultancy so we do follow up with that as well.

Matt: network is pretty strong in the sense that people who go through the eChallenge generally you see them a lot around the think lab or at particular event so there's a pretty strong...we do form a bond and a particular connection to the program and key staff and involved in the program as well.

There 's also success story that go on to join accelerators. Here in Adelaide as well as interstate. There's kind of an alumni companies as well as those that have some experiences in entrepreneurship.

21 - You said that the majority of participants are students, right?

Tina: yeah about $\frac{3}{4}$ are students.

22 - Do students from every kind of area participate?

Tina: absolutely from across the university, so there's undergraduate, post-graduate, and across different faculties. So computer science, arts, engineering, anything at all, economics, medicine.

23 - Do the majority of them come from specific faculties?

Engineering is pretty strong and computer science, but the whole point often is good to have a mix of people. Sometimes there are the hardest teams too because there's more conflict but these are also the teams that come away with better ideas. People are seeking each other much, people studying computer programming might come along looking for marketing students because they know they're lacking those sense of skills.

24 - How does the team creation work?

Matt: it's totally organic, we don't step in. we put them in a room and let them talk, we give them a reason to talk, to speak to each other and they form connections.

It's the third week they set in teams. So the first two weeks they work on their own in the workshops. We set a lot of time for them to interact and talk to other people.

Tina: but they've got two weeks to actually form a team.

Matt: that's the hardest thing of the course and probably the most abstract cause you don't already know how many teams you've got until week three and then they start to show up.

Tina: it's very rare that people don't find a team though.

25 - How many people participated in the last eChallenge?

Tina: this year we had at least 230. We also asked high schools to participate in this as well. So we had undergraduate, postgraduate and high school students as well as all the community people.

Matt: The high schools had their own separate lessons, they do participate in all the lectures but they also have an extra tutorial.

26 - How many people from the community did participate?

Tina: about 1/3 of that

27 - Is there a way for you to measure if participants have improved their skills?

Matt: I think it goes back to the mindset. If you measure the outcomes of the course as successful ventures. What we try to instill in them is a focus on trying to go out and do stuff. It happens sometimes that some of them after a few years start a venture and they come back and say that it helped and that it had a big impression on them. It's hard to say "we failed in that case or we succeeded in that case". The things that we measure in terms of progresses is whether they're doing a good job on that, ultimately the performance in the pitch. How they're doing that is part of their performance. And the companies that actually do get formed, great for us and really great to see because you see them from the earliest stages and successful stories obviously help everyone. But we really try not to focus on that because it's more important for everyone to try.

28 - I don't mean that you need to assess all the participants but I am wondering if there's a way for you to measure if what you're doing creates value or not.

Matt: there's company that get formed from the eChallenge that wouldn't exist if not for the eChallenge and there's some people that may just expect to get jobs that now at some point they create their own business.

Tina: we get that through both formal and informal feedback. So we do send out the feedback request but we also have a lot of people who volunteer that information to us.

29 - Except for entrepreneurial mindset are there other mindsets you want the participants to gain?

Matt: I don't know if you call it a mindset but the idea that you have to go out and engage with the world. You have to go out and get feedback on your idea from real world people and not just sit in a room and set a plan that hasn't been tested anyway. So the importance of going out and doing things and showing what you've done, particularly respect to the pitches, by the end of the pitches there's an expectations that the good teams will build a prototype. But

that's the mindset, to go out and do stuff, not necessarily just think about it at some point in the future. But also other things like creativity, design thinking, teamwork (they're working in teams from the early stages through the end). So managing that process, they're getting experience in working with other people in a very close environment. Merging opinion, all that kind of stuff.

30 - Do you follow the design thinking method?

Tina: there is some element of it but it's not the focus of the course. We will run a session on that, but it's just one element of the course.

Matt: Particularly the early stages like the problem formation is a big part of how we describe, looking for ideas. We try to instill in them the idea that they've got to go out and solve problems with people.

31 - So there's design thinking, business model canvas, is there other methods?

Matt: we create our template for students. Business model canvas we don't use that too much apart from the early stages as a quick way to get a summary of their business. But then we have a pre-pitch which is along with all the entry criteria of accelerators. This is what the standard process of pitches requires. All of those have particular things that we cover.

32 - Are there other well-known methods like design thinking that you use?

Matt: I don't use the term lean startup methodology. Clearly that is very important to us, in respect to the process of feedback from customers, which is implicit in the methodology.

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