



# Teaching the European key competence of the sense of initiative and entrepreneurship

## L'insegnamento della competenza chiave europea del senso d'iniziativa e d'imprenditorialità

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### ABSTRACT

This article tackles the issue of enterprising teachers and how they can educate for the key competence of the sense of initiative and entrepreneurship as a cross curricular subject. It analyses the literature on entrepreneurship and enterprise education, didactics, competence and key competences. The article defines five aspects critical to teaching the sense of initiative and entrepreneurship. These are expanded upon a questionnaire and administered as structured interviews with a group of Italian secondary teachers and workshop assistants. Results show how the interviewees make sense of and teach enterprise education according to their role and the subject they teach.

Il presente contributo affronta la questione dell'insegnante imprenditivo e come si possa educare per la competenza chiave del senso d'iniziativa e d'imprenditorialità come materia cross-curricolare. Il paper analizza la letteratura sull'imprenditorialità e l'imprenditività, la loro didattica, il concetto di competenza, e le competenze chiave per l'apprendimento permanente. Il contributo definisce cinque aspetti fondanti dell'insegnamento del senso d'iniziativa e d'imprenditorialità; questi sono sviluppati in un questionario e somministrati come interviste strutturate a un gruppo d'insegnanti e d'istruttori tecnico pratici di un istituto tecnico tecnologico situato in Lombardia. I risultati mostrano come gli insegnanti insegnano e significano l'imprenditività secondo il ruolo e la materia insegnata.

### KEYWORDS

Italy; Enterprise Education, Competence, Sense of Initiative and Entrepreneurship, Teacher Training, Key Competences.  
Imprenditività, Competenza, Senso d'Iniziativa e d'Imprenditorialità, Formazione Insegnanti, Competenze Chiave.

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Educators are recognizing the benefits of an enterprising approach to learning and teaching, and that learning for, about and through enterprise can motivate students and enhance their freedom of choice and participation (B. Jones & Iredale, 2014). However, research on entrepreneurship has largely privileged higher education rather than compulsory education (Draycott & Rae, 2011; Kyrö, 2015) and the field of entrepreneurship is highly fragmented and compartmentalized (Henry, Hill, & Leitch, 2005a): “The result of this is that each discipline views entrepreneurship from its own perspective without taking cognisance of approaches in other disciplines” (p. 99). Knowledge gained from research on education and entrepreneurship needs to be clearly and accurately combined (Fayolle, 2013). Lackeus (2015) suggests that in entrepreneurship education teaching methods differentiated from traditional teaching methods without taking into account the larger educational debate on what is good teaching. The teacher’s perspective has seldom been taken into consideration in entrepreneurship education: there is a lack of information on teachers’ enterprising practices, a lack of tools to support teacher training in entrepreneurship, and lack of results that connect the enterprising teaching methods with the expected results (Ruskovaara & Pihkala, 2013). Sarasvathy and Venkataraman (2011) argue that it is now time to extract the principles and techniques of entrepreneurship, and make them largely available as part of basic education. Eventually, enterprise education should move from being embedded in specialist curricula to mainstream courses whilst still maintaining its characterizing features (Draycott, Rae, & Vause, 2011).

Similarly to the challenges tackled by enterprise and entrepreneurship education, the literature on education has promoted concepts such as competence or key competences to help the individual thrive in a globalized, highly connected and fast changing society. The first part reviews the following studies: entrepreneurship and enterprise education, teaching for enterprise and entrepreneurship, the teaching action in education, competence, and key competences. The article argues that: 1) we are in the middle of a paradigmatic change between an old, economic and narrow view and a modern broad, educational view of entrepreneurship; 2) the literature on competence and entrepreneurship/enterprise education converge around a common theme: bringing school back into society; 3) enterprise education corresponds to a modern way to teach for the key European competence of the sense of initiative and entrepreneurship as a cross curricular subject, with a student-led approach, active didactics and assessment based on mixed methods. The second part defines the features of the enterprising teacher, and develops a questionnaire that is administered in the form of structured interviews with 21 teachers and technical assistants of an Italian technical upper secondary institute specializing in surveying and logistics.

## 1. Entrepreneurship and enterprise in education

In the literature, enterprise and entrepreneurship education are often confused (B. Jones & Iredale, 2010, 2014; Lackeus, 2015). At the European Commission the only term in use is entrepreneurship education, covering all the activities “that seek to prepare people to be responsible, enterprising individuals who have the skills, knowledge and attitudes needed to prepare them to achieve the goals they set for themselves to live a fulfilled life” (European Commission, 2015, p. 3). Half of all European countries use the European definition of entrepreneurship education in the broadest sense, encompassing active citizenship, entrepreneurial skills for life and work, and employability. Ten countries have their own definition; and the re-

maining European countries have no definition of entrepreneurship at the national level (European Commission, EACEA, & Euridyce, 2016). The UK has its own term in use, enterprise education, which is different from entrepreneurship education. The British Quality Assurance Agency (QAA, 2012) defines the former as the form of education providing an “enhanced capacity to generate ideas and to make them happen” (p. 2), while the latter gives graduates “the additional knowledge, attributes and capabilities required to apply these abilities in the context of setting up a new venture or business” (p. 2). Table 1 shows the main differences between enterprise and entrepreneurship education.

