

A TAXONOMY OF ENTREPRENEURSHIP EDUCATION

- PERSPECTIVES ON GOALS, TEACHING AND EVALUATION

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PREFACE

The aim of this publication is to bring together the knowledge and experiences of entrepreneurship education of the Danish Foundation for Entrepreneurship - Young Enterprise (hereafter the Foundation) and present various perspectives on what entrepreneurship education is and how it can be produced and evaluated as educational practice. We aim to construct an alignment between the overall purpose and learning goals of entrepreneurship education, the content and progression the teaching should have and the feedback, evaluation and assessment that will support student learning. At the same time, we seek to describe how this can be manifested as pedagogical practice in a diverse educational system with different levels, curricula and traditions.

This text is intended for teachers, leaders and decision makers at all levels of education - from primary school to higher education. With this broad aim, we seek to create a common thread throughout the educational system and a common understanding of the phenomenon of entrepreneurship education. This also implies that the individual educational institution will need to interpret the text in a way which creates a link between its academic objectives and the entrepreneurial dimensions and goals that form the basis for the understanding in the text.

This publication is part of the Foundation's work as a knowledge centre, and is based on the previously published progression model and the research and impact studies the Foundation has developed and implemented in the field of entrepreneurship education. Models and research findings are available on the Foundation's website: www.ffe-ye.dk

This publication will be updated regularly as new knowledge is acquired and new models are developed.

Our thanks:

A great many teachers, researchers, government officials and colleagues have contributed thoughts, ideas, reflections and experiences to the text. Some are aware of this, but not all. In any case, we wish to thank you for these contributions without which the project would have been impossible. We also hope that you, the reader of this publication, will send us comments and perspectives which may be incorporated into subsequent editions.

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INTRODUCTION

Against a background of globalization and extensive changes in society, innovation and entrepreneurship have become part of the educational discourse in Denmark and abroad (Moberg, 2014). There is a strong focus on implementing innovation and entrepreneurship in the educational system, with teaching that provides students with entrepreneurial competences. National (Danish Government, 2009, 2012) and supranational strategies (EC,

2007; OECD, 2010) as well as a wide range of initiatives and legal amendments today support the implementation of innovation and entrepreneurship in the educational system. However, there is still disagreement and uncertainty regarding the form, content and objectives. The discussion about whether entrepreneurship is part of a techno-capitalist, liberating or academically innovative discourse remains unresolved; some see entrepreneurship education as an adaptation of the individual to a certain socio-economic logic, while others perceive it as a liberating educational opportunity to give more people a greater say in their lives (Paulsen 2012, Jones & Iredale, 2010). By focusing on a number of general competences and on value creation in a broad sense, we will seek in the following to integrate these different perspectives.

Many entrepreneurial and innovative competences are not directly measurable and can be difficult to evaluate and assess. Educational tools for the evaluation of entrepreneurship education are therefore a combination of elements from a traditional understanding of examination and a more unconventional approach focusing on elements such as process evaluation and value creation. The development of such tools raises a number of questions. What are the innovative and entrepreneurial skills and competences to be developed in the classroom? How do we teach to enable these skills and competences to be developed? How do we evaluate the efficacy and quality of entrepreneurship education? These questions are relevant for teachers, leaders and decision makers. In the following, these challenges are described and a framework for entrepreneurial learning objectives is presented, together with paths to teaching, evaluation and assessment, as a unified, well-considered methodology for entrepreneurship education.

The models and dimensions we present in the text are based on research, knowledge and experience gathered during the five years the Fund has been in existence. Our daily contact with teachers and our continuous efforts to develop entrepreneurship education at all levels of the educational system have provided insight into the everyday work of the educational practitioners and how they see entrepreneurship as part of their teaching. The text also represents a further development of the progression model of entrepreneurship education published by the Foundation in 2013. It is further a result of the research and effect studies the Foundation has conducted since 2010. At the same time, general learning theory and external educational research have been a focal point for linking models and content closely to teaching practice and theoretical research-based knowledge. On the basis of experience, knowledge and research, we therefore seek to create coherence between definitions, learning goals, teaching practice, feedback and assessment.

Entrepreneurship education implies activities directed towards developing students' ways of perceiving their world, themselves and others, and how they handle their resources. Like all other teaching, entrepreneurship education is not value-free and we have therefore reflected on ethical perspectives and dilemmas often overlooked in educational contexts. A key point in this regard is that entrepreneurship education should allow and

support the development of entrepreneurial competences; whether, when and how students choose to enact their competences is entirely up to them.

The text is divided into chapters with the following themes:

Chapter 1: Definitions of entrepreneurship and entrepreneurship education. The focus is on how and why we have arrived at the definitions and on various derived implications.

Chapter 2: Goals and objectives of entrepreneurship education. Here we present a review of contexts and content in the dimensions of the progression model and a taxonomic framework of understanding related to the national qualifications.

Chapter 3: Education and entrepreneurship. Here we describe the relationship between entrepreneurial competences, curriculum and teaching methodologies. The central place of experience in entrepreneurship education is discussed, and suggestions are provided for ways of developing competences and experience in teaching. Motivational issues in entrepreneurship education conclude the chapter.

Chapter 4: Feedback, evaluation and assessment. This chapter describes how a combination of different elements of evaluation provides support for learning and competence building, and how reflection is a key aspect of the evaluation of entrepreneurship education. There is discussion of how a standardization of the evaluation process may counteract the intentions of entrepreneurship education and consideration of the ethical challenges of evaluating students' entrepreneurial competences and skills. Finally, examination and assessment are discussed, with suggestions as to how these can be structured in interaction with, and as a continuation of, the teaching.

Chapter 5: Entrepreneurship education - perspectives and future. Here we reflect on a nuanced understanding of innovation and entrepreneurship in the educational system and the positive influence of entrepreneurship education on the ability of students to cope with present and future challenges in interaction with the community.

CHAPTER 1: DEFINITIONS OF ENTREPRENEURSHIP AND ENTREPRENEURSHIP EDUCATION

In autumn 2010, the Foundation formulated a definition of entrepreneurship with the aim that it could function and be incorporated in a variety of educational contexts and accommodate both a commercial entrepreneurial approach and an educational and competence-based approach. Many of the existing definitions can be roughly divided into two groups. Firstly, there are definitions that focus on types of employment and their outcomes (self-employment, start-ups), and secondly, definitions that focus on behaviour (ways of thinking and acting) and the impact of this behaviour on the individual and society. The first perspective has a more precise focus in terms of context, while the second sees entrepreneurship as a phenomenon that can be found in many contexts. Our definition is in line with the latter perspective and has a strong focus on value creation (Moberg, 2014)¹.

Entrepreneurship is here defined as follows:

"Entrepreneurship is when actions take place on the basis of opportunities and good ideas, and these are translated into value for others. The value thus created can be of an economic, social or cultural nature." (FFE-YE, 2011)

This definition shows that the creation of value can take different forms and may thus include intrapreneurship, social enterprise, cultural innovation, etc. In the following, no distinction will be made between these different types of entrepreneurship and innovation. The various offshoots of entrepreneurship that have arisen over time will thus be part of the definition. The concept of innovation is also considered to be covered by the above definition and subsequent references are therefore limited to the terms "entrepreneurship" and "entrepreneurship education"². One key aspect of entrepreneurship is the inclusion of some form of active value creation on the basis of "something sensible", where value is not understood solely in economic terms. A further key element is that the activities and the implementation of the ideas should lead to value for others. Action and the involvement of others make up a large part of our understanding of entrepreneurship; this is also evident in the derived definition of entrepreneurship education and the understanding of practice to be presented later.

¹ See Wiklund et al., 2011 and Foss & Klein, 2012 for a detailed discussion of this.

 $^{^2}$ The terms innovation and entrepreneurship are covered by a multitude of definitions and perceptions. The point in considering innovation as part of the definition of entrepreneurship is that teaching which aims to make students respectively innovative or entrepreneurial has so much in common that it seems fruitless to make the distinction in an educational context.

The definition of entrepreneurship education is based on several different approaches and understandings of content and purpose (Jones & Iredale, 2010; Neck & Greene, 2011; Blenker et al, 2011; Gibb, 2011; Paulsen, 2012).

- Entrepreneurship education aimed at training and qualifying more entrepreneurs.
- Entrepreneurship education aimed at giving students skills that can be used in various life contexts for personal, social and career development.
- Entrepreneurship education directed towards innovation and a dynamic/creative understanding in other subject areas.

Since the various approaches lead to resistance, conceptual confusion and disagreement, we will seek to establish a definition of entrepreneurship education that embraces the different approaches and creates a distinction between what can be described as entrepreneurship education and what can not. Our intention is to create a functional framework so broad that entrepreneurship education can take place in a great variety of professional and educational contexts, while at the same time we set a limit to what can be described as entrepreneurship education.

