Chapter 1
The Research Hypothesis

Abstract This chapter demonstrates that for the effectiveness of entrepreneurship to be realised, the teachers must model initiative and be entrepreneurial themselves, so their students can acquire this skill. It starts by outlining A New Skills Agenda, with the European Commission launching a revision of the key competences with a special focus on to the promotion of entrepreneurial and innovation-oriented mindset. There is currently a need for a broader view of entrepreneurship beyond business creation. A sense of initiative and entrepreneurship represents a European key competence. It is part of a mindset for turning ideas into action which is transferrable to many contexts as well as being a lifelong learning perspective. Given the polysemy of entrepreneurship, the chapter defines the terms closely related to it: entrepreneurial education, entrepreneurship education, enterprise education, and a sense of initiative and entrepreneurship. Although entrepreneurship can be learned, research about how teachers should be trained and how they can teach in an entrepreneurial way is an underdeveloped area. Among the learning theories used in research to support entrepreneurial education, the theory of experiential learning has been the most extensively used. However, expansive learning is a learning theory of innovation and collective change of practices that is most suitable for entrepreneurial education. The Change Laboratory is a type of formative intervention useful to promote cycles of expansive learning, and it was challenged in the context of an Italian secondary school with a course in surveying that had been suffering a dramatic loss of enrolments after 2008. This study explores the extent with which a Change Laboratory as inservice training can be useful to promote a sense of initiative and entrepreneurship in the teaching staff.

Keywords Entrepreneurial education · Sense of initiative and entrepreneurship Research hypothesys · Change Laboratory · A New Skills Agenda

The first section shows the European policy agenda with a renewed interest in entrepreneurial education. Within the policy paper *A New Skills Agenda*, the European Commission launched a revision of key competences with a special focus on to the promotion of entrepreneurial and innovation-oriented mindset. While psychological research has failed to find specific personality traits characterising the

individual entrepreneur, the literature suggests that entrepreneurship is a skill that can be learned. Research in entrepreneurial education has not yet shown which didactics are most effective with the associated learning outcomes. Beyond didactics, in entrepreneurial education it is important that teachers act as role models to educate their students to have a sense of initiative and entrepreneurship. However, teacher training in entrepreneurial education—as well as how to train teacher to teach entrepreneurship in an entrepreneurial way—is an underdeveloped topic in research.

The second section shows the debate around the terminology and the concept of entrepreneurship itself. A common agreement on the terminology is absent, and the risk of misunderstanding and confusion is substantial. This book will use: (1) entrepreneurial education as general unifying term; (2) entrepreneurship education as functional view of entrepreneurship, that is venture creation; (3) enterprise education as broad educational view, a mindset to help turn ideas into action in many contexts and in a lifelong learning perspective; (4) a sense of initiative and entrepreneurship is the outcome for entrepreneurial education.

The third section explains why a new theory of learning such as expansive learning is necessary to underpin entrepreneurship. While experiential learning has been extensively used in entrepreneurial education, there are issues with its application, for example learning is considered a process internal to the individual, and it is not clear how the four phases follow each other. By way of contrast, expansive learning is a theory of innovation and collective change of practices that is more suitable to support entrepreneurial education. It focuses on communities as learners, transformation and creation of culture, horizontal movement and hybridisation and the formation of theoretical concepts. The Change Laboratory is a type of formative intervention useful to promote cycles of expansive learning, thus change and innovation. Its results can be evaluated against the development and implementation of new ideas and concepts and the development of the agency of its participants.

The third section also describes the context of the research—an Italian technical school—and why a Change Laboratory was needed. The course in surveying had suffered from a dramatic fall of enrolments for 10 years, with the reduction of the classes from four to one. The teachers did not know what could be done to revitalise the course, but knew that a collective effort would be necessary. The research questions explore the extent to which a Change Laboratory intervention as in-service training can be useful to promote a sense of initiative and entrepreneurship in the teaching staff.