Education	Entrepreneurship	Enterprise
Primary focus	Enterprise creation, development, planning, included the start-up process	Competences useful in diverse contexts and to thrive in a fast changing market economy.
Context	Economic	Educational
Didactics	Standard, for example lecture	Active didactics centred on experience
Orientation	On the result	On the process
Underlying values	Libertarian	Liberal
Target	Corporations	SMEs and self-employment
Type of educational institutions involved	Tertiary faculties of management	Primary and secondary education
Orientation	Theory	Practice

**Table 1. Differences between entrepreneurship and enterprise education.**

Both entrepreneurship and enterprise count towards the entrepreneurial capability to work with effectiveness as an entrepreneur or in an entrepreneurial capacity (QAA, 2012), and share the common aim of value creation (Lackeus, 2015). They both help in coping and adapting to the economic and social challenges that individuals are facing, and in promoting opportunity creation, a more go-getting society and can-do culture; and in so doing they challenge established power and authority (B. Jones and Iredale, 2014). The main difference comes from the adopted pedagogy (B. Jones & Iredale, 2010). Entrepreneurship education concentrates on the techniques of opening a new business; it is taught in higher education business courses with lectures and business plans. By way of contrast, enterprise education is focused on the individuals’ competences and potential to adapt to change and act effectively as a citizen, either employed or self-employed in a changing market economy; it draws on active learning pedagogy, and can be taught at different school levels across a variety of subjects. It can be seen as a means to bring school and work together (Draycott & Rae, 2011).

Although the European Commission (2011) has recognized that the view of entrepreneurship has been broadened to go beyond business creation, introducing that term in educational contexts may prove to be difficult. A survey carried out in 2008-2009 in Italy showed secondary students’ limited interest in entrepreneurship (Testa & Frasccheri, 2015), and some stereotypes emerged: the entrepreneur is the manager of a large company, ruling out self-employment and small and medium enterprises. Most of the students believed that the basic ingredient for entrepreneurship is luck, and one “is born” entrepreneurial. Svedberg (2010) and Riese (2010) contend that schools are hostile towards entrepreneurship because they see its strong connection with the economy. Svedberg (2010) observed that teachers started defining entrepreneurship by stating what

it is not, and this is the best way to limit the concept. Kyrö (2015) notes that the critiques of educators towards entrepreneurship are paradoxical, since entrepreneurship does not follow, but trigger changes in current practices in economy and society. The concept of enterprise education is at its best when freed by economic and managerial features; it is better understood by educators in schools which do not realize why it is important to train their students to become entrepreneurs. In education it is important to differentiate between entrepreneurial and enterprising, the latter being a developable competence concerning innovative thinking and the ability to turn ideas into action (Baschiera & Tessaro, 2015).

## 2. Teaching for enterprise and entrepreneurship

Most scholars today agree that at least some aspects of entrepreneurship and enterprise can be enhanced and developed by means of education and training (Henry, Hill, & Leitch, 2005b). In regards to teaching, research has focused on higher education with outcomes such as the development of business plans (Draycott & Rae, 2011; B. Jones & Iredale, 2010, 2014). This has received criticism from scholars; C. Jones and Penaluna (2013), for example, provided compelling reasons why entrepreneurship education should move beyond business plans; the aim of entrepreneurship should, instead, be a “stepping-up” and not a “starting-up” (C. Jones & Matlay, 2011). The business start-up, “the mythical holy grail of entrepreneurship and enterprise education” (C. Jones, Matlay, & Maritz, 2012, p. 816) is only pursued by 10% of tertiary students at the best (C. Jones & Penaluna, 2013). In Italian secondary schools, say Testa and Fraschieri (2015) it is clear that before providing technical knowledge on how to write a business plan, we need to work on values, beliefs and attitudes.

For C. Jones et al. (2012) the most desirable future scenario in higher education is that entrepreneurship education becomes a transformative experience, capable of creating an entrepreneurial mindset, and this would be highly dependent on the institution delivering it. The heterogeneity of entrepreneurship education is a value (C. Jones & Matlay, 2011): there are in fact many types of entrepreneurship, the following being a non-exhaustive list (Komarkova, Gagliardi, Conrads, & Collado, 2015): social, eco, digital, inclusive, female, and intrapreneurship. Educators should prepare their students for many of these forms, and not just for the creation of business. In education it is important to consider the holistic dimensions of entrepreneurship as a dialogical relationship between the student, the educator, the community, the institution, and the educational process, the student being at the centre (C. Jones & Matlay 2011) with a learner-led process (Kyrö, 2014). Starting from the types of entrepreneurship found by Gibb (1999), Hytti and O’Gorman (2004) list three goals of entrepreneurship and enterprise education: developing a broader understanding of entrepreneurship and its role in society; learning to become entrepreneurial - meaning to take responsibility for one’s own life; and learning to be an entrepreneur – which means to start a business. Hytti and O’Gorman (2004) conclude that in the programs with a broader understandings of entrepreneurship, aiming at improving the students’ entrepreneurial skills, the key factor is embedding entrepreneurship across the curriculum.

For Taatila (2010), education should go beyond simply teaching facts to students and instead move towards enabling them to live in a real world and mould it. Traditional teaching methods turn the learner into a passive receiver, while the sense of initiative and entrepreneurship is best acquired through learner-led in-

quiry and discovery, allowing ideas to transform into actions (European Commission, 2011). In entrepreneurship education the teaching style encourages learning by doing, exchanging, experimenting with errors, mistakes considered as change for learning, taking risks, creative problem solving and interaction with the world outside school (European Commission, 2014). Peltonen (2015) found that a teacher's entrepreneurial competence is concerned with a holistic understanding and positive attitude towards entrepreneurship; he or she adopts modern learning pedagogies and teaches in an entrepreneurial way. However, half of all European countries have little to no guidelines on how to teach entrepreneurship (European Commission et al., 2016).