Entrepreneurship education is here defined as:

"Content, methods and activities that support the development of motivation, competence and experience that make it possible to implement, manage and participate in value-added processes." (FFE-YE, 2013)

The particular focus on value creation and the inclusion of students in value-creating processes is what, according to the definition, separates entrepreneurship education from other types of process- and project-oriented teaching. Value-creating processes should be understood as reaching beyond the learning of the individual student and as far as possible into the community outside the class or educational institution. As entrepreneurship is defined above, the value students create may be of an economic, cultural or social nature.

Competences are not only based on knowledge and skills, but also on more subjective dispositions and various possible courses of action in uncertain situations (Illeris, 2013). This implies that entrepreneurship education must have content and form which:

- 1. Supports the development of students' entrepreneurial knowledge and skills.
- 2. Supports the development of students' personal and emotional resources.
- 3. Provides students with experience in applying knowledge, skills and personal resources in value-creating processes.

4. Allows students to reflect on, and take a critical and ethical view of, value creation.

This means that some of the practices and activities which today are called entrepreneurship education only partly meet the definition. This applies to e.g.

- Teaching processes where students work with value creation, but where it is unclear what competences are being developed.
- Courses in subjects such as law, creativity or project management where the subject is not linked to value creation.
- Teaching which aids the development of students' self-esteem and confidence (self-efficacy)³, but which does not develop competences or involve value creation.
- Activities which only to a limited extent involve reflection, motivation and emotional factors.

Such teaching sequences can help to develop entrepreneurial competences, but they must complement each other and be constructed to include the three elements of the definition of entrepreneurship education, namely the development of motivation, competence and experience. There will thus be a general need for a wide variety of teaching sequences and activities during a student's education in order to meet the goal of involving innovation and entrepreneurship education in the entire educational system (EC, 2007; Danish Government, 2009), and to ensure that "pupils and students learn and are tested in innovation to a greater extent" (Danish Government, 2012).

³ Self-efficacy is a theoretical concept with roots in Albert Bandura's social learning theory. The focus is on the individual's belief in his/her capacity to execute certain behaviours and perform certain activities (Bandura, 1977; 1997).

CHAPTER 2: GOALS AND OBJECTIVES OF ENTREPRENEURSHIP EDUCATION

The Foundation's effect studies, like other international research, have shown that many different competences are important for entrepreneurial activity (Moberg, 2014). Non-cognitive skills, such as mobilizing one's resources and being able to handle uncertainty, are vital for navigating in an uncertain and changing world. But cognitive skills, such as planning and acquiring financial knowledge, are also important.

The studies demonstrate the importance of providing students with the opportunity to form their own entrepreneurial experience and thus a frame of reference and an understanding of which competences and qualities are important, and at which stages of the entrepreneurial process they are important. The teaching should therefore have an action-oriented approach that complements the development of individual skills and competences. This is because our memory, and thus our knowledge, is best developed and recalled as procedural action patterns (Illeris, 2006). In this way, students will not only learn cognitively-oriented entrepreneurial skills, but also the non-cognitive skills which the educational system traditionally has had difficulty in evaluating and testing. We will return to this discussion in Chapter 4, where we consider how to evaluate entrepreneurial competences.

AREAS OF COMPETENCE IN FOUR DIMENSIONS

Since 2013, the Foundation has used a progression model (Nybye & Rasmussen, 2013) which focuses on four complementary and interdependent dimensions which form the basis for the operationalization of the broad objectives of entrepreneurship education, formulated as:

- Giving individuals the opportunity and the tools to shape their own lives
- Educating committed and responsible citizens
- Developing knowledge and ambition to establish businesses and jobs
- · Increasing creativity and innovation in existing organizations
- Creating sustainable growth and development, culturally, socially and economically

In order to operationalize this complex objective of entrepreneurship education as educational practice, we present below a competence framework and an understanding of progression that can delineate entrepreneurship as a general learning goal that can apply to different levels of the educational system. The ambition is to ensure an understanding of the progression in the learning goals and of the acquisition of entrepreneurial competence and experience which results from these goals being translated into educational practice.

There is a wide variety of approaches, methods and practices in entrepreneurship education. These range from a causal and linear understanding of planning, through an approach that focuses on students' "mindsets", to a

process-based entrepreneurial and methodological approach (Jones & Iredale, 2010; Neck & Greene, 2011; Sarasvathy & Venkataraman, 2011). However, the different approaches have certain dimensions in common which they all focus on:

- One central perspective is an emphasis on action and economic understanding, where entrepreneurship education is based on students performing activities (Gibb, 2011; Neck, Greene & Brush, 2014; Sarasvathy, 2008).
- Another key element is the development of creativity and divergent thinking, the ability to get ideas, to see and create opportunities and solve problems (Baron, 2012; Dyer, Gregersen, Christensen, 2011; Elsbach, 2003; Lee, Florida & Acs, 2004).
- A third aspect is interaction with the world outside the classroom, by e.g. emphasizing cooperation with various external partners and stakeholders, openness to opportunities in the market, and an empathetic approach to the social and cultural context (Nielsen et al. 2009; Neck, Greene & Brush, 2014).
- Finally, the fourth point concerns students' faith in their own possibilities and capabilities to act under complex and uncertain circumstances and their belief in their own ability to initiate acts of change (Blenker et al., 2011; Sarasvathy, 2001; Sarasvathy & Venkataraman, 2011).

Four complementary and interdependent competences are thus revealed, subsequently described as entrepreneurial dimensions: 1) action, 2) creativity, 3) outward orientation, and 4) personal attitude. A dimensional concept has been chosen since it can provide several meanings all of which are relevant to our understanding. The dimensions thus establish a framework for a number of areas of competence, but they can also be considered in varying degrees for use in methodological and didactic approaches in a variety of teaching situations.

The dimensions may be:

- A particular part of a person's competence preparedness
- A framework for specific learning goals
- A part of teaching content or methodological approach
- Part of the overall educational planning at the institutional level

The dimensional concept also indicates that entrepreneurial competences are not necessarily a subject or field of study in themselves; they may be, but they may also be part of a larger whole⁴. This whole is constituted by the core curriculum of various courses and institutions, which thus forms the framework for the four entrepreneurial dimensions. The four dimensions are seen as complimentary and embedded in interaction with a core curriculum which shapes them. Within individual subjects and vocational or professional courses, we will therefore find considerable variation in how the dimensions are manifested in the teaching.

Action

Action is understood as the competence to launch initiatives and to achieve these through collaboration, networking and partnerships. It is also the competence to analyse and manage finances, resources and risks, communicate purposefully and organize, set goals for, and lead activities.

Creativity

Creativity is understood as competences to identify and create ideas and opportunities, to achieve divergent and abductive thinking, and to combine knowledge from different fields in new ways. Creativity also involves competences to create and revise one's personal conceptions, and to experiment and improvise to solve problems and challenges.

Outward orientation

Outward orientation⁵ is understood as competences to observe, analyse and construct a social, cultural and economic context as an arena for actions and activities that create value. This implies knowledge and understanding of the world, at local and global level, including the assessment of global opportunities and challenges.

Personal attitude

Personal attitude is the personal and inter-subjective resources used by students in the face of tasks and challenges. It is a belief in acting in the world and thereby realizing dreams and plans. Personal attitude is based on competences to overcome ambivalence, uncertainty and social complexity and to work persistently. It also

⁴ A distinction is typically made between three different approaches: teaching about, for and through entrepreneurship. Teaching **about** entrepreneurship typically focuses on content, declarative knowledge and vocational entrepreneurial skills. Teaching **through** entrepreneurship, by contrast, is more pedagogically-oriented and focuses on action-oriented entrepreneurial skills. Teaching **for** entrepreneurship may be seen as a combination of teaching about and through entrepreneurship, but unlike the pedagogical orientation of teaching through entrepreneurship has a strong focus on content.

 $^{^{5}}$ We use the term 'outward orientation' in stead of 'environment'. It is based on one's insight into one's own capacity in interplay with surrouding opportunities and needs; an ability to adapt this capacity in dynamic interaction with a particular social, corporate and/or material setting in the way that this action creates social, cultural or financial value.

involves competences to accept and learn from others' and one's own mistakes and to make ethical assessments and reflections.





Here we see that the dimension of personal attitude is in the centre of Figure 1. This does not mean that it is more important than the others, but rather that it is difficult to teach, being linked to personal factors such as identity and subjectivity. At the same time, there is a close relationship between the development of core curricula, the other three dimensions and personal attitude.

THE RELATIONSHIP BETWEEN THE DIMENSIONS

The four dimensions can develop separately within a teaching context, but are interconnected in a complex pattern. Examples of these interrelationships are:

- The action dimension will often take place in a context of outward orientation, where successful action in a particular context promotes competence in the action dimension, while also supporting knowledge of the world and influencing students' ways of observing and perceiving the world.
- Positive experiences in the action dimension will, like other experiences of success, enhance students' belief in their ability to act in the world and thereby also their personal attitude.
- Focus on the outward orientation dimension will encourage the development of divergent thinking, creativity and students' ability to identify opportunities in the world.
- Personal attitude influences the actions students can and are willing to take and also how they perceive their opportunities in the world.
- The development of creativity will affect students' perceived possibilities to act in the world and increase the likelihood of new ideas about the future for themselves and others.