1.1 A New Skills Agenda: A Policy View on Entrepreneurship

Skills, a term used to indicate what an individual can do, understand and know, are a path to prosperity and employability (European Commission, 2016). In a global and fast-changing economy, it is the skills which determine the ability to drive innova-

tion and competitiveness. Not only are the skills key for investments, but they also contribute to the virtuous cycle of growth and job creation. Yet there is the danger that vast parts of the European population are left behind and marginalised by the digital revolution and globalisation, thus threatening social cohesion. The European situation calls for help: 70 million EU citizens have limited writing and reading skills, and even more individuals lack basic numeracy and digital skills, putting these individuals at risk of joblessness, social exclusion and poverty. More than half of 12 million long-term unemployed individuals can be regarded as poorly skilled. Skills mismatches and ability gaps are also evident. While many individuals have jobs that do match their qualifications and skills, 40% of European employers find it difficult to find the skilled people they are looking for (European Commission, 2016). Less than a third of the European citizens have a university degree against 40% of the USA and 50% of Japan (European Commission, 2010). Too few individuals have the entrepreneurial skills and mindset necessary to start a business. Dealing with these skills challenges calls for important reforms and policy efforts in education and training.

A New Skills Agenda is one of the most significant work programmes at the European Commission. It focuses on three areas (European Commission, 2016): (1) improving the relevance and quality of skills training; (2) making qualifications and skills more comparable and visible; (3) advancing knowledge about skills and intelligence about what level constitutes competence, to enhance career choices. The acquisition of skills is a lifelong process which takes place in formal and informal environments starting when individuals are very young. Beyond the technical and specific skill set, employers are increasingly looking for transversal skills like the capacity to work in teams, solve problems and thinking creatively. The same skills, which are useful when considering starting a business, are often neglected in school curricula and are seldom evaluated formally in member states. To help more individuals to obtain better key competences, the European Commission in 2017 will launch a revision of the key competences framework.

The European Framework for key competencies represents the political agreement on what a learner should able to know and do at the end of compulsory education (van Woensel, 2008). Its main objectives are (European Commission, 2007): (a) identifying and defining a set of key competences useful for active citizenship, personal fulfilment, employability and social cohesion in a knowledge society; (b) supporting the member states and ensure that, by the end of compulsory education, learners have achieved a level of mastery over key competencies helping them in the progression for further learning and working life in a lifelong learning perspective; and (c) providing tools for policy makers, employers and education providers; and (d) to present a framework for further action at the European level.

Competence is defined as a combination of knowledge, skills and attitudes that are relevant to the context. The Reference Framework establishes eight key competences (European Commission, 2007): (1) communication in the mother tongue; (2) communication in foreign languages; (3) mathematical competence and basic competences in science and technology; (4) digital competence; (5) learning to learn; (6) social and civic competences; (7) sense of initiative and entrepreneurship; (8) cul-

tural awareness and expression. These key competences are all relevant since each contributes to personal fulfilment in a knowledge society. Many of them interlock, overlap and support each other. Within the *A New Skills Agenda*, the European Commission (2016) has launched a revision of key competences with a special focus on to the promotion of entrepreneurial and innovation-oriented mindset, including the encouragement of concrete entrepreneurial experiences.

One of the most important changes in the transition from the twentieth to the twenty-first century has been the emergence of the knowledge economy (OECD, 2010) with a returned centrality of the small and medium enterprises (SMEs). New companies and SMEs are the most aggressive agents of innovation and change in the economy, since they introduce new products and services, more effective ways of working, but they also represent the major source of new jobs. Compared to large companies, SMEs have become key players for innovation since they can better recognise and exploit not only the opportunities coming from market, but also the technological and competitive changes. These changes can all be considered as part of the transformation that has occurred from managed to entrepreneurial societies. The managed society enjoyed mass production and stable employments in big companies, while the government—in partnership with employers and unions—would play a major role in regulating society and economy. Such contracts comprised a controlled labour market and a robust welfare state. The decreased influence of unions and large firms, the lowered ability of governments to raise taxes at times of fast-moving capitals, and an enhanced turbulence of the labour market culminated in the withdrawal of the welfare state.