This article continues by showing interesting insights on the teaching action developed in pedagogy, and how this should inform enterprise education.

### 3. The teaching action

Damiano (1993) suggests that the action of teaching is connected to the Aristotelian concepts of *praxis* and *poiésis*. The *praxis* is a type of action oriented towards an ethical end; it has worth according to the values it witnesses and is inspired by. By way of contrast, *poiésis* is an action finalized to make a tangible product, and it has a value according to the result. The difference between the two types of action stems from the relationship with the end: while the practical action is an end in itself, an expression of the ethical values it is inspired by, the poetical action finds its end in the product it achieves. These action types can merge into human behaviour, and teaching should include both, the practical dimension being oriented towards the process, and referring to the human qualities of the teacher to witness a set of ethical values, and the poetical dimension being oriented towards the product, referring to the teacher's technical and professional qualities.

When this distinction between practical and poetical actions is applied to enterprise and entrepreneurship education, the former is a practical action oriented towards the process of becoming enterprising, while the latter is poetical, oriented towards a product such as business creation. Like any form of education, enterprise education emphasizes its educational worth as it is open ended. Since an educator cannot know how it will be useful during life, it concerns the individual in a lifelong and life wide perspective, considering the formal, non-formal and informal aspects of learning. By way of contrast, entrepreneurship points out its formative ends towards a clear objective, the creation of enterprise. Moreover, the distinction between poetical and practical forms of teaching action help to define enterprise education as something to be taught as a cross curricular subject: while the practical action would be connected to the values and mindset contained within enterprise education, the poetical action could be oriented towards the specific subject being taught.

In their work, teachers mediate between the cultural content to be transmitted and the learning subjects (Damiano, 1993). There are four types of mediators according to the distance between the cultural content to be transmitted and the subjects: 1) active mediators, aiming at reconstructing the reality within a school context (school visits, scientific experiments, observation of natural phenomena); 2) analogical mediators, transforming reality in simulated activities (dramatizations, role play, simulation games); 3) pictorial mediators; representing the reality through visual images (drawings, schemes, models, figures) ; 4) symbolic mediators, representing reality with abstract symbols (verbalization, codes, for-



mulas). Mediation has three functions: 1) making a simulated environment to protect the learning subjects from the adverse consequences and risks of direct experience; 2) simplifying the content, and 3) restructuring space and time. Simulation, simplification and restructuring make learning possible. A teacher (even in enterprise education) will therefore have to use a plurality of types of mediators according to the subject, school grade and context. Unfortunately, Italian secondary teachers tend to privilege pictorial and symbolic mediators over the iconic and active mediators (Castoldi, 2010). The risk is for the school to become self-referential and separated from the rest of the world, a phenomenon named by (Engestrom, 1991) as encapsulation of school learning.

It was Resnick (1987) who emphasized four important differences between school learning and work place learning. First, while school teaching calls for performance at the individual level, in the outer world most of the performances are socially shared. Secondly, while school demands mental activities with no supports, people on the outside use instruments and artefacts. Thirdly, the school privileges symbolic thinking, whilst outside the individual manipulates tools. Fourthly, whilst a school aims to teach general concepts, in the outer world, specific competences tied to the situation dominate.

The next section demonstrates how competence allows a departure from the encapsulation of knowledge in the school context.

#### 4. The concept of competence in education

According to (Illeris, 2011), the profound changes in the structure of society we have witnessed in recent years have brought two major developmental trends in education. Firstly, there has been the shift away from the belief that education and qualifications only belong to youth, since individuals must be prepared for frequent changes in jobs throughout their working life; this is why nowadays notions such as lifelong, life wide and life deep learning are extensively used in education. The second major developmental trend in education is a move away from terms such as qualification, skills and knowledge: while these terms still remain necessary, a new concept becomes necessary in order to emphasize that the same terms have to be permanently adapted, updated and organized to be effective in new contexts. This is competence and its development: it refers to what an individual can actually perform in practice, not what he or she has learnt, but can do with or through that learning (Illeris, 2009). Castoldi (2010) argues that competence belongs to the realm of to be, not to have.

Competence encompasses something essential for learning and education because it is related to an individual that is able to thrive in a fast changing globalized society (Illeris, 2011). This is a challenge for educational institutions which have to provide learners with competencies necessary to solve problems that are not known at the time of learning. For Castoldi (2010) there are three characterizing attributes for competence: 1) constructive, meaning the relational nature of knowing, a dialectical relationship between the subject and the object of knowing; 2) socio cultural, since knowing is always performed in a relational and cultural context; 3) situated, as knowing is anchored to specific contexts. Illeris (2014) notes that while much has been written on the meaning and assessment of competence, little has been written on how to develop it. When competence is applied to formal education contexts, performance is considered complex, holistic and local; knowing starts from real contexts and returns to them, and the group becomes a resource for the activity or problem to be solved (Comoglio, 2011).