The relation to the curricular context also affects the dimensions, and different types of interactions will take place between the dimensions depending on the level and syllabus. In some cases there will be an overlap between the dimensions and the curriculum; business economics at secondary schools includes important elements of the action dimension, and the learning goals of courses in entrepreneurial subjects at tertiary level coincide with much of the content of the various dimensions.

A PROGRESSIONAL UNDERSTANDING

One of the challenges of entrepreneurship education has been a lack of description of the progression. This has led to similar practices in various stages of the educational cycle, so that it has been unclear how learning goals develop over time. The areas of competence in the four dimensions can be developed progressively over time by an expansion of competence in relation to depth of knowledge, complexity and taxonomic level. Since the core curricula constitute the framework for the four dimensions, the development of subject knowledge will provide the basis for progression, in entrepreneurial competences as in other subject areas. Each dimension will over time change in form and content, as from school pupils using creativity in their writing to university students using scientific methods to explain new and unknown phenomena. Competences are developed through coherent progression based on commitment, practice and reflection (Illeris, 2013). Entrepreneurial and value-creating processes support this progression and competence building. In order to strengthen the four dimensions, their

interrelationship and their link to core curricula, it is essential that students have continuous experiences of applying their entrepreneurial and other academic competences in value-creating entrepreneurial processes.

Progression in entrepreneurship education thus takes place through the connection between three parameters:

- The development of core curricular competences throughout one's education
- The development of entrepreneurial competences within the four dimensions
- The development of continuous experiences of value-creating processes

Our understanding is that entrepreneurial competences are formed through experiences of creative, valuegenerating processes in an educational context. Experience is here perceived as a particular kind of holistic learning where students are included in a process with important subjective significance for them and which takes place in interaction between situation, action and reflection. Students' competence building through continuous experience of value-creating processes thus provides a foundation for learning and for their possible future actions and reflections (Illeris, 2006; Dewey, 1916).



Figure 2: Progression is based on three parameters. Ideally, a student would reflectively connect the three parameters to produce a synthesis of them.

The development of entrepreneurial competences and experience depends on the educational context, and it is important to realize that different subject areas and traditions will affect the dimensions and goals. It is basically unreasonable to expect all students to acquire the same entrepreneurial competencies, but rather that all students, in the context of their core curriculum, learn to act entrepreneurially based on relevant personal and entrepreneurial competences.

A TAXONOMIC UNDERSTANDING

In the following, areas of competence in the four dimensions are exemplified as overall objectives for knowledge, skills and competence as they may develop during a student's education. The examples are adapted to the national qualifications framework (NQF) where Level 1 corresponds to the completion of compulsory schooling, Level 3 the completion of vocational education, Level 4 the completion of upper secondary education, Level 6 the completion of a profession-based tertiary course of study and Level 7 the completion of a degree course (Ministry of Education, 2009). These examples also aim to build up the progression on the basis of the SOLO taxonomy (Biggs & Collis, 1982), so that all educational levels include learning goals involving different forms of knowledge and degrees of complexity. The higher learning domains in Bloom's revised taxonomy, namely analysis, evaluation and creation (Bloom & Krathwohl, 1956), are thus not considered to be limited to higher education; they also occur in primary and secondary education with the difference that their complexity and students' ability to self-initiate and structure these learning domains are less well developed in early stages of education.

| NQF 1 | Competence goals | Knowledge | Skills |
|------------------------------|--|--|---|
| | | The student has knowledge of | The student is able to |
| Action | The student can independently and in cooperation with others initiate, organize, plan and carry out simple value-creating projects in a simple context and reflect on them The student can work in a | simple project management basic economics, budgeting, bookkeeping and resources cooperative relationships and forms of cooperation simple communication and communicative instruments building personal networks simple risk assessment the concepts of imagination and | plan and carry out simple value-creating projects and activities under guidance evaluate his/her own activities present relevant results to a target audience use budgets and accounts for activities of limited complexity communicate purposefully use personal networks in tasks and projects use different types of structured idea |
| | persistent, experimental and exploratory manner in simple creative processes on the basis of fundamental subject knowledge | creativity simple creative processes the role of creativity in society simple creative methods and processes | generation under guidance identify opportunities or ideas on the basis of fundamental knowledge express creativity and imagination through models and illustrations experiment and improvise with basic personal and subject knowledge |
| O u t w a r d orientation | Based on an understanding of his/her own cultural background, the student can reflect on opportunities in simple social, cultural and economic contexts | basic cultural, social and economic conditions problems and opportunities in different cultural, social and economic circumstances basic business models, markets and market conditions | describe and compare simple economic, social and cultural phenomena describe local and regional cultural, social and economic problems and opportunities assess and analyse opportunities in a simple context |

| Personal attitude | The student has a fundamental belief in his/her own abilities, and can independently and in cooperation with others keenly participate in solving uncertain and open tasks and deal with his/her emotional reactions in this regard | his/her own personal resources the development of personal resources different career paths and how to make choices to influence one's career path his/her emotional reactions in the | use his/her own resources in solving problems work on open and uncertain tasks in a specific context explain personal dreams and visions of limited complexity and provide examples of ways to realize these |
|----------------------|--|---|--|
| | 0 | his/her emotional reactions in the context of various types of tasks | ways to realize these reflect on one his/her own and others' mistakes and successes make ethical assessments of concrete, local and personal phenomena |

| NQF 3 | Competence goals | Knowledge The student has knowledge of | Skills The student is able to |
|------------------------------|--|--|--|
| Action | The student can independently and in cooperation with others | theories and processes in innovation and entrepreneurship | independently organize and implement projects |
| | plan and implement value- creating tasks and reflect on | project management and business plans | evaluate his/her own and others' problem solving using relevant criteria |
| | resources, process and results | resources, finance, budgeting and bookkeeping | use relevant terminology in the presentation of results |
| | | cooperative relationships and forms of cooperation | communicate subject matter appropriately to a target audience |
| | | forms of communication | use simple budgets and accounts in a subject- specific context |
| | | risk assessment | use relevant networks in connection with work tasks |
| Creativity | The student can take responsibility and work in a persistent experimental and | the concept of creativity in relation to practical school work | use different types of structured idea generation |
| | exploratory manner with creative processes in a practical field | creative processes and methods the role of creativity in society | analyse and evaluate an opportunity or an idea on the basis of knowledge and experience |
| | | | express knowledge and creativity through models and illustrations |
| | | | experiment and improvise within a specific subject area |
| O u t w a r d orientation | Based on an understanding of his/her own cultural and educational background, the | cultural, social and economic conditions in a curricular context | describe and analyse local and regional cultural, social and economic opportunities and challenges |
| | student can interact in subject- related, social, cultural and economic contexts and | how cultural, social and economic conditions create opportunities and challenges | describe his/her cultural background and personal values |
| | analyse these for opportunities | business models, markets and market conditions in relation to curriculum | describe connections between subject knowledge and possible business models |
| | | | discuss cultural, social and economic knowledge in relation to the curriculum |

| Personal attitude | The student has a fundamental belief in his/her own | his/her own and others' various personal resources | use his/her own resources in solving open and uncertain tasks |
|----------------------|---|--|--|
| | knowledge and resources and can independently and in | methods of working with the | work keenly to solve open and uncertain tasks |
| | responsibility and keenly participate in solving uncertain | and personal resources | describe personal dreams and provide examples of ways to realize these |
| | and open tasks and deal with his/her emotional reactions in this regard | emotional reactions to various tasks and work methods | reflect on and learn from his/her own and others' mistakes and successes |
| | | | discuss subject-related ethical issues |
| | | | |

| NQF 4 | Competence goals | Knowledge The student has knowledge of | Skills The student can |
|------------------------------|---|---|--|
| Action | The student can independently and in cooperation with others take responsibility to initiate. | theories, concepts and processes in innovation and entrepreneurship | independently organize, manage and implement projects and activities |
| | organize, plan and implement value-creating projects in a relevant curricular context and | project management and business plans | evaluate his/her own and others' activities using relevant criteria |
| | reflect on connections between resources, relations, process and results | resources, finances and accounting | identify and use relevant terminology in the presentation of results |
| | | forms of communication | use relevant communication for a target audience |
| | | use of personal networks | use and analyse simple budgets and accounts for activities |
| | | | analyse and assess the value and risk of activities |
| | | | use personal networks in tasks and projects |
| Creativity | The student can take responsibility and work in a consistent, experimental and | the concepts of imagination and creativity in relation to basic subject knowledge | use different types of structured idea generation |
| | exploratory manner in creative processes by involving relevant subject knowledge | creative processes and methods | analyse an opportunity or an idea on the basis of knowledge and experience |
| | | the role of creativity in society | express knowledge and creativity through models and illustrations |
| | | | experiment and improvise with basic subject knowledge |
| O u t w a r d orientation | On the basis of a reflective understanding of his/her cultural background, the student can interact in | cultural, social and economic conditions in a national and international context | describe and analyse local, regional and international cultural, social and economic phenomena, opportunities and problem issues |
| | educational, social, cultural and economic contexts and a n a lyse these with | how cultural, social and economic conditions create opportunities and challenges | describe and analyse relationships between basic knowledge and possible business models |
| | | business models, markets and market conditions in relation to subject knowledge | describe and analyse his/her own cultural background and personal values |
| | | 5 | discuss cultural, social and economic knowledge in a relevant curricular context |