The entrepreneurial society rewards a proactive search for opportunities, a propensity for creative adaptation, and a drive to turn ideas into action (Bahri & Haftendorn, 2006). In the near future, most job opportunities will come from the growth of new businesses, and young individuals will be asked to generate their employment opportunities. Inside companies, workers will have to be able to take responsibility and decisions, carry out tasks autonomously, act creatively and flexibly, and to constantly update their competencies. Beyond business, entrepreneurship will be pivotal for communities to solve the problems that the globalisation has brought.

Internationally, North America plays a leading role in entrepreneurship education and in high-growth enterprises (Volkmann et al., 2009), and entrepreneurship is considered the main creator of economic growth (Draycott & Rae, 2011). The huge economic contributions of companies such as Amazon, Google, Microsoft are unquestionable. Compared to other countries, America enjoys one of the most entrepreneurial friendly cultures and environments, as well as the longest tradition in entrepreneurship education, the main goal being implementing and commercialising research, innovation or knowledge linked to generation of income (Volkmann et al., 2009). The definition of entrepreneurship aligns with its role: "we define entrepreneurship education as developing the mindset, skill set, and practice necessary for starting new ventures" (Neck & Corbett, 2018, p. 10). In China entrepreneurship education is still in its infancy, but progresses are rapidly being made, with more and more courses at the university level.

In Europe, the emphasis of entrepreneurship education lies on fostering entrepreneurial capabilities and mindset, and on recognising the social importance of entrepreneurial activity. Entrepreneurship has been a top priority since the Lisbon agenda in 2000. New enterprises, especially SMEs, are thought to represent the backbone of Europe and the primary source of new jobs. To restore jobs and growth in Europe after the financial crisis, more entrepreneurs would be necessary. While in 2010 45% of European citizens were keen on becoming self-employed, this figure plummeted to 37% in 2012 against 56% of China and 51% of USA (European Commission, 2013). In Europe 2020 three out of seven flagships for a smart, inclusive and sustainable growth are specifically dedicated to entrepreneurship (OECD & European Commission, 2013). In compulsory education a sense of initiative and entrepreneurship should be taught across the curriculum both horizontally and vertically, to provide advancement throughout the education levels (European Commission, EACEA, & Eurydice, 2016).

While psychological research that sought to find common personality traits which characterise the individual entrepreneur has been heavily criticised (Autio, Kenney, Mustar, Siegel, & Wright, 2014; Kyrö, 2006), in the literature there is no doubt that entrepreneurship can be learnt (Valerio, Parton, & Robb, 2014). Research has, therefore, moved towards the pedagogy of entrepreneurship (Kyrö, 2006), with questions such as how humans learn to become entrepreneurial, how they learn creativity, learn to recognise opportunities and combine resources and opportunities in new ways, eventually create new ventures.

Research in entrepreneurial education has opposed traditional didactics (including regular lectures) against innovative methods (which are more based on action) often summarised as passive and active methods (Mwasalwiba, 2010). While traditional didactics considers the student a passive receiver and focuses on content and compartmentalised subjects, active didactics feature interdisciplinarity, collaboration and project work, and see the student as an active part of the learning process (Lackeus, 2015). For Komarkova, Gagliardi, Conrads, and Collado (2015) collaborative learning and learning by doing are the two most suitable didactics for entrepreneurship education with students' self-centred learning becoming more important. Teaching methods should also develop attitudes such as creativity, inclination to take calculated risks and manage uncertain situations with an increasing importance of learning from failure and making connections with the outside world. However, research in entrepreneurial education has not yet shown convincingly which didactics are most effective and the corresponding expected learning outcomes (Valerio et al., 2014).