In a competence-approach assessment, teaching and learning are indissolubly tied together (Castoldi, 2010; Camoglio, 2011). The distinguishing features of evaluation are the active role of the student; the presence of contextualized tasks which mimic real life situations; and the promotion of the social dimension of learning (Author &, 2016). In the literature there are three forms of assessment (Draycott et al., 2011): “of”, “for” and “as” learning. Assessment “of” learning represents the conventional psychometric teacher-led approaches which are centred on the learning outcomes (Baartman, Bastiaens, Kirschner, & van der Vleuten, 2007); it is led by the myth of objectivity in evaluation with a separation between evaluator and evaluatee, and based on the assessment of facts and the mechanical application of principles (Castoldi, 2010). The assessment determines the contents to be transmitted (teach to the test), and teaching is based on simplified knowledge easy to be tested in an objective way. This ultimately causes the encapsulation of knowledge in the school context. By way of contrast, assessment “for” and “as” are learner-led: with “for” types, the focus is on the gap between where the student is and where he or she needs to be; with “as” forms, the most radical, it is the student who sets his or her own learning goals. A competence approach to evaluation is characterized by a triangulation of methods, therefore making use of a mix of learner-led and teacher-led approaches (Baartman et al., 2007).

## 5. The key competence of the sense of initiative and entrepreneurship

In 1997 the OECD DeSeCo project (Definition and Selection of Competences) sought to define competence and to find key competences. To be key, competences must fulfil three requirements (OECD, 2005): be valuable in that they bring measurable benefits to both society and economy; be beneficial in diverse contexts, for example family life, and labour markets, as well as encourage political participation; and be important for every individual, regardless of whether they study or work. At the centre of this framework there is reflection, “the ability of individuals to think for themselves as an expression of moral and intellectual maturity, and to take responsibility for their learning and their actions” (p. 8). Following the DeSeCo project, in 2006 the European Commission put forward the European key competences for lifelong learning, useful for full employment, inclusion, active participation, democracy, and personal realization. Key competences are defined as a combination of knowledge, skills and attitudes appropriate to their context (European Commission, 2007).

Among the European key competences for lifelong learning, the seventh is the sense of initiative and entrepreneurship which is useful for turning ideas into actions:

It includes creativity, innovation and risk taking, as well as the ability to plan and manage projects in order to achieve objectives. This supports individuals, not only in their everyday lives at home and in society, but also in the workplace in being aware of the context of their work and being able to seize opportunities, and is a foundation for more specific skills and knowledge needed by those establishing or contributing to social or commercial activity. This should include awareness of ethical values and promote good governance. (p. 11)

The Joint Research Centre of the European Commission (Bacigalupo, Kamylyis, Punie, & Brande, 2016) has recently developed the Entrepreneurship

Competence Framework (EntreComp), the aim being to find a shared understanding of entrepreneurship competence. EntreComp defines three areas of competence with learning outcomes and levels of proficiency: into action, resources, ideas and opportunities. Entrepreneurial competence is a simplified label for the key competence of the sense of initiative and entrepreneurship, because this is the common way it is referred to. EntreComp does not mention the connection between its levels of proficiency and the levels of the European Qualification Framework. By way of contrast, Author & (2016) showed that the European Qualification Framework is a convenient benchmark for the learning outcomes of the sense of initiative and entrepreneurship.

To summarize and link the literature analysed so far:

1. We are in the middle of a paradigmatic change between an old, economic and narrow view and a modern, broad, educational view of entrepreneurship. Whilst old entrepreneurship is a type of training justified by the concrete goal it achieves such as starting a business, new entrepreneurship is educational, and open ended in a lifelong learning perspective. In this context, enterprise is useful in an educational context, allowing a departure from the economic meaning of entrepreneurship.
2. The literature on competence and entrepreneurship/enterprise education converge around a common theme: bringing school back into society. Whilst the competence approach is more concerned with a generic external world, enterprise education seeks to connect education with working life, which includes self-employment. Enterprise and competence, however, find a synthesis with the key European competence of the sense of initiative and entrepreneurship.
3. The old narrow view of entrepreneurship corresponds to a disciplinary way of teaching for knowledge and a psychometric approach to testing. In contrast, enterprise education corresponds to a modern way to teach for the key competence of the sense of initiative and entrepreneurship as a cross curricular subject, with a student-led approach, active didactics and assessments based on mixed methods.

The next section discusses how an enterprising educator should teach for the sense of initiative and entrepreneurship as a cross curricular subject.

## 6. The features of the enterprising teachers in secondary schools

The desired characteristics of the enterprising teacher have been found through the analysis of the literature above, the personal experiences of this researcher in enterprise education, and discussions with teachers, and experts in the fields of entrepreneurship, enterprise and pedagogy.

The first feature of the enterprising teacher is the way *he or she embeds within a taught subject the learning outcomes of the sense of initiative and entrepreneurship*. These can be drawn from the descriptors of the key competence of the sense of initiative and entrepreneurship (Author & , 2016) or from EntreComp (Bacigalupo et al., 2016). This allows for the demarcation of a specific area of teaching and learning, and students know what is expected of them; furthermore, teachers can organize their teaching activities and assessment around it (European Commission et al., 2016). *“For” and “as” types of assessment* would be



good in promoting entrepreneurial effectiveness with autonomous self-direction. Students could choose their own goals and self-assess their performance coupled with psychometric testing operated by teachers.

The second feature of the enterprising teacher is a focus on *enterprising active didactics*. Enterprise education is also about good teaching, and educators should become entrepreneurial and innovative in their teachings with an approach driven by curiosity and experiential learning (Penaluna, Penaluna, Usei, & Griffiths, 2015). For B. Jones & Iredale (2014) enterprise education is about teamwork, confidence building and problem solving. The second characteristic of the enterprising teacher is the use of active didactics like experiential learning, group work, work by projects, problem solving, and mentoring. These are not mutually exclusive and can be used together, through project work within groups, for example. In class group work it is particularly important to teach for enterprise and competence, simulating the world outside and going beyond an economic, individualistic and Shumpeterian view of entrepreneurship. Experiential learning is taken in a Deweyan perspective (Pepin, 2012); for both teachers and students, being enterprising means “determining purposes for action and subjecting them to the test of experience in a given context” (p. 810) in a continuous process of reflection and dialogue between action and experience. The teaching mediators span from the abstract (pictorial and symbolic) to the concrete (analogic and active), with a particular emphasis on the latter to avoid encapsulation of knowledge into the school context: company visits, experts lecturing at school, and work experience. Analogical mediators such as Practice Enterprise model, for example Simulimpresa (Komarkova et al., 2015) are welcome. However, enterprise education is not simply about didactics, otherwise enterprise education would lose its distinctiveness (Draycott et al., 2011): the fact that a teaching methodology makes students active does not necessarily imply that they become enterprising.