| Personal attitude | The student has a fundamental belief in his/her competence | Knowledge of his/her own and others' various personal resources | use his/her own resources to solve open and uncertain tasks |
|----------------------|---|---|--|
| | and resources, can independently and in cooperation with others take responsibility and keenly participate in uncertain and open tasks and can deal with | methods of working with the development of personal resources emotional reactions to various tasks and working methods | work keenly at open and uncertain tasks reflect on personal dreams and visions and provide examples of ways to realize these |
| | his/her own and others' emotional reactions in this regard | | reflect on and learn from his/her own and others' mistakes and successes discuss ethical issues related to concrete, local and personal phenomena |

| NQF 6 | Competences | Knowledge The student has knowledge of | Skills The student can |
|------------|---|--|---|
| Action | The student can independently and in cooperation with others take responsibility to initiate, organize, plan and implement value-creating projects in a professional context and reflect on connections between resources, relations, process and results | theories and concepts in innovation and entrepreneurship different types of projects, management and leadership finances, budgeting and accounts in a professional framework forms of cooperation and communication at different levels networks and collaborative relationships in relevant fields | initiate, organize, manage and implement projects within a particular profession analyse and evaluate his/her own and others' activities using relevant professional criteria use different subject-specific terminologies in the presentation of relevant results use strategic communication with a specific target audience use and analyse budgets and accounts for complex activities analyse risks and opportunities on the basis of evidence-based knowledge develop and use professional and subject-related networks analyse and evaluate resources and present alternative solutions for resource allocation |
| Creativity | The student can take responsibility for processes that create and evaluate new uses of professional knowledge, and work persistently with creative processes against a professional background | Creativity in relation to his/her own professionalism creative and innovative processes and relevant models Creativity in a subject-related and professional context | use and evaluate relevant idea generation and innovation processes analyse opportunities and ideas on a professional basis illustrate subject-related knowledge and creativity through sketches, models and prototypes experiment and improvise with subject knowledge and personal experiences |

| O u t w a r d orientation | Based on an understanding of his/her own and others' cultural background, the student can interact in professional, social, cultural and economic contexts, and a n a l y s e the s e with opportunities in mind | cultural, social and economic conditions in an international context how subject knowledge in relation to cultural, social and economic conditions can create opportunities and challenges business models, markets and market conditions in relation to professional knowledge | analyse and evaluate economic, social and cultural phenomena as an impetus for new opportunities on a professional basis challenge his/her own and others' basic assumptions about the world at a relevant academic level assess the significance of his/her own and others' cultural background and values analyse and evaluate relationships between professional knowledge and possible business models |
|------------------------------|---|---|---|
| Personal attitude | The student has a reflective understanding of his/her own resources, can independently and in cooperation with others take responsibility and work persistently with uncertain and open tasks, and can reflect on and deal with his/her own and others' emotional reactions in this regard | his/her own and others' personal resources and the consequences of this methods to develop personal and educational resources emotional reactions in connection with working methods and tasks of professional and contextual complexity | use his/her own and others' resources to solve tasks reflect on his/her own and others' dreams and visions and provide examples of ways to use and realize these analyse and evaluate his/her own and others' mistakes and successes and use this as an impetus for learning use knowledge of his/her own and others' emotional reactions in connection with complex working methods and uncertain tasks analyse and evaluate ethical issues in relation to personal, professional and global phenomena |

| NQF 7 | Competences | Knowledge The student has knowledge of | Skills The student can |
|------------|---|--|---|
| Action | The student can independently and in cooperation with others take responsibility to initiate, organize, plan and implement complex value-creating projects in an academic context and reflect on connections between resources, relations, process and results | theories and concepts in innovation and entrepreneurship different types of projects, management and leadership finances, budgeting and accounting at an appropriate level of complexity forms of cooperation and communication at different levels networks and professional cooperative relationships | initiate, organize, manage and implement complex projects analyse and evaluate his/her own and others' activities using relevant criteria use theories and terminologies from different fields in the presentation of relevant results use and evaluate strategic communication with a specific target audience use, analyse and evaluate budgets and accounts for complex activities analyse and assess risks and opportunities on a scientific basis develop and use professional and subject-related networks on the basis of relevant subject knowledge, analyse resources and present alternative solutions for resource allocation |
| Creativity | The student can take responsibility for processes that create, analyse and evaluate new use of knowledge in the field and work persistently with creative processes on an academic basis | Creativity in relation to his/her core competence complex creative and innovative processes and relevant models creativity in a professional and global context | use and evaluate relevant idea generation and innovation processes analyse and evaluate opportunities and ideas on a scientific basis illustrate subject knowledge and creativity through complex sketches, models and prototypes experiment and improvise with subject knowledge and personal experiences |

| O u t w a r d orientation | On the basis of a reflective understanding of his/her own and others' cultural backgrounds, the student can interact in academic, social, cultural and economic contexts and analyse these with opportunities in mind | cultural, social and economic conditions in an international and global context how subject knowledge in relation to cultural, social and economic conditions can create opportunities and challenges business models, markets and market conditions in relation to science and research | analyse and evaluate complex economic, social and cultural phenomena as an impetus for new opportunities on a scientific basis challenge his/her own and others' basic assumptions about the world at a scientific level assess the significance of his/her own and others' cultural background and values analyse and evaluate relationships between research-based knowledge and possible business models |
|------------------------------|--|---|--|
| Personal attitude | The student has reflective knowledge of his/her own resources and can independently and in cooperation with others take responsibility, work persistently with uncertain and open tasks, and reflect on and use his/her own and others' emotional reactions in this regard | a reflective understanding of his/her own and others' personal resources and the consequences of this methods to develop personal and professional academic resources emotional reactions to working methods and tasks of high scientific and contextual complexity | evaluate and use his/her own and others' resources to solve tasks reflect on complex dreams and visions and provide examples of ways to realize these analyse and evaluate his/her own and others' mistakes and successes and use this as an impetus for learning use knowledge of his/her own and others' emotional reactions in connection with complex working methods and uncertain tasks analyse and evaluate ethical issues in relation to personal, scientific and global phenomena |

CHAPTER 3: EDUCATION AND ENTREPRENEURSHIP

The political and legislative articulation of entrepreneurship education places teachers and institutions in the challenging situation of needing to establish a connection between the educational institution's core curriculum and goals for entrepreneurial competence, and translate this into teaching practices. These teaching practices will include both everyday lessons and particular value-creating elements. The following presents a number of ways in which the dimensions may be included in a core curricular context, followed by a section describing various approaches to experience-enhancing education.

INCLUSION OF THE FOUR DIMENSIONS IN AN EDUCATIONAL CONTEXT

Action

The action dimension aims to enable students to initiate, plan, manage and implement various projects and activities by strengthening areas of competence in project management, economic understanding, communication, networking, cooperation and risk assessment. These competences will be supported through extended, process-oriented teaching sequences. It is therefore crucial that teachers working with this dimension consciously help students in an academic progression which involves both the development and application of subject knowledge and encouragement to apply their action competences. Neck, Greene and Brush (2014) have developed a teaching model to help students learn what they call "the entrepreneurial method". They place action as a central element in all the five areas they consider central to entrepreneurial activity. For them, entrepreneurship is the practice of play, empathy, creation, experimentation and reflection. If teaching is to include these elements, the activities should involve open options that learners help to define and which also challenge their planning and execution methods. This may for example take place through the involvement and development of different networks, varied forms of cooperation, different forms of communication and presentation, and work with resource management.

It is thus not a question of activities where learners are given a free hand to do whatever they want, but a question of teaching that challenges learners and provides a framework for activities that oblige them to involve their subject knowledge and apply it to different contexts. It is important that students gain mastery experiences and entrepreneurial experience, but to achieve this, mistakes must be accepted as part of the process, and students must be given the opportunity to discover these mistakes by reflecting on their own and others' actions (Schøn, 1987).

Creativity

The creativity dimension aims to enable students to create ideas, see opportunities, think in divergent ways and have an open, experimental and improvisational attitude to problem solving. Although the creativity discourse has

been prominent for the past 20 years, knowledge of how creativity arises and is developed has not received a great deal of attention. Creativity is generally developed through experiments, open tasks, challenges, hindrances and aesthetic or artistic work. An important point is that creativity is not exclusively a result of individual creative efforts, but often arises from collaborative processes involving knowledge, non-knowledge, relations and concepts (Darsø, 2011).

Several theoretical approaches argue that creativity is not wild imagination or "thinking outside the box", but is based on knowledge and insight, and in Bloom's taxonomy, creativity and creation is the highest taxonomic level of knowledge (Bloom & Krathwohl, 1956). This understanding implies an internal relationship between the development of academic knowledge and creativity, where the development of creativity enhances academic learning and vice versa.