Beyond active didactics, in entrepreneurial education it is of utmost importance that teachers act as role models to educate their students to have a sense of initiative and entrepreneurship (European Commission, 2014; Heinonen & Poikkijoki, 2006; Peltonen, 2015). For the QAA (2018), teachers inspire and motivate their learners to advance in enterprising and entrepreneurial behaviours, attributes and competencies. Similarly, Bahri and Haftendorn (2006) suggest that teachers should be trained to display same of the entrepreneurs' features by being enterprising in the way they solve problems or overcome resource constraints. Also Penaluna, Penaluna, Usei, and Griffiths (2015) comment that teaching staff should be innovative and entrepreneurial

in their in the way they design and deliver courses, thus acting as role models for what this behaviour looks like. However, the role of entrepreneurial teachers and the way they should be trained has been the subject of only a small amount of research (Morselli, 2017; Peltonen, 2015; Ruskovaara & Pihkala, 2013).

1.2 The Debated Concept of Entrepreneurship

The policy literature considers the positive side of entrepreneurship without questioning the concept and how it is actually enacted and thought by educators. Jones and Spicer (2009) suggested a critical perspective to question the concept, which until recently has been mostly studied as market-based and individualistic phenomenon. As it is defined nowadays, almost anybody could be considered an entrepreneur. In doing so the entrepreneur becomes a 'sublime object', a rather attractive but ultimately empty figure. Moreover, it should be considered that up to 90% of the start-ups fail die within the first 5 years of life. Only recently scholars have started investigating the 'dark side' of entrepreneurship—failure—by studying the two sides of it: fiascos and frauds (Olaison & Meier Sørensen, 2014). For Tedmanson, Essers, Dey, and Verduyn (2015), entrepreneurship can be studied as two-sided edge phenomenon encompassing oppression and emancipation that stand in a dialectic relationship.

After having 'unmasked' the entrepreneur Jones and Spicer (2009) reconstruct his/her essence. Firstly, the role of the state must be considered, as it distinguishes what is enterprising from what is not (Anderson & Smith, 2007). This is because ethics play a key role in the phenomenon. Second, entrepreneurship is not based on sole individuals, and as such the myth of the lemonade kiosk is misleading. Entrepreneurship entails working with others, and the creation of the potential for others to innovate rather than claiming innovation for themselves. Jones and Spicer (2009) conclude that characterising feature of entrepreneurship is about creating the enterprising potential for the others.

A group of scholars in the Nordic countries proposed the concept of pedagogical entrepreneurship to overcome the resistance of teachers towards the economic and business sides of entrepreneurship (Dal, Elo, Leffler, Svedberg, & Westerberg, 2016; Haara & Jenssen, 2016; Peltonen, 2015; Riese, 2010; Svedberg, 2010). The tensions between a narrow concept and a broad concept of entrepreneurship, which in the Nordic countries is seen as internal versus external entrepreneurship, have resulted in the growth of a wide array of approaches (Haara & Jenssen, 2016). The literature review on pedagogical entrepreneurship suggests bewilderment among educators, who find it difficult to define the concept in light of their educational practices (Dal et al., 2016). Many teachers perceive it just as another buzzword rather than an effective learning approach. In the literature, there is conflict and uncertainty about the framing of the concept, which presents fragmented and with no common starting point, except common referral to supranational policies. There are four challenges that characterise research on pedagogical entrepreneurship (Haara, Jenssen, Fossøy, & Ødegård, 2016). Firstly, coherence is missing between the aims of policy makers

and actual implementation in schools. Second, the teachers stress the need for coordination among teaching staff to implement entrepreneurship, especially as it is a concept that challenges several older educational doctrines. The third challenge is teachers' insufficient knowledge about entrepreneurship. Fourth, the tensions between the programme that students are offered within the school and the increased attention on the activities 'out in the world' (Seikkula-Leino, Satuvuori, Ruskovaara, Hannula, & McCracken, 2015). For Haara and Jenssen (2016), pedagogical entrepreneurship should move beyond business creation towards human development with an emphasis on authentic activities, action and self-regulation. In other words, students should not learn *about* entrepreneurship but *through* entrepreneurship.