The third characteristic is *educating for enterprising attitudes*. Active didactics should aim at developing enterprising attitudes in the individual according to the school level. In a pedagogical environment, Riese (2010, p. 84) contends that entrepreneurship is “a strategy primarily aimed at stimulating pupil’s development in the direction of creativity, independence and decisiveness”. Bell (2015) mentions innovativeness, proactiveness, risk-taking and self-efficacy, while Van Gelderen (2012) emphasises autonomy and personal initiative. Mueller and Anderson (2014) point out the role of responsibility in engaging students in the learning process and entrepreneurial ways of living. To offer examples, to connect enterprising attitudes with active didactics, brainstorming would be good to develop one’s creativity, and cooperative learning would be useful in encouraging the ability to work productively with others, as well as critical thinking and problem solving.

The fourth characteristic of an enterprising teacher is the ability to *cross the boundaries* between disciplines and between school and work. This is to emphasize the importance of the horizontal dimension of learning between different contexts. In their work, professionals “operate in and move between multiple parallel activity contexts”, and “face the challenge of negotiating and combining ingredients from different contexts to achieve hybrid solutions” (Engestrom, Engestrom, & Karkkainen, 1995, p. 319). It is at the boundary where innovation lies (Akkerman & Bakker, 2011). Penaluna et al. (2015) call for practice that breaks the boundaries and transdisciplinary approaches. Partnerships can be both within schools with other colleagues, subjects and courses, and outside the school, to engage students in meaningful activities and avoid the encapsulation of school

knowledge. In vocational subjects, having a working relationship in the industry connected to the vocation or subject the teacher oversees is regarded in a positive light, as the teacher has up to date competencies, knows the needs of industry, and can therefore plan activities for students crossing the boundary of the school, the course, the subject.

The fifth feature is *being enterprising in a lifelong learning perspective*, meaning inside and outside the school context and throughout professional development. The European Commission (2014) comments that teachers should teach in an entrepreneurial way. Peltonen (2015) suggests use of the term pedagogical entrepreneurship (Riese, 2010; Svedberg, 2010) with the implication that entrepreneurship from the teachers' point of view is also a matter of professional development and pedagogical renewal in itself. The enterprising teacher participates in specific courses on entrepreneurship but also in broader way develops his or her own sense of initiative and entrepreneurship, for example through new ideas for promoting innovation and creativity. Discussion with colleagues about entrepreneurial themes is also a good indicator of the extent to which the topic is felt to be important. Management of the school is an important aspect as the school can solicit or thwart the teachers' enterprising conduct.

## 7. A structured interview based on the features of the enterprising teacher

Within a European Marie Curie research program, the five characteristics described above were adapted to upper secondary technical school, and developed in 24 questions shown in Table 2.

<p><b>Entrepreneurship learning outcomes, and “as” and “for” forms of evaluation</b></p> <ol style="list-style-type: none"> <li>1. The sense of initiative and entrepreneurship is a goal of my curriculum.</li> <li>2. I have evaluated the sense of initiative and entrepreneurship of my students.</li> <li>3. I have developed evaluations where the student had to self-evaluate his/her performance or chose his/her objectives.</li> </ol>
<p><b>Enterprising active didactics</b></p> <ol style="list-style-type: none"> <li>1. What is the percentage of your teaching you generally deliver through lectures?</li> <li>2. I have organized practical experiences through learning by doing.</li> <li>3. I have organised class activities according to group work (for example cooperative learning).</li> <li>4. I have organized in class activities according to project work</li> <li>5. I have organized a didactics based on problem solving.</li> <li>6. I have utilized mentoring (for example by going to the students' seats and giving them advice on their work).</li> </ol>
<p><b>Educating for enterprising attitudes</b></p> <ol style="list-style-type: none"> <li>1. I have taught my students how to deal with the risk connected with to be enterprising, and learnt how to accept failure.</li> <li>2. I have organized discussions to transform the classroom in a place of debate.</li> <li>3. I have stimulated students' critical thinking, for example with activities where the goal was to reflect on the process rather than the result.</li> <li>4. I have sustained my students' initiative, for example by accepting their proposals.</li> <li>5. I have prepared activities where the students could express creativity and innovation.</li> <li>6. I have encouraged my students to take responsibilities and to be autonomous.</li> </ol>

<p><b>Boundary Crossing</b></p> <ol style="list-style-type: none"> <li>1. I have established partnerships with industry/the outside world.</li> <li>2. I have involved experts during in class lessons</li> <li>3. I have organized school visits in places of interest.</li> <li>4. I have organized multidisciplinary projects with my colleagues.</li> <li>5. I work outside the school for the local industry.</li> </ol>
<p><b>Being enterprising in a lifelong learning perspective and professional development</b></p> <ol style="list-style-type: none"> <li>1. I have taken part to endeavours or courses stimulating my own sense of initiative and entrepreneurship.</li> <li>2. I have discussed about entrepreneurship education with colleagues and experts.</li> <li>3. During my school life (in class and in the school) I show my sense of initiative and entrepreneurship.</li> <li>4. In my life outside the school I show my sense of initiative and entrepreneurship.</li> </ol>