According to Tanggaard (2008, 2010), creativity is developed through in-depth study, experimental approaches (fudging) and by meeting resistance in the data one is working on. In an educational context, this would mean allowing students time for in-depth study and persistent work with experimental and open tasks without foregone conclusions or solutions. At the same time, the teacher's own creativity and ability to surprise and challenge learners' perceptions will help to enhance creativity in the classroom. Here it must also be recognized that creativity can have many expressions and is not confined to artistic and aesthetic subjects. It is equally, if not more, important that the teaching of languages, science and social studies involves creative approaches.

Hansen and Byrge (2013) see creativity as a special kind of "unrestrained use of knowledge". It can be developed and trained through particular exercises based on four principles: freedom of judgement, horizontal thinking, parallel thinking and focus on the task. These principles are seen as together forming a particular learning environment, the "Creative Platform", where creativity can be developed and trained. The Creative Platform is a special didactic approach which can be used for the development of ideas, the solution of challenges and problems, and the training of divergent and horizontal thinking. Given the need to involve creativity in core subject teaching in general, the four principles and the particular learning environment were developed into a special method called "Creative Platform Learning" (Hansen & Christensen, 2014), where learners' preconceptions and creativity are used to make suggestions or hypotheses about subject-related concepts and principles. The methods and principles of the Creative Platform necessitate a more detailed description than can be given here, but it is important to note that specific learning environments can encourage creativity and that creativity can be trained through particular methodologies and activities, since the theory and methods of this approach may eventually come to enhance education to the benefit of both core curriculum and creativity.

It is also important to give students the opportunity to test and evaluate how far their creative solutions and ideas also represent innovations for others. Something that is new to the individual and which he/she perceives as personal disharmony often has existing solutions or is something others simply do not need. This should not

inhibit students' initial creative processes, but they should be given the understanding and skills to evaluate the innovative potential of ideas and solutions.

Outward orientation

The dimension of outward orientation deals with the way students perceive their environment and the world as an arena for entrepreneurial activities. It does not merely concern the necessary knowledge and understanding of the world as a scientific field, but particularly the world as an entrepreneurial opportunity and the student as an opportunity for the world. The dimension of outward orientation is based on the fact that entrepreneurial actions require insight into the context in which these actions will take place. This applies to economic, social and cultural conditions which determine whether an action makes sense, is profitable and makes a positive contribution to the world. Understanding and knowledge of the world are also a sound basis for considering the world as a field of opportunity. Greater understanding of social, cultural and economic conditions and differences will improve opportunities for entrepreneurial activity and the ability of individuals to develop their life and career in a global context.

Research has shown that individuals' background is a vital factor in the types of opportunities they see in a given context, such as the possible applications of a new technology or the possibilities involved in social change (Shane, 2000). Furthermore, it has been shown that entrepreneurial individuals typically show an ability to connect different contexts and changes to their own contextual knowledge and thus create an understanding of the potential of new situations and changes (Baron, 2006). This is obviously related to their creative abilities but is also linked to how they collect and use information. Typically, more generic sources only generate the ideas, but it is through informal sources that this knowledge is validated (Fiet et al., 2004). An understanding of local and global developments and the challenges and opportunities involved is a central field of entrepreneurship; this can indicate opportunities for commercial activity or cultural development and in general help students to acquire an approach to the world where they are more involved in creating their life situation and their world than being obliged to adapt to developments they cannot influence (Sennett, 1999).

Competences in this area can be part of general teaching, where academic knowledge is related to its historical and social context with the question of how the knowledge or the academic field originated and how they are used in human practice and development. It is also important that students have the opportunity to consider how different fields of knowledge might be used in the world in a future-oriented perspective, in order to develop their divergent thinking. Outward orientation can also be developed through activities where learners are actively involved in the world beyond their educational institutions. This can take place in physical form but today there are many opportunities for virtual visits, communication with interested parties from all parts of the globe and involvement in projects with actors from different cultures and geographical locations.

Personal attitude

"In sum, the successful, the venturesome, the sociable, the nonanxious, the nondepressed, the social reformers, and the innovators take an optimistic view of their personal capabilities to exercise influence over events that affect their lives. If not unrealistically exaggerated, such self-beliefs foster positive well-being and human accomplishments." (Bandura, 1994, p. 26).

This quote indicates that individuals with a positive self-image and a strong faith in their own ability, i.e. a high level of self-efficacy, will be those who succeed best in changing the world and creating results. If this is the whole truth, we primarily need to work on personal attitude if we want to create entrepreneurial students. Of course, a positive self-image is closely linked to progress in many fields, but according to Bandura, things are more complicated. Different people, regardless of their overall self-image, may differ greatly in their levels of self-efficacy in various fields. Self-efficacy is domain-specific and is determined by a person's faith in being able, alone or with others, to perform all activities presented by this domain (Bandura, 1997). It therefore makes good sense for a teacher to have a holistic approach to entrepreneurship and not to focus merely on a few of the areas of competence needed for students to feel confidence in their own abilities and to engage in entrepreneurial activities.

Personal attitude concerns the development of students' belief that they can use their own resources to act in the world and influence their life, career and external circumstances. It also involves the ability to work persistently and to accept uncertainties and complexities. Personal attitude differs from the other dimensions in that knowledge and skills have the character of self-knowledge and self-understanding. This necessitates specific conditions for the operationalization of this dimension of the areas of competence, involving the organization of the teaching rather than its concrete content.

There are many similarities between ways of working to develop students' entrepreneurial personal attitude and how, according to Bandura's (1997) research, one can develop self-efficacy. This takes place primarily through:

- Mastery experiences. The most important factor, according to Bandura (1997), is the individual's experience of success. This mastery experience will be dependent on the individual having overcome obstacles through a sustained effort. Mastery experiences that come too easily can have the opposite effect, as they may give rise to expectations of quick results and make a person give up in the face of adversity.
- Social role models and vicarious experiences. By observing and studying how others perform actions, a
 person can learn to do the same. Further, students can learn from role models by identifying themselves
 with their good results and gaining confidence that they can master something similar. This can also
 have an adverse effect if the role models were unsuccessful despite their persistent efforts. The effect of

role models depends largely on the ability to identify with the person concerned, which is an important consideration when inviting guest speakers or potential role models or when using role models in teaching.

- Social persuasion. People who are convinced of their ability to solve certain tasks by positive expectations from teachers or others will put in more effort and be more persistent than if they hesitate and focus on their shortcomings when problems arise. However, it is also easy to undermine a person's self-efficacy through social persuasion. Unrealistic challenges can also easily lead to disappointing results.
- Moderation of stress reactions to prevent the tendency to slip into negative thought patterns. This is a question of teaching students to discover their own signals and signs of stress and anxiety. Through repeated practice and reflection, students can not only develop meta-cognitive abilities but also meta-affective skills, and can learn how they react emotionally in different situations.

Self-efficacy is an important factor for entrepreneurial actions, and research has demonstrated a strong correlation between high self-efficacy and the extent to which individuals will perform actions, that is, how likely it is that students will actually use their competences in practice. In an educational context, one can be inspired by the self-efficacy concept and structure lessons so that the four ways to strengthen self-efficacy become part of the organization of the teaching. This implies activities and teaching sequences that ensure that all students experience success and mastery of the work they are given; the content and level of difficulty of the work should also ensure persistence and concentration by the students. Similarly, the involvement or stories of role models may be used as inspiration, also in subject-related contexts. At the same time, positive expectations expressed by teachers are important for students, and preventative actions and support for students with slow learning progress are also important to ensure that those students do not develop negative self-efficacy.

The ability to accept and work with uncertainty and complexity can similarly be a focal point in teaching. This can primarily take place through work with open tasks with limited advance information, where the learners cannot know how to solve the task or when it has been solved. In such tasks, learners may be allowed to reflect on their emotional reactions, to help them to learn to accept the emotional responses that arise in work with uncertain and complex tasks (Rohde & Olsen, 2013). In continuation of this, teachers can help students to learn to accept failure, leading eventually to the ability to accept and learn from their own and others' mistakes.

Teaching that involves future scenarios and addresses students' dreams, plans and hopes for the future can help to promote reflection on the values, opportunities and resources the students possess and the choices and actions they can take to achieve their objectives, alone or with others. In such sequences, relevant role models or stories about what others have achieved may help to broaden the learners' understanding of the diversity of the world and how different personal resources can be used to exploit this in the future.

THE DEVELOPMENT OF ENTREPRENEURIAL EXPERIENCES

"[...] experience in everyday speech is seen as something deeper than 'ordinary learning'. When you have experienced something, it is something you have a direct personal awareness of and something completely different from the indirect relationship involved when you have learned something at school, read it in a book or seen it on TV." (Illeris, 2006:135).

The Foundation's effect studies have focused on students' entrepreneurial self-efficacy and measured their confidence in their ability to perform activities requiring cognitive skills, such as planning and financial knowledge, as well as activities that require non-cognitive skills, such as mobilizing resources and managing uncertainty. The studies of primary and secondary school students show that teaching that focuses on the development of non-cognitive entrepreneurial skills has a positive effect on students' connectedness to school and on their learning and motivation to continue their education. This is due to the practice-oriented teaching methods and the supportive learning style required in this kind of teaching (Moberg, 2014). This teaching approach has a particularly positive effect on students from non-academic backgrounds, as it involves a variety of talents. The studies also show that if students have a high level of ownership of the entrepreneurial projects, and do not just see these as typical school work, this has a very positive impact on their self-perception in relation to entrepreneurial activity.