As stated above, finding a common agreement on the terminology is difficult, and therefore, the risk of misunderstanding and confusion is substantial. In research, entrepreneurial, entrepreneurship and enterprise education are often used without a clear rationale (Draycott & Rae, 2011; Mwasalwiba, 2010). Any discussion should, therefore, begin with a clarification of the terms used (Lackeus, 2015). In research, entrepreneurship education is often used as generic term to embed the other similar processes seeking to influence people's intentions, values, attitudes and behaviours towards entrepreneurship (Mwasalwiba, 2010). To avoid misunderstandings, this book will use entrepreneurial education as the unifying term embedding the other similar processes as suggested by Erkkilä (2000) and later by Lackeus (2015), and distinguish between entrepreneurship and enterprise education as from the UK Quality Assurance Agency. Enterprise education is defined as "the process of developing students in a manner that provides them with an enhanced capacity to generate ideas, and the behaviours, attributes, and competencies to make them happen" (QAA, 2018, p. 9). Instead, entrepreneurship education builds "upon the enterprising competencies of students who are capable of identifying opportunities and developing ventures, through becoming self-employed, setting up new businesses or developing and growing part of an existing venture" (p. 9). Table 1.1 draws from Jones and Iredale (2010) and displays the main differences between entrepreneurship education and enterprise education.

For Draycott and Rae (2011), enterprise education can be considered as a way to bridge the long-standing gap between the world of work of the real economy and education. It advocates liberal ideals with personal freedom and citizenship at the centre, since the individual has freedom to change, develop, grow and adapt to contexts, circumstances and contexts (Jones & Iredale, 2010). It promotes freedom, as it argues for the right to start own business, and citizenship, with an active pedagogical approach and a democratic learning environment. Draycott, Rae, and Vause (2011) suggest that an enterprising pedagogy should be flexible, traceable and with the students progressively taking control over their learning. One of the objectives of enterprise education is to contribute breaking the culture and the cycle of poverty to trigger communitarian and socio-economic regeneration (Jones & Iredale, 2014). However, entrepreneurship and enterprise education share value creation as a common goal; this can be either social, cultural or financial (Lackeus, 2015). The creation of value happens extensively in society and is closely linked with an individuals' happiness: any individual may help others make a living, but their self-worth also results

Table 1.1 Comparison between UK entrepreneurship education and enterprise education

Focus of entrepreneurship	Focus of enterprise
How to start a business including the key processes of business start-up	An active learning enterprise education pedagogy
How to plan and launch a new business venture	Knowledge needed to operate effectively as a consumer, citizen, employee or self-employed individual in a fast-changing market economy
How to grow and manage a business	The development of personal attributes, behaviours and skills to be used in numerous contexts
Enhancing the necessary skills and behaviours needed to run a business	The person as an enterprising individual—in the workplace, in the community, at home, or as an entrepreneur
The deployment of entrepreneurial skills and knowledge in a business context	The use of enterprising attributes, skills and behaviours throughout the whole life course
Imminent use of the knowledge and skills needed to start a business; and self-employment	How a business, particularly a small business works

Source Jones and Iredale (2010, pp. 10–11)

from a feeling of satisfaction due to participation, engagement and meaningfulness in relation to their life as a whole.

In contrast to America where entrepreneurship concentrates on new venture creation (Neck & Corbett, 2018), in Europe a sense of initiative and entrepreneurship is a key competence for lifelong learning. Very similarly with the QAA's definition of enterprise education, it concerns the capacity to turn ideas into actions (European Commission, 2007).

Coherently with the definitions above, this book will use: (1) entrepreneurial education as general unifying term, (2) entrepreneurship education as a functional view of entrepreneurship, that is with an eye to venture creation, (3) enterprise education as broad educational view, a mindset for proactive and self-reliant citizens who are capable of turning ideas into action in many contexts and in a lifelong learning perspective; (4) a sense of initiative and entrepreneurship is the outcome for entrepreneurial education.