**Table 2. Questions on the enterprising teacher.**

The questions were administered in the form of structured interviews with 21 teachers of grades III, IV, V of a technical institute specializing in surveying or logistics located in the Lombardy region in Italy. Of these 21, 10 were technical teachers, 7 workshop assistants, and 4 humanity and science teachers. The interviews began with the researcher reading the definitions of entrepreneurship education and the key European competence of the sense of initiative and entrepreneurship. The interviewee asked for clarifications if he or she did not understand any technical terms such as: learning by doing, problem based learning, mentoring, and critical thinking. Although such terms are often mentioned in the everyday teaching language, it is difficult to define them with precision. For each question the interviewee had to answer yes or no, rate the frequency (never, sometimes, often, always when possible) in the latest six months, and give examples in their everyday practice.

## 8. Results

The results are illustrated quantitatively in term of frequencies as well as qualitatively, which provides some of the most interesting answer. Given the limited group of interviewees, it is not possible to search for statistical differences. However, in socially situated research (Zucchermaglio, Alby, Fatigante, & Saguetta, 2013) the aim is not to find generalizations suitable for other contexts, but to explore in depth the way the interviewees signify the sense of initiative and entrepreneurship. The analysis differentiates between technical teachers, workshop assistants, and general education teachers which includes math, literature, English teachers.

Generally speaking, the interviewees were happy to answer the questions and share their experience. Two thirds of the teachers are very experienced with careers spanning 20 years' or more, and five of those being close to retirement. None of the interviewees have initial pedagogical teacher training. Most of the technical teachers are engineers and architects. The workshop assistants are all less than 35 years old, and most have only a high school certificate. At school, they work both in the workshops and in the classes; they deliver lessons as well as assist the technical teachers.

Table 3 shows the areas of the questionnaire, the questions, and the results of the participants with specific sub-groups.

Area	Question	Average N=21	Technical Teachers N = 10	Workshop assistants N = 7	Humanities and science N = 4
<b>Entrepreneurship learning outcomes and evaluation</b>	Goal of the curriculum	No	No	No	No
	Evaluation of key comp	No	No	No	No
	Evaluation "for" and "as"	1	1	1	2
<b>Enterprising Didactics</b>	Lecture	50%	60%	40%	50%
	Learning by doing	2	2	4	2.5
	Group work	2	2	2	3
	Project work	2	2	3	1,5
	Problem solving	3	3	2	2,5
<b>Educating for Enterprising Attitudes</b>	Mentoring	3	2,5	4	3
	Risk management	1	1,5	1	1,5
	Negotiation – debate	2	2	2	2,5
	Critical thinking	2	2	2	2,5
	Initiative	2	2	2	3,5
	Creativity and innovation	2	2	2	2
<b>Boundary Crossing</b>	Responsibility and autonomy	3	3	3	3
	Partnerships with industry	2	2	1	1,5
	Involvement of experts	1	1	1	1
	Company visits	2	2	2	1,5
	Multidisciplinary projects	1	1	2	1,5
<b>Being enterprising in a lifelong learning perspective</b>	Second job in industry	Yes	Yes	No	No
	Courses and initiatives on entrepreneurship	2	1,5	1	2,5
	Discussion with colleagues	1	1	1	1,5
	Entrepreneurship in school	3	2	3	2,5
	Entrepreneurship in life	3	3	3	2
Legend Medians: 1 = Never; 2 = Sometimes; 3 = Often; 4 = Always.					

**Table 3. Quantitative results of the interviews (N=21).**

### 8.1. Sense of initiative and entrepreneurship in the curriculum, and evaluation "as" and "for" learning

The interviewees do not put the key competence of the sense of initiative and entrepreneurship as a goal in their curriculum. For some, the implementation of the key competence in the curriculum is a way to bring school and work together: "I assess the students' project according to the degree of resemblance with the reality of the real-estate market" (workshop assistant) and "Every activity I carry out has the aim of anchoring my subject with reality" (technical teacher). One interesting case is a teacher who works for half of each year as an entrepreneur, who comments "When I enter in the classroom, the lesson isn't traditional, but is given by an entrepreneur. I teach the students to be ambitious and never give up. When they come to school they must understand they are doing something for themselves, and are exposed to risks if they do not intend to dedicate time to study".

The interviewees stated that they do not assess the sense of initiative and entrepreneurship in the classroom: "I don't know how to do it" (literature teacher). Technical teachers are generic or keep it in mild consideration in terms of autonomy, initiative and participation: "I assess their initiative and active participation if students go beyond what I have taught them on how to solve a problem" or "I

evaluate autonomy, and whether the student makes appropriate choices". It appears that the sense of initiative and entrepreneurship is connected with the participation of the students in the classroom, but, as the lessons are mostly delivered through lectures, the students have no initiative: "I have tried to provide my class with challenges, but rarely are they taken up" (math teacher).

Only the general education teachers indicated that they sometimes use "for" and "as" forms of assessment. A technical teacher comments "I tried it once, but students misused immediately". Technical teachers enact two interesting practices. First, during written tests, they use transparent criteria and grids of evaluation (which should be mandatory in that school for all teachers), so that students know the score for each exercise in advance and they can therefore choose to start from the exercise they are confident with. Second, after oral examinations, some teachers ask the students to rate their performance and give reasons for that. However, they decide their mark before this takes place: "I don't want to be influenced by the student's self-evaluation", an example of how evaluation follows a psychometric model separating the observer from the observee.