A key aspect of the understanding of progression in Chapter 3 is based on the idea that students during their education receive a number of entrepreneurial teaching sequences that help to develop their competences and motivation to engage in entrepreneurial processes. These sequences should create holistic experiences with considerable subjective significance for the student on the basis of commitment, motivation and interaction between students and the outside world. The concept of experience in such an understanding is not connected to students' past experiences, but refers to entrepreneurial teaching sequences to support the formation of experience (Illeris, 2006; Dewey, 1938). A focus on value creation in education requires a process-oriented approach to teaching where the students form a starting point for reflection on experiences.

Students will always have experiences regardless of what teachers do. Thus, it is the quality of the experience, and "to discriminate between those experiences which are worthwhile educationally **and those which are not**" (Dewey, 1938), that is of interest. According to Dewey, experience forms a continuum where an individual experience both refers back to past experiences and anticipates possible future experiences. Experiences thus form "dispositives"⁶ for future action, thought and reflection. Teaching which supports the establishment of these potentials will have elements of both subject-related and entrepreneurial content and interaction with the world. It will also include "drive" (mental energy or motivation) and in particular accommodative and transformative

⁶ John Dewey's term for the dispositional possibilities that can be developed by students on the basis of their experience. It has many parallels with the concept of competence, which also reflects potential actions in new contexts.

learning (Illeris, 2006, 2013). The development of experience will thus take the form of process-based sequences with different starting points, activities, outcomes and evaluation criteria. Thus there is not one particular exemplary teaching sequence that can be repeated or which alone can develop skills and experience in entrepreneurship. For this reason, a framework divided into starting point, value creation and process is presented here; this allows for variation in the entrepreneurial sequences and can thus function in many different educational and social contexts.

Starting point

Learning sequences to develop experience will always have a kind of "starting point" that forms the basis for subsequent student activity. In classical entrepreneurial teaching, this has mostly consisted of business ideas based on idea generation among the learners. However, this is just one of many options and in many types of education and schools this will be an unsuitable starting point. There is therefore a need to expand the number and variety of starting points, as this can help to vary the learning sequences and link them more closely to educational and entrepreneurial goals. These may include:

- · Domains or specific challenges within a field of study
- Personal resources, knowledge and experiences of the students
- · Challenges and problems in students' everyday lives
- A specific challenge from an external entity
- Specific tasks/projects within an organizational framework
- A particular resource (financial, material or framework)
- Business ideas from idea generation
- Fashion, trends or other aspects of society
- Local/global issues

Value creation

According to the definition in Chapter 2, the typical feature of an entrepreneurial sequence is the process from idea or opportunity to actions that create value for others⁷. In an educational context, value and action cannot always be realized, which means that teachers must bear in mind whether the goal of the teaching is real or potential value creation, and whether this should be part of the student's own choice. The teacher should also be aware of whether and how the value can be assessed and that the criteria for this may be objective/external (applicability in a context), competence-based (i.e. on students' ability to analyse and evaluate ideas and value creation) or pedagogical (the learning value of the students' value-creating activities).

Potential forms of value will usually be business or project plans that have not yet been put into practice but worked on in other ways, e.g. through prototyping, illustrations or presentations. Real forms of value may be projects or activities that have been realized and have created value for a specific target group. Examples of these could be:

- Information sessions or sequences for other students
- Fundraising or help for particular groups' projects based on realized activities
- Present and future value of enterprises
- Social events
- Exhibitions or experiences
- Processes
- Knowledge
- Artistic expression
- A problem solved or addressed

⁷ All teaching will involve some form of learning by students that can be seen as learning-related value. This value is however not sufficient to be characterized as entrepreneurship education, since this would imply that all learning is entrepreneurship education. See Chapter 1.

Process understandings

Many entrepreneurial teaching sequences will be based on particular step-by-step models that ensure that students understand processes and that the processes can be controlled, corrected and evaluated as the various steps are completed. This allows teachers to control the process, guide students and improve the ideas or projects. A step-by-step model provides good opportunities for the control and development of goals, specific areas of knowledge and skills, and the synchronization of students' projects to ensure that they are at a similar stage in the process. What is important in step-by-step models is that focus is maintained on learning and the development of valuable experience and not on the individual steps or activities. A static approach can compromise the possibility for students to pursue emerging opportunities and apply the knowledge they acquire in the process.

A variation of the above can be found in "design thinking", which implies an understanding of the interrelationship between technology, people and market. Design thinking does not operate from a problem-solving perspective, but rather with problem identification, involving students' ability to observe, listen and reproduce their observations. Design thinking thus focuses on outward orientation and empathetic skills, where one can put oneself in the place of others and see oneself and others in unfamiliar contexts (Neck, Greene & Brush, 2014). Design thinking is concerned with the question of what things/processes/cultures "ought to be", unlike science, which is concerned with what things "are". Work processes in design thinking are therefore based on questions such as "What if...?" and "How can we...?" and involve the production of prototypes, illustrations and models. There is also a coherent notion that quantity of ideas is positive, and design thinking processes will often have many different perspectives and seek to provoke errors for learning and new understandings.

Linear step-by-step models will basically assume that a specific goal can be established from the beginning and that students' planning is based on achieving this goal; the goal thus determines the process. This linear understanding has in the past decade been challenged by Sarasvathy's effectuation approach to entrepreneurship. According to Sarasvathy, "entrepreneurs" only use causal goal-directed management methods to a limited extent. An entrepreneurial process rather begins in an attempt to answer the questions of who I am, what I know and whom I know. In Sarasvathy's understanding, it is resources and funds (not the goal) that determine the entrepreneurial activities a person will engage in. Since entrepreneurial processes typically involve many players, more resources will be added during the process; these will expand the possible activities that can be implemented and the goals that can be achieved, and will provide new demands and challenges. It is therefore important that students gain the experience of dealing with the uncertainty and ambiguity typical of entrepreneurial processes. In order to act on the opportunities that arise during the process, there must be an open and flexible structure which enables continuous testing and iterations of ideas and goals (Sarasvathy, 2008).

In the effectuation approach, therefore, there is very little point in teaching students management methods where the rationale is to predict the goal in advance and to avoid uncertainty and risks through planning. Depending on the players involved, the process and the goals to be achieved will vary greatly. According to Sarasvathy (2008), it is better to focus on the "next best action" and on experience of real entrepreneurial actions and processes, rather than making business plans and teaching traditional management methods.

THE RELATIONSHIP BETWEEN LEARNING GOALS AND PROCESS

A rigid repetition of the same steps or the same methodological approach may reduce complexity for students, but also lead to the repetition of their past actions and successes, and thus not to the development of new experiences. Therefore, variation in starting point, value creation, processes and evaluation criteria will be needed. Different working methods, processes and approaches will thus be able to support different goals for competences and learning, and in accordance with educational research, methodological diversity will enhance learning outcomes (Meyer, 2009). The overriding method and process for students' work should therefore be dependent on the intended learning goals and be varied to enable students during their education to gain experience of many different forms of entrepreneurship, process understandings, tools and successes. Similarly, all learning sequences should contain elements of reflection, either as an integral part of the learning process or as subsequent learning-focused evaluation, in order to turn experiences, knowledge and skills into competences (Illeris, 2013). The different starting points, types of value creation and process understandings allow for an infinite amount of different learning sequences that can take place in a variety of educational contexts. Consequently, it should be possible for any teacher on any course to find or develop models which enable students to work entrepreneurially and also involve academic and curricular goals. Whether this succeeds will often depend on the framework decided by the teacher and whether the students are sufficiently motivated to become involved in the process. Here a crucial factor is whether the teachers can create sufficient motivation to allow students to gain meaningful experiences and engage in the learning process.

MOTIVATION

Research into learning and pedagogy has shown that teaching which creates student involvement and motivation typically focuses on authentic and practical tasks that challenge students' creativity and problem-solving abilities, and includes group work and provides space for various talents (Newman, 1991). Important dimensions to create involvement in the learning process are that students feel ownership and responsibility for their work and learning processes, that the work offers variety, and that the students perform work in all stages of the process from concept to outcome (Wentzel & Brophy, 2013). In this connection, motivation research has also shown the great importance of knowing how the results will be used and what value this will create. Entrepreneurship education typically contains all these dimensions and is therefore in itself a good reason to create engaged and motivated students (Moberg, 2014).