1.3 Why the Theory of Expansive Learning for Entrepreneurial Education?

In entrepreneurial education, many researchers have speculated about the learning processes that support entrepreneurship. For Man (2006), the ability to learn is key to developing an entrepreneurship competence. Minniti and Bygrave (2001) observed that learning is a key feature of entrepreneurship: "a theory of entrepreneurship

requires a theory of learning" (p. 1). Of the 16 contemporary theories of adult learning identified by Illeris (2009), only few have been used in the literature to support entrepreneurship education. According to Wang and Chugh (2014), the most used learning theories in entrepreneurial education are Lave and Wenger's (1991) situated learning, Wenger's (1998) community of practices, Kolb's (1984) experiential learning and Mezirow's (1997) transformative learning. For example, Mezirow's (1997) theory is used by Cope (2005) to emphasise how major challenges are imbued with emotions. Cope (2005) also applied the theory of situated learning (Lave & Wenger, 1991) to describe the contextual dimension of entrepreneurial learning and to study entrepreneurs as practitioners operating within multiple communities of practice.

Since entrepreneurship is intrinsically an experiential phenomenon, it is not surprising that Kolb's theory of experiential learning has been the most used to describe the entrepreneurial learning process. Of 75 articles reviewed by Wang and Chug (2014), 32 refer to experiential learning in a broader sense. Of these 32 articles, 14 refer specifically to the theory of Kolb (1984). When used broadly, experiential learning deals with learning by doing and by participating, learning from the others' experience, learning from favourable or adverse experiences and learning from the past (Wang & Chug, 2014). When used as indicated by Kolb (1984), experiential learning is considered a cyclic process composed of four dialectically related stages of reflection and action: concrete experience; reflective observation; abstract conceptualisation; and active experimentation (Wang & Chug, 2014). However, there are issues with Kolb's theory (Morselli, Costa, & Margiotta, 2014), as it was originally developed to be a classification to support the Learning Style Inventory (Engeström & Sannino, 2012), and its theoretical foundations are not solid (Miettinen, 2000). Firstly, it is unclear why the four phases follow one another in the recommended sequence (Engestrom & Sannino, 2012). Secondly, Kolb considers learning as an internal process. As a result of this assumption, his theory of experiential learning does not consider the social dimension of the learning process. For Gosen and Washbush (2004), during the last twenty years experiential learning has been used as a kind of "postmodern fantasy", that is "a Rousseauist invitation for students to return to nature and their genuine cleverness" (in Vozikis, Solomon, Winkel, Rideout, & Gray, 2013, p. 371). Similarly, Wenger's (1998) theory of the community of practices does not back adequately entrepreneurial learning, since it conceives learning as "one-way movement from incompetence to competence, with little serious analysis devoted to horizontal movement and hybridisation" (Engeström & Sannino, 2010, p. 2).

Many authors are, however, dissatisfied with the present learning theories because they do not offer an appropriate framework to underpin entrepreneurial education (Deakins & Wyper, 2010). By contrast, a suitable theory can be expansive learning, another of the 16 contemporary theories of adult learning identified by Illeris (2009). Within Cultural Historical Activity Theory (CHAT), expansive learning focuses on "communities as learners, on transformation and creation of culture, on horizontal movement and hybridisation, and on the formation of theoretical concepts" (Engestrom & Sannino, 2010, p. 2). Expansive learning is a theory of innovation and collective change of practices where "learners learn something that is not yet there"

(p. 2). During expansive transformations the contradictions of an activity system become aggravated, and some members start questioning and diverging from the established norms. As more practitioners join in, they engage in a collective design effort to conceive a new model of their organisation, and they move to implement the new model while improving and adjusting it. Ideally, a cycle of expansive learning is composed by learning actions which follow one other logically (Engeström, 2015): to question current practices, to analyse the situation with 'why' questions and explanations, to model the new explanatory relationship, to examine the new model and experiment it, to implement the model in practice, to reflect on the model and evaluate the expansive learning process, to consolidate the model into a stabilised practice and generalise it.

Based on this cycle, Engestrom (1994) describes learning as having three features. Firstly, learning is a meaningful construction and a creative use of cognitive tools; the tools can be external instruments or internal mental models. Secondly, learning is dialogue, participation and collaboration in communities of practice. Thirdly, learning can take the shape of criticism of the already existing practices, and this can spur innovation with creation of new ideas, artefacts and behaviours. Put in this way, there is a connection between the theory of expansive learning and the theories which study entrepreneurship as a broad phenomenon well beyond business creation. An example is Kyrö's (2006) cultural approach, which connects entrepreneurship to democracy, liberalism and economic development. Entrepreneurship is valuable during transitions in human history, where ideas of freedom and the need for new practices become vital for the society. In these periods, the role of entrepreneurship is to help dismantle and adapt the old institutions and systems so they become more flexible, and to create new practices.