## 8.2. Enterprising active didactics

The interviewees say that only half of their time is devoted to lectures, with technical teachers most fond of lectures (60%) and workshop assistants less so (40%). Workshop assistants like using didactics such as learning by doing and project work; general education teachers favour group work and mentoring, and technical teachers use problem solving.

Learning by doing. For the interviewees this means having students undertaking practical experiences. The answers can be categorized according to Damiano's (1993) type of mediators: concrete (active and analogical) and abstract (iconic and symbolic). Workshop assistants use analogic mediators such as computer simulations ("Students use Autocad and Photoshop, they work, and I don't explain how to use the programs"), active mediators outside the school ("Survey on the field"), or inside the school with workshops and experiments ("Construction of an amplifier sized from a mathematical point of view"), or in class activities ("Students survey the class and the furniture"). Roughly half of the technical teachers use concrete mediators: analogical ("organization of spreadsheet"); active, in the school with workshops ("traffic lights, speed sensors"), in the corridors ("Surveying the corridors"), outside the school ("Tracing foundations, digging with mini excavators, building small walls"). The other half of technical teachers understand learning by doing just as using symbolic mediators with authentic problems ("Project of farming a quarry", "I simulate what happens in the building site, I pretend I am the buyer"). In the group of general education teachers, math teachers reproduce authentic problems ("A gardener has to mow grass within the area of a polygon, I ask the students to make an estimate"), or a symbolic mediator is turned into an iconic one ("In the project math and music sounds make waves visible"). Other general education teachers manage to use analogical mediators: in history ("In the French revolution, the student pretends he or she's a character and has to defend their interests against other students"), and in English ("Simulation of everyday situations").

Group-work. Workshop assistants focus on the number of group components spanning from 3 to 5 students. Technical teachers use this methodology only with a couple of students. A technical teacher considers "counterproductive", having experienced that the lecture is more efficient and group-work turns



to be ineffective if not carefully planned (Castoldi, 2010). The activities organized as team work by technical teachers concern making and designing, whilst general education teachers enjoy employing group work for catching up, enhancing, preparing the tests, and debating.

**Project work.** Technical teachers and workshop assistants ask students to make projects of buildings or at least part of them, cycling tracks, and gardens. It is harder to work by projects for general education teachers. The math teacher managed just once with a project on math and music, while the English teacher created a project related to the parts of a warehouse.

**Problem solving.** For the technical teachers, problem solving means making in class exercises that consist of the practical application of the principle they have explained (“I give the students a ceiling to be designed and ask them to find the right structural solution”, “Dimensioning of a warehouse”). A technical teacher states his frustration with the students: “I try to explain the process to them so that it can be applied to other contexts, but often they get stuck”.

**Mentoring.** This is considered as something which supports the other didactics: project work (“During a project I walk around to solve comprehension problems”); lectures (“After my explication I give an exercise and walk around to give individual help”), or during catching up with peer-tutoring activities.

### 8.3. *Enterprising Attitudes*

All the interviewees often educate for autonomy and responsibility, whilst general education teachers also educate for students’ initiative.

**Risk taking.** This is infused with students sharing personal experiences or making general comments. A technical teacher explains: “Sometimes I talk about my activities outside the school, you always have to be careful in your work, but sometimes things go bad”. For a literature teacher a failure in school is a chance for reflection “On a failed test, we reflect on the causes of the errors”. Two workshop assistants let the students make mistakes “First the students work. If they have made a mistake, I want them to become aware, and only then I give help”. The teacher and entrepreneur comments “I do it every day. Since the beginning of the year I have kept on telling the students that they are the entrepreneurs of themselves and are exposed to risks according to the choices they make. It’s useless to cry after a wrong choice. It’s important to understand that there are always consequences”.

**Negotiation.** For most of the teachers negotiating means simply having a public discussion in the classroom: “Discussing rules and motivation to stay at school”, and “Sometimes discussions occur spontaneously” (technical teachers). However, there are also teachers who explicitly understand the methodology: “I set a debate on an estimate, is that subjective or objective? It’s a tremendous methodology, but it’s difficult to use as students lack the social skills to work together” (technical teacher) and “I use it with diverse topics, I take an article from the newspaper, it can be on electromagnetic waves, the relationship between science and faith, the sense of mystery in literature. I don’t give the answers” (literature teacher).

**Critical thinking.** For a technical teacher sometimes it happens, but it is unintentional. Another technical teacher states “I make open questions to stimulate their reasoning, and when possible I don’t give the solutions but I focus on the process”. A math teacher is convinced “It’s all about that. When we deal with an exercise we have to weigh the results, otherwise my discipline would not make sense”.

Initiative. Generally speaking, students look passive: “Over the years students have become more passive, it’s not a problem of school but society”. That’s why students’ proposals are welcomed by teachers, for example proposals on the essay they have to prepare for the state exam on Grade 5, on the program, or on the test dates. Having initiative is considered a synonym for excellence, a going beyond what is asked. A math teacher reports “In Grade 4 there’s a smart group, it’s a stimulating class. They make requests beyond the curriculum”.

Creativity and innovation. Both surveying and logistics are oriented towards orderliness and the best way to do things. However, a technical teacher comments: “Within designing, you can always tell a good project apart from a bad one”, meaning that students can be creative and innovative in the way they design, within the given constraints.