Entrepreneurship education often involves the use of competitions as a way to motivate students as well as a way to engage the local business community in the teaching and thus make the teaching more authentic. Many researchers in motivation and learning are critical of competitive elements in education as this is likely to make students focus more on winning the competition than on the learning process itself. According to the researchers Deci and Ryan (1985), competitions are an example of extrinsic motivation, i.e. the students are motivated to do the work because they are being rewarded for it⁸. Instead of using rewards and threats, Deci and Ryan argue for finding other ways to stimulate curiosity and learning in students, i.e. intrinsic motivation. Students' intrinsic motivation typically increases when tasks are authentic, meaningful, challenging and create value for others (Helme & Clarke, 2001), and also if the students can work with something that interests them and preferably arouses their feelings (Wentzel & Brophy, 2013).

⁸ Marks are also an example of external motivation.

CHAPTER 4: FEEDBACK, EVALUATION AND ASSESSMENT

The Foundation's survey of forms of examination in entrepreneurship in higher education showed that teachers called for clearer teaching goals, taxonomies and benchmarks for evaluation and assessment. It was also found to be a problem that the new teaching goals required new ways of thinking about feedback and examination which better supported these goals and student learning. One challenge in integrating entrepreneurship into the educational system is that many of the existing forms of evaluation and assessment do not cover entrepreneurial competences (FFE-YE, 2014).

There is strong evidence that feedback from teachers to students is an important parameter for how much students learn. Correspondence between intended and perceived learning goals, whether those goals are clear to students and whether students receive feedback are key factors for teaching and learning at all levels (Hattie, 2009; Biggs & Tang, 2011). There is also evidence that students become diligent and involved in precisely what they will ultimately be tested on. Ramsden (1992) states explicitly that evaluation and examinations influence students' approach to teaching so strongly as to define the curriculum. It is therefore necessary to establish a correspondence or "constructive alignment" to ensure that the teaching and learning strategies used, the types of evaluation created, the evaluation criteria and how marks are given all support the learning goals (Hattie, 2009; Biggs & Collis, 1982). Overall, this means that the intentions to implement entrepreneurial learning in the educational system basically depend on:

- The way teachers evaluate and give feedback to students in order to assess their learning
- The content that the education system chooses to evaluate at the end of courses
- The correspondence between teaching goals and forms of evaluation and examination
- The use of appropriate taxonomies as benchmarks for the assessment of student performance

The quality of the teaching also depends on the evaluation, and particularly on the feedback the teacher consciously or unconsciously seeks from the students in order to revise the teaching and activities to enable the above-mentioned correspondence between intended goals and actual learning (Hattie 2009).

EVALUATION OF ENTREPRENEURSHIP INTEGRATED INTO THE GENERAL CURRICULUM

In the evaluation of learning where entrepreneurship is integrated into the general curriculum, feedback and evaluation must be related both to the overall curricular goals and to the entrepreneurial goals derived from the four dimensions (Chapter 2). As these latter goals are partly difficult to quantify or measure, some of the evaluation must be based on indicators, observations and assessments on the part of the teacher and learner (Ministry of Education, 2014).

Openness with regard to teaching goals, what the teacher observes, and the indicators used, will increase students' understanding of the teaching and its objectives. Visibility is thus a prerequisite for the following:

- Teachers can give students appropriate feedback
- Students can give each other feedback
- · Students can use self-evaluation and reflection in their work

Research has provided clear evidence that precisely visibility in the relationship between goals and evaluation criteria supports learning and enhances student learning outcomes (Hattie, 2009; Biggs & Tang, 2011). From a learning point of view, this emphasizes the importance of visualizing precisely the entrepreneurial competences that the teacher wants students to develop and how these will be evaluated. A secondary school teacher of Danish can for example explain to students that the way they organize a Danish language exercise is a goal in itself, and make the students' organization part of evaluation and feedback. In this way, in addition to the Danish language goals, there will be feedback from the teacher on how the work was organized. On a higher education course, a separate goal of entrepreneurial competence could be the students' ability to put particular academic knowledge into a social, cultural and economic context and point out different potential uses of the knowledge. Academic knowledge will thus be combined with competences involving outward orientation and creativity.

EVALUATION IN VALUE-CREATING EDUCATION

Experience has shown that much entrepreneurial education has focused more on a specific predetermined process than on the learning goals the process should lead to (Paulsen, 2012). This implies a risk of an inverse relationship, where the process is a goal in itself and the learning outcome is taken for granted, random and remains invisible to the students. It is therefore important that teachers, regardless of the process they choose, pay attention to the learning goals the activities will lead to. It may also imply the need to explain clearly to students the point of each activity in the process. In terms of developing knowledge and skills into competences, it is important that students either continuously or at the end of a learning sequence have the opportunity to reflect and to analyse and evaluate ideas, processes and products. Such reflection supports learning, competence building and the likelihood that knowledge, skills and competences will have a transfer value to enable their use in other contexts (Illeris, 2006, 2013). The probability that students will be able to apply their acquired competences can be enhanced by allowing them to expand their reflections on an entrepreneurial learning sequence to include stories (narratives) about what they thought, did, felt and learned (White, 2008). This increases the possibility that the learning sequences will involve accommodative and transformative learning (Illeris, 2006) and it is thus also important for enhancing identity and building self-efficacy (Mauer, Neergaard & Kirketerp, 2009).

The teaching of value creation can, as described in Chapter 3, take many different forms, with a variety of starting points, processes, products and forms of presentation. There must therefore be ongoing work on different forms of evaluation that embrace the process, product and students' learning and reflections.

| Connecting knowledge, curricula Starting point | r competences and prior experience Value creation, process, ongoing | es, ongoing feedback ; feedback | |
|---|--|------------------------------------|--|
| | Process | Reflections and narratives | |
| | | Product | |
| | | | |

Figure 3: A process-based interrelationship with associated feedback loops, evaluation, reflection and perspectives. The figure shows how all the elements of evaluation together support learning and competence building.

EVALUATION CRITERIA

The criteria used to evaluate student performance have a decisive influence, and the teacher must therefore be aware that the system of evaluation will steer students' learning outcomes, processes and products in certain directions (Biggs & Tang, 2011). Variation in goals, feedback and evaluation criteria therefore helps to create progression and prevents students being locked into specific patterns of action and thought which they have previously found successful.

Some of the entrepreneurial goals are so specific that they can be evaluated quantitatively. This applies for example to economics, certain competences in outward orientation and skills in planning and organization. Knowledge and skills in these areas can be evaluated quantitatively by multiple choice tests or written work where students solve problems presented to them. However, other entrepreneurial competences cannot be directly measured, but will depend on the teacher's determination of indicators and criteria that can lead to dialogue and feedback, perhaps also between students (Ministry of Education, 2014).

Some entrepreneurial education involves networks and society at large in its activities. Students can then be assessed on their ability to act appropriately in relation to broader society, and the external relationships and contacts can provide students with valuable feedback on their projects. Finding indicators, developing criteria and giving feedback can be a strain on resources and difficult to manage in a large group of students. Therefore, various forms of self-assessment, peer to peer evaluation and feedback from society can represent valuable alternatives to the teacher's evaluations.

Many student projects will include knowledge that the teacher does not possess; the teacher will therefore need to evaluate students' ability to seek out, apply and relate to external knowledge. The involvement of external experts, role models and "sparring partners" in the field is also an opportunity to involve a wider variety of perspectives and feedback than can be acquired within the framework of the educational institution.

SOME ISSUES IN EVALUATION AND ASSESSMENT

SYMBOLIC VIOLENCE

There are certain important issues related to the evaluation and assessment of entrepreneurial learning and competences. Feedback, evaluation and assessment involve a form of standardization or power of definition, where the teacher's (perhaps subjective) idea of what entrepreneurial competences are may counteract the intention of diversity and creativity in entrepreneurship education. The assessment criteria and yardsticks we use thus risk jeopardizing what we actually wish to achieve (Paulsen & Ziethen, 2014). The evaluation of entrepreneurial competences can thus take the form of symbolic violence, where the evaluating elements (teachers, curricula, examinations) through feedback and assessment help to define what is "appropriate and right" or "inappropriate and wrong." This creates an institutionalized reproduction and standardization (Bourdieu & Passeron, 2006) of specific processes, forms of expression, actions and creativity understandings which may ultimately run contrary to diversity, creativity and innovation. Policy makers and practitioners must therefore realize that the feedback and forms of assessment used in entrepreneurship education may on the one hand support students' learning and development, but on the other hand may tend to lock students' actions, personal attitude, creativity and outward orientation into certain defining frameworks and forms of expression.

THE MEASUREMENT OF COMPETENCES

"Competences imply that a person acts in a competent manner in both familiar and unfamiliar situations, and if one attempts to measure the extent to which a person can be expected to act competently in unknown and unpredictable situations, one is on shaky ground." (Illeris, 2013 p. 68)

While it is possible to measure a person's knowledge and skills, competences are difficult to measure and evaluate. This is because competences imply a kind of potentiality and are linked to personality traits and subjective resources that can not readily be observed or tested with the methods available in the educational system. Some of the areas of competence in entrepreneurship and in the four dimensions are context-related and contain various elements of a subjective, affective and non-cognitive nature, which cannot readily be articulated or demonstrated outside specific contexts. The success or failure of an individual entrepreneurial process or project cannot constitute a valid basis for the evaluation and assessment of competences. Forms of evaluation and assessment in an educational context must therefore primarily involve the assessment of students' reflections and perspectives on knowledge, practice and problems on the basis of known taxonomies.