Moreover, some authors utilised expansive learning to explain entrepreneurship as a process. Kauppinen and Juho (2012), for example, utilised expansive learning as a conceptual framework to show how entrepreneurial interactions between SMEs build international business opportunities. Mainela, Puhakka, and Servais (2015) conceptualised international opportunities in entrepreneurship as boundary crossing that is expansive transformations between related activity systems. In a Change Laboratory intervention, Barma, Laferrière, Lemieux, Massé-Morneau and Vincent (2017) documented the expansive learning actions that led a collectiveness to a successful entrepreneurial experience. However, expansive learning can be used beyond explanative purposes, since it is useful to bring about change and innovation, and in doing so it becomes a suitable learning theory to support entrepreneurial education (Morselli et al., 2014). As Chap. 3 will explain, within CHAT framework formative interventions have been designed to trigger cycles of expansive learning (Sannino, 2011). There are significant differences between traditional training courses called 'linear interventions' and 'formative interventions' developed within the Vygotskian legacy (Engestrom, 2011; Yrjö Engestrom, Sannino, & Virkkunen, 2014). In linear interventions, the structure and objective of the course are known ahead. By contrast, in formative interventions the participants deal with a contradictory problem with no apparent solution. In linear interventions, the researcher aims to gain control over the variables and the situation, whereas in formative interventions he or she aims to

provoke and sustain an expansive learning process of transformation which is guided and owned by the learners.

The Change Laboratory is a type of formative intervention developed from the 1990s at the Helsinki University to promote deep and intensive transformations as well as incremental improvement (Engestrom, Virkkunen, Helle, Pihlaja, & Poikela, 1996). During Change Laboratory workshops a group of practitioners met for a couple of hours on a weekly basis for roughly 10 weeks as well as attending follow-up workshops for an intensive analysis of their activity system in a highly mediated environment. The instruments of the Change Laboratory were devised to analyse the relationships within and between activities, promote theoretical thinking and design new systemic structures (Virkkunen & Ahonen, 2011). The main tool is a 3×3 set of writing surfaces to display work activities used according to a horizontal and a vertical dimension, as Chap. 3 will explain. The results of this Change Laboratory can be evaluated in the light of: a) the process of development and implementation of new ideas and concepts; b) the development of the participants' agency from individual to collective actions, and from resistance and criticising to commitment and actions to change the organisation (Sannino, Engestrom, & Lemos, 2016).

1.4 The Research Hypothesis

There are, however, important preconditions for setting a Change Laboratory, the main one being, an activity system has to face a major change (Sannino, Engestrom, & Lahikainen, 2016). This means that a formative intervention would make no sense if the practitioners—teachers in this case—would not face a problem of value for them that could only be tacked with a collective effort. The research described in this study was carried out in a secondary vocational institute located in the Lombardy region in Italy. The school has three courses: graphics and communication, surveying, and logistics, for an overall number of 1000 students. The school was founded in the early 70s, and at that point in time it was exclusively structured to train future building surveyors. With the educational reform of 2008, the school introduced the other two courses, but while logistics has not yet taken over—it has been difficult some years to make one Grade 1 class, the course in graphics and communication had been growing year after year, moving from one to four Grade 1 classes. Unfortunately, such success had been counterbalanced by the drop of enrolments in surveying, who had moved from four Grade 1 classes in 2007 to one Grade 1 class in 2016.

As it will be described in Chap. 4, there have been historical reasons that caused the drop of new enrolments in surveying. Some of these were external to the school's dynamics, for example the crisis of the estate sector that led the profession of surveyor being a less attractive profession in the mind of the public, and the partial tertiarisation of the surveying profession.