Autonomy and responsibility. All the interviewees answer this question. For most of the interviewees educating for responsibility and autonomy means meeting the deadlines for homework and projects, and to be prepared for examinations. A technical teacher asks students to deliver parts of lessons, while the literature teacher is critical “We all say we encourage them, but in fact that is not the case”. The teacher and entrepreneur comments “If they are not autonomous, nobody will want them outside the school. I encourage them to take the lead in their life, and I get angry when they fail a test and think they will never catch up. I want them to think: next time I will study and get the best mark!”

#### 8.4. Boundary Crossing

The interviewees have sometimes engaged in partnerships with industry and organized visits outside school; they have never invited experts to school. Technical teachers are the only ones to have a second job in the industry.

Partnerships with industry. Few technical teachers are in charge of networking with industry. In every class there is a technical teacher who acts as coordinator for work experience, and he or she is the one keeping the contacts with industry.

Involvement of experts. It is rare that teachers invite experts to lectures in the school. Just once, a technical teacher invited “the local representative of the association of industrials”.

Company visits. These are more common in the interviewees’ experience, mostly in the case of technical teachers and workshop assistants, who organize visits connected to their vocation to working sites (“local state archive”, “workshop of analysis”, “building of churches after earthquake”). However, general education teachers also organize visits in places of interest (“international trade fairs” and “cultural festivals”).

Multidisciplinary projects. The interviewees in that school find cooperating with colleagues difficult “I found the resistance of my colleagues, they want my hours but not working together” (literature teacher) and “There’s too much compartmentalization in this school, the resources of my subject aren’t exploited” (technical teacher and entrepreneur). Other technical teachers cooperate, for example in the project of surveying through drones.

Second job in industry. Most of the surveying technical teachers have a second job in the industry as a consultant or a private practice connected to the subject they teach. Logistics teachers also have a second job in the industry, but not connected with the topic they teach.

### 8.5. Being enterprising in a lifelong learning perspective

The interviewees are enterprising both inside and outside school; they have never had discussions with their colleagues on entrepreneurship, and sometimes have taken a course which stimulated their sense of initiative and entrepreneurship.

**Enterprising professional training.** A third of the answers were left blank. Some interviewees answered the question on what type of course they had undertaken but not why it was enterprising. Some took specific courses in entrepreneurship “I did a Masters with a course on entrepreneurship” (technical teacher) or entrepreneurial skills “I took a course on leadership and group work” (literature teacher). For a technical teacher, the topic’s too new. For other teachers it is an important matter: “It’s all about that. I want to be stimulated and have new ideas for my job. There are courses that leave you with nothing, but I want to transform my practice innovatively” (math teacher) or “The courses I took to update my skills made me reflect on my field and that there’s a need of new ideas on how to approach problems. There’s a need to create new jobs with new services to create one’s market niche” (technical teacher).

**Discussion with colleagues.** Half of the questions were left blank: “I don’t remember debates orientated in this direction”, “now that the school has involved me” (technical teachers).

**Being enterprising in the school.** Apparently the workshop assistants are the most proactive inside the school: “The proposal for the project of the quarry was mine, as was the visit to the chemical analytical laboratory”. The literature teacher is enterprising in the classroom “I am weird therefore I invent new didactics”. Some technical teachers don’t feel they are enterprising “I just cope with the ordinary things”, or “I have been hampered by the fact that I ended up teaching a subject that isn’t mine”. A technical teacher feels he is enterprising in writing grants “I wrote projects and obtained funding regarding interactive multimedia board, students’ leasing of personal computers, and workshop equipment”.

**Being enterprising outside the school.** For technical teachers being enterprising outside the school means having a private practice “I have my private company”, and “I cooperate with my daughter’s private practice”. For other interviewees one can also be enterprising in private life: “I proposed that my family visit Florence” (workshops assistant); “I organize journeys with my friends” (workshop assistant); and volunteering “In my parish I organize courses to prepare couples for marriage” (technical teacher).

### Conclusions

Although this is an explorative research with a small group, results show how teachers and workshop assistants make sense of the sense of initiative and entrepreneurship as a cross curricular subject. None of the interviewees embed this key competence in their curriculum and use “for” or “as” forms of assessment. Nonetheless, the group educate for this key competence in different ways according to the subject they teach: technical subjects or general education subjects, and their role, teachers or workshop assistants. Technical teachers are the most anchored to traditional didactics, but are good boundary crossers; general education teachers are the most concerned with students’ enterprising attitudes; workshop assistants practice active enterprising didactics and, together with the technical teachers, they are the most enterprising in a lifelong learning perspective. The question on learning by doing is particularly interesting as it indicates the ways

teachers overcome school encapsulation of knowledge with analogic, active mediators or authentic tasks according to the subject they teach. Using concrete mediators is easy for workshop assistants, whilst technical teachers and general education teachers make use of analogical mediators or authentic situations.

This research emphasizes that enterprise education is also about good teaching. Overall, the participants are still anchored to traditional forms of didactics with lectures and psychometric forms of assessment which tend to turn students into passive receivers. It is evident that their teaching action is focused on *poiesis* and not *praxis*, oriented towards the product with tangible goals rather than on processes and educational aims in a lifelong learning perspective. These aspects of enterprising teaching are useful for making questionnaires to at the school level (primary or secondary) and higher education (general or vocational) to establish a base line for targeted interventions. In the case described here, for instance, an intervention on enterprise education could start with the embodiment of the key competence of the sense of initiative and entrepreneurship in the teachers' curricula; introducing "as" and "for" forms of evaluation of learning, and then move to enterprising didactics such as group work.

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