ETHICAL CHALLENGES

Personality traits and competencies within the dimension of personal attitude are particularly difficult to assess and evaluate and there are also a number of ethical issues involved in evaluations of students based on their subjective and personal preferences and resources. There may be unintended consequences if we put "labels" on students and provide them with narratives that they have (or do not have) certain personality traits. It may ultimately be traumatizing for students to be assessed in areas related to their self-perception and which they cannot or do not want to change. Evaluation of entrepreneurial learning also involves the risk of favouring students with certain extroverted personality traits (lversen, 2011). A key question is therefore whether it is at all appropriate to evaluate subjective and personal preferences, even though many students find it attractive to take part in activities that resemble personality tests, analyses of team roles, etc.

Education directed towards the development of personal attitudes and subsequent evaluation of its effect risks crossing an invisible line between what can be described as teaching and therapy. Teachers must therefore find a balance where the development of students' personal attitude is an educational goal, but where students must be allowed to decide for themselves whether they wish to include this in evaluations, assessments or reflections. On the other hand, personal attitude is an important goal in entrepreneurship education, and the use of self-assessment tools is an opportunity to protect students from the above-mentioned ethically problematic situations, while also providing the benefit of the proven learning effect of self-evaluation (Hattie, 2009).

SELF-EVALUATION AND IMPACT MEASUREMENT TOOLS

The Foundation has conducted a range of impact measurements of programmes and initiatives at various levels of the educational system. These studies have focused on how students feel that they have developed their entrepreneurial skills, knowledge, attitudes and behaviour. There has however also been a focus on more education-oriented dimensions such as student motivation, school engagement and relationships with classmates and teachers. To provide teachers with access to a straightforward evaluation tool that students can also use for self-evaluation, the Foundation cooperated with several European partners to develop ASTEE (Assessment Tools and Indicators for Entrepreneurship Education) (Moberg et al., 2014). ASTEE can be used to assess in which areas individual students or entire classes need to strengthen their self-confidence. This can give teachers insight into how their teaching is affecting students' confidence to conduct entrepreneurial activities and thus support the development of personal and subjective competences, without the aforementioned problems. The Foundation is in the process of developing a digital version of ASTEE; this will automate the quantitative analysis to enable the results to be available simultaneously with the data collection. This assessment tool will be available in autumn 2015.

EXAMINATION AND ASSESSMENT

Although there is research to suggest that students obtain the best results on the basis of formative assessment and feedback rather than through exams (Butler, 1986), an examination can help to legitimize a subject or area of

competence both externally and internally. Against this background, examinations in entrepreneurship and assessments of entrepreneurial competences help to legitimize entrepreneurship in the educational system and to motivate students to engage in entrepreneurship education on an equal footing with other subjects.

Ideally, a form of examination should meet several criteria: it must support the learning objectives, so that the backwash effect that will occur in any case helps to reinforce students' intended learning. This ensures alignment between goals and assessment and helps to motivate (and discipline) students (Biggs & Tang, 2011). A form of examination must also have validity in measuring what one wants to measure or assess, both in a broad sense in relation to a curriculum (content validity) and in a deep sense in relation to learning goals (construct validity). Finally, examinations must be assessed by their reliability, so that the same performance will give roughly the same results, regardless of who the examiner is. There must therefore be objective criteria and yardsticks against which the candidate's performance can be compared (Miller, 2014).

In an examination context, an evaluation should be based on whether students have attained the pre-defined learning goals. Therefore, a random idea and a subjective perception of the potential of this idea cannot be a valid basis for evaluation. It should rather be the students' way of working with the idea, and especially their thoughts and reflections in this connection. An examination on such a basis assesses not only idea and product, but particularly students' ability to analyse and be critical - to engage constructively in process-based working methods. The advantage of this is that learning is not dependent on the idea or product, but on what takes place during the process and on how students handle practice and reflect upon it. This also means that one can use existing taxonomies, such as Bloom's, SOLO, etc. as yardsticks.

An ideal form of assessment of entrepreneurial learning sequences will thus constitute reflection on process and learning, enabling a combination of formative and summative evaluation; in this way, the assessment will not be of or for learning. Assessment should ideally be established as learning - a process that both assesses students' learning and develops their own competence to assess and evaluate (Dobson, 2012). It should further ensure the development of competence and experience with a high degree of transfer value. In the figure below, there are thus three elements in an evaluation/assessment context which illustrate that there is:

- An educational and personal starting point prior to a process, perhaps as a result of past formative and summative evaluations.
- A process which, on the basis of knowledge, curriculum and experience, works with a form of idea/ opportunity and value creation. This process can be evaluated with regard to idea, value creation, process, product and presentation. The evaluation should be formative with feedback and learning in mind.
- A subsequent reflection on the process and teaching sequence in a curricular framework, as well as a perspective on how experiences from the sequence can be transferred to other areas. The evaluation

relates to students' thoughts on starting points, value creation, process and relation to curriculum, context and previous experiences and teaching sequences. The evaluation is formative to aid feedback and learning and may perhaps also be a summative assessment to give students marks.



Figure 4: Interrelationships in the assessment of entrepreneurial processes

This model presents an additional element of reflection not included in many of the existing forms of entrepreneurship education. This means in principle that students could be successful in their process and product, but fail in reflection, or vice versa. Learners thus have the opportunity to demonstrate competences in assessing and developing ideas in a given context, in taking different perspectives on value creation, in providing curriculum-based justification for their choices and at the same time involving metacognitive and meta-affective aspects of their own learning. Such reflection increases the likelihood of creating transfer value to allow knowledge, skills and competences to be applied to other contexts than the project in question (Illeris, 2006; 2013).

The presentation portfolio is a very suitable form of evaluation for this type of learning as it contains a selection of products chosen by students themselves, based on a reflective process and thus an in-built formative self-evaluation. The evaluation and any grading is thus based on knowledge, product, process, reflection and a synthesis of starting point, process and learning, in a weighting familiar to the students.

Forms of examination such as the presentation portfolio will allow for valid and reliable assessment. It supports engagement, practice and reflection, which are the basic elements of competence building (Illeris, 2013) and of the development of experience which forms part of the progressional understanding of entrepreneurship education presented in Chapter 2. There is thus a high level of alignment between goals, methodology and assessment with the positive side effect that the process allows students to establish various narratives about what they have done, thought, felt and learned along the way. Such narratives may, as described earlier, help to strengthen students' self-efficacy and form the basis for the development of an entrepreneurial identity and self-understanding (White, 2008; Mauer, Neergaard & Kirketerp, 2009).

CHAPTER 5: ENTREPRENEURSHIP EDUCATION – PERSPECTIVES AND FUTURE

We have sought to bring together previous research, materials and development projects by the Foundation in one single understanding. This seeks to find a new approach to entrepreneurship education based on the learning goals, understood as knowledge, skills and competencies, which should be the outcome of entrepreneurship education. One point is precisely the fact that there is no single theory or practice that leads to the goal, or one single methodological approach that is the solution per se. On the contrary, we seek to highlight the need for a variety of forms of entrepreneurship education, leading to its inclusion in various subjects and allowing for relevant experience of different forms of entrepreneurship at various stages in the educational system. At the same time, we seek to establish a link between learning goals, the practices to support these goals and the way in which learning can be supported through feedback, evaluation and assessment. The authors and the Foundation thus have the desire to create new perspectives on this context. The consistent focus on learning goals is also an attempt to avoid the ongoing debate on the definition of entrepreneurship. The focus on learning objectives seeks to emphasize competences that can be used in many contexts, and it must be up to the individual to decide whether, when and how to apply the competencies.

There are many other perspectives on entrepreneurship education and new models, theories and descriptions of practice regularly emerge in the field. Many of the examples of practices and methods provided here are treated more exhaustively elsewhere. The discussion of how to evaluate and examine entrepreneurial learning will certainly evolve in the coming years. It is our hope that the present publication can help to support and inspire teachers, researchers and decision makers in the ongoing work to practice, develop and enable a nuanced understanding of entrepreneurship in the educational system.

We also have a point to make about entrepreneurship education in general: there is evidence that entrepreneurship education motivates students, gives them greater satisfaction with their school and education and encourages them to continue with their education. They generally feel better able to handle the future with its challenges, and also to make a positive contribution to society. Therefore, there seems to be good reason to implement entrepreneurial elements, methods and sequences at all levels of the educational system, irrespective of whether this is perceived as a useful competence, part of general education or a commercial discourse. Entrepreneurship education can be commercial; it can also be rooted in many other subjects or in personal dreams and the challenges we face as individuals, society and civilization. It is our hope that teachers at all levels will take up the challenge and become involved in the development of new understandings and teaching and learning processes and practices in the field of entrepreneurship education.

With a pragmatic approach, we argue that this model is valid if it can be used in educational planning and practice and in further development and research. At the same time, we recognize that there will never be an exhaustive or definitive understanding of what entrepreneurship education is, what its goal is, how it is practised and how it can be evaluated.

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