This situation had created on the one hand a condition of helplessness of the surveying teachers, who did not know how to contain the loss of enrolments. On the other hand, the situation created a culture of blame, where external circumstances

were labelled as the root cause for enrolment issues which cultivated an atmosphere of helplessness. Additionally, the school director was blaming the teachers for not having updated their study programme and didactics because of the school reform of 2008, with tedious lectures and unnecessary structural calculations making the surveying course overly ambitious and too difficult. In turn, the teachers blamed the school director for not having helped to contain the loss of Grade 1 surveying students; it was as if with her choices she had privileged the other school courses over the years. The teachers resisted her proposals and limited their participation in school extra-curricular activities and governance. Surveying teachers also blamed each other for not cooperating and admitted that such lack of collegiality impoverished the quality of their course. They also blamed the turnover of workshop assistants, the lack of workshops and of up-to-date equipment. Moreover, they blamed their colleagues in graphics and communication for taking all the enrolments with an unfair competition. Many surveying teachers considered the course in graphics and communication as a simplified version of surveying. As with surveying it was about drawing, yet it also dealt with activities such Internet, Facebook and Photoshop that appealed to the students. Unlike surveying it did not have complicated structural calculations.

This condition of blaming and helplessness created the conditions and need to set up a Change Laboratory. The teachers in surveying did not know what could be done to revitalise the course, but knew that a collective effort would have been necessary to change deeply the surveying course. At the same time, they knew that an answer for their problem could not come from the school director and they had to take the lead of the situation. When the researcher proposed the surveying teaching staff (both teachers and workshop assistants) to engage in Change Laboratory workshops they were happy to enrol. The goal was to find and implement shared solutions to revitalise the enrolments in surveying. Concerning the school director, she saw a Change Laboratory intervention as an opportunity both to promote the school outside (thus improving enrolments) and encourage concrete change within the school. She suggested that the best use of it would have been with the surveying course. Moreover, in order to let the teaching staff discuss freely and avoid resistance to her proposals, she participated in the workshops only at a later stage. In other words, she only joined in when the teachers had moved from the expansive learning actions of criticising and analysing the situation to modelling a new solution and committing for change.

A first expected impact of the Change Laboratory is to increase the number of Grade 1 students' enrolments in surveying. Beyond that, this research *explores the extent to which a Change Laboratory intervention as in-service training can be useful for promoting a sense of initiative and entrepreneurship among the teaching staff*. The research question is:

> To what extent can a Change Laboratory help the teaching staff turn ideas into actions? (RQ1).

The expression "to turn ideas into action" represents the definition of a sense of initiative and entrepreneurship as from the European Commission (2007). It is maintained that by showing a sense of initiative and entrepreneurship in the school, the teaching staff will act as role model for their students and thus teaching entrepreneur-

ship by showing a sense of initiative and entrepreneurship as recently suggested by the literature (European Commission, 2014; Heinonen & Poikkijoki, 2006; Penaluna et al., 2015; Ruskovaara & Pihkala, 2015).

In conclusion, while many authors think that entrepreneurship is about business creation, this chapter has shown an enlarged definition that encompasses a sense of initiative and entrepreneurship, where everybody should be entrepreneurial at any stage of life and in any context. Additionally, teachers in schools could be entrepreneurial for themselves and for their students. The historical conditions and accumulated tensions that had led the course in surveying almost disappear had created a favourable setting to carry out a Change Laboratory, with the teachers deeply involved and ready to engage in a collective change effort to change their circumstances. Moreover, the workshops will permit the teacher to find their own meaning of entrepreneurship. In other words, rather than learning entrepreneurship with an "about" approach, the teachers will learn with a "through" approach to entrepreneurship. The next chapter returns to entrepreneurial education and its assessment. It will also explain useful concepts, including *about* and *through* approaches to entrepreneurship. The chapter shows three best practice examples of linear interventions for the delivery of entrepreneurial education, including the SIE questionnaire, which assists in evaluating the way teachers educate for a sense of initiative and entrepreneurship and can pave the way for a formative intervention.